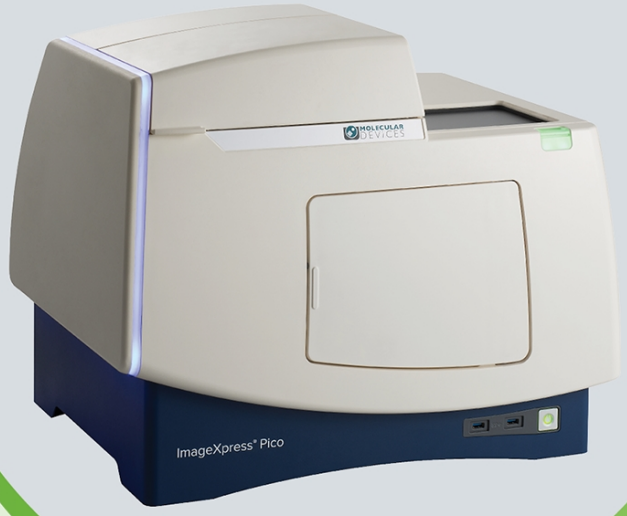


ImageXpress Pico

Automated Cell Imaging System

with CellReporterXpress Software Version 2.9

Installation Guide

5063666 M
January 2022

MOLECULAR DEVICES

For research use only. Not for use in diagnostic procedures.

Patents: www.moleculardevices.com/patents

Product manufactured by Molecular Devices, LLC.
3860 N. First Street, San Jose, California, 95134, United States of America.
Molecular Devices, LLC is ISO 9001 registered.

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.

Safety Symbols in This Guide

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

When warning or caution statements appear in this guide, ensure you follow the related safety information.

The following safety symbols may appear in this guide:

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

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

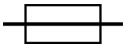
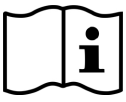
In addition, the following user-attention symbols appear in this guide:

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.

Safety Labels on the Instrument

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. To prevent injury, use a minimum of two people to lift the instrument. See Lifting Hazard on page 11 for details on the weight of the instrument.
	Indicates a potential pinch hazard.
	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 United Kingdom technology conformity.
	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.
	Indicates that there is an authorized representative in the European community.
	Indicates the instrument manufacturer.
	Indicates the manufacturer catalog number.
	Indicates compliance with California Proposition 65, which requires businesses to warn Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm.

Protective Housing

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

WARNING! Do not manually open the top 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 electrical-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. See Obtaining Support on page 20 for details.

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 only the supplied power cords and connect the instrument 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.

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

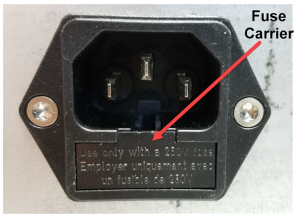
If the instrument does not power on when you press the Power button, confirm that the power cord is securely connected to a functioning power outlet and to the power port on the rear of the instrument.

If the power fails 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 65 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. 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 amber, the instrument is fully powered off.

Note: If the ImageXpress Pico system doesn't respond, you can perform a hard shutdown by holding the Power button for five seconds.

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

Note: If the instrument still does not power on after replacing 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 by Molecular Devices Technical Support. 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.
- Use compressed gas supplies 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 defined by your safety officer to maintain a safe work environment, such as the use of an automatic warning system.
- Observe the applicable cautionary procedures defined by your safety officer when using flammable solvents in or near an instrument that is powered on.
- Observe the applicable cautionary procedures 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 ImageXpress® Pico Automated Cell Imaging System is an 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 six high-powered LEDs enables very high sensitivity fluorescent imaging. Additional LED-based light sources allow transmitted light and overview 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.
- Secondary 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 Filter Cubes on page 69 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:

Objective	Part Number	Magnification	Numerical Aperture
N PLAN 2.5x/0.07	5089752	2.5x	0.07
PL FLUOTAR 4x/0.13	5064345	4x	0.13
HC PL FLUOTAR 10x/0.32	5064346	10x	0.32
HC PL FLUOTAR 20x/0.40	5064347	20x	0.40
HC PL FLUOTAR L 40x/0.60 CORR	5064348	40x	0.60
HC PL FLUOTAR L 63x/0.70 CORR	5064349	63x	0.70

CAUTION! To prevent damaging both the instrument and your sample, do not use any other objectives with the ImageXpress Pico system.

See Objectives on page 69 for details.

Motorized Objective Turret

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

LED Autofocus

The ImageXpress Pico system uses a high-powered LED to autofocus the sample. For certain assays (particularly those with thin plates and low magnifications), software autofocus is also available.

Sample (X-Y) Stage

Plate Holder

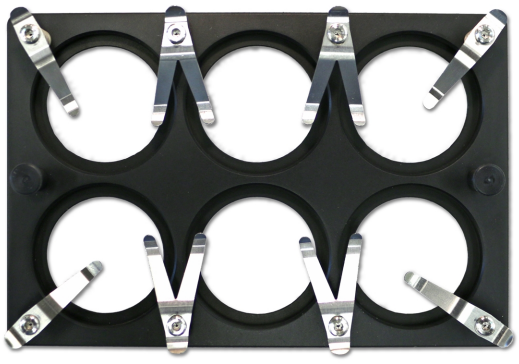
The plate holder is designed for imaging multi-well microplates in standard ANSI (SBS) formats with plastic or glass bottoms and standard footprint dimensions. It can also be used with the optional dish holder, which holds up to six 35 mm (1.38 in.) dishes. Optimal image quality depends on plate flatness, well bottom thickness, and optical clarity.

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

Slide Holder

The slide holder is designed for imaging up to four standard microscope slides of 25 mm × 75 mm (1 in. × 3 in.).

Dish Holder



The optional dish holder is used with the plate holder. It is designed for imaging up to six standard culture dishes of 35 mm (1.38 in.) in diameter.

CellReporterXpress Software Features

The CellReporterXpress Image Acquisition and Analysis 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 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.

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

With the workstation and monitor bundle, the CellReporterXpress software is pre-installed on the host computer. You may still need to install the software on any remote analysis and remote storage computers. You may also want to set up workstation clients.

Theory of Operation

The ImageXpress Pico system uses the following components and functions:

Fluorescence Imaging

Fluorescence is a property of certain classes of molecules (fluorophores) 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 significant probe molecules, so that visualization of the combined fluorophore in the specimen highlights the specific distribution of the molecules in question.

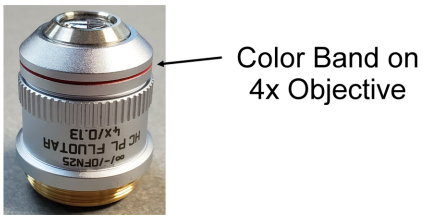
By attaching different probes to a set of dye molecules with non-overlapping excitation and emission spectra, you can stain a specimen with multiple fluorophores and either simultaneously or sequentially image different structures or substances within the same specimen. The excitation and emission peaks 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 use, such as the emission and excitation filters and the dichroic mirror.

Objective Lenses

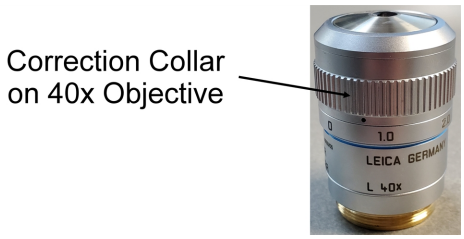
The ImageXpress Pico system can be configured with high-quality Leica Fluotar objectives. Five objectives are currently available.

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

Objective Magnification	Color Band
2.5x	Brown
4x	Red
10x	Yellow
20x	Green
40x	Light Blue
63x	Dark Blue



The 40x objective and 63x objective have application-optimized correction collars 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 69 for details.

Filter Cubes

In the ImageXpress Pico system, the filter cube contains the excitation and emission filters and the dichroic mirror. These optical components are essential parts of an epi-illumination fluorescence imaging system in which the illumination and imaging optical paths overlap at the objective lens.

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.

A dichroic mirror is a specially designed beam splitter that transmits light above a certain cutoff wavelength and reflects light at shorter wavelengths. In the illumination path, the dichroic mirror reflects shorter wavelengths from the light source up through the objective onto the specimen.

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—to restrict the wavelength range.

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.

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—describes the support options offered by Molecular Devices, including service plans and professional services. It also has a link to the Molecular Devices Knowledge Base, which contains documentation, technical notes, software upgrades, safety data sheets, and other resources. If you still need assistance, you can submit a request to Molecular Devices Technical Support.

Technical Support

To contact Molecular Devices Technical Support, submit a support request through the Molecular Devices Knowledge Base at support.moleculardevices.com.

You can also submit a support request by phone. For regional support contact information, go to www.moleculardevices.com/contact.

To expedite support, be prepared to provide the instrument serial number. The serial number is located on the back panel of the instrument.

Documentation

Review the product documentation on the Molecular Devices Knowledge Base at support.moleculardevices.com, including installation guides and user guides. In addition, online Help is available within the CellReporterXpress software. Press **F1** to access Help for the current page.

Additional Resources

Web-based microscopy courses:

- www.leica-microsystems.com/science-lab/science-lab-home
- 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.thermofisher.com/us/en/home/references/molecular-probes-the-handbook.html

Product Documentation

The following guides are available on the Molecular Devices Knowledge Base at support.moleculardevices.com:

- *CellReporterXpress Installation & IT Guide*
- *CellReporterXpress Firewall & Antivirus Supplement*
- *CellReporterXpress User Guide*
- *CellReporterXpress Release Notes*
- *ImageXpress Pico Pre-Installation Guide*
- *ImageXpress Pico EC Gas Requirements Pre-Installation Guide*
- *ImageXpress Pico Product Safety Sheet*
- *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: We recommend 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.

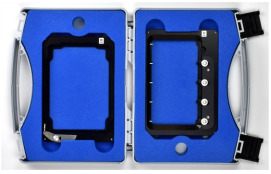
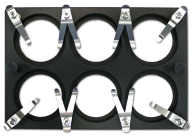
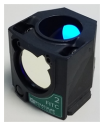
The information in this guide is subject to change without notice. We recommend that you review the guide on the Molecular Devices Knowledge Base at support.moleculardevices.com for the most up-to-date information.

Chapter 2: Setting Up the ImageXpress Pico System

2

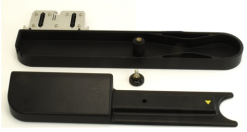
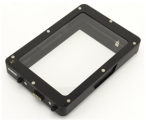
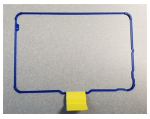
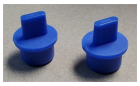
Package Contents

The ImageXpress Pico system arrives in one box, which contains the instrument and its accessories. The package includes the following items:

Item	Description
	Product Safety Sheet
	Two (2) CAT6 Ethernet Cables, 2 m (6.6 ft)
	One of the following: • Power Cord for USA/Canda, 2.29 m (7.5 ft) • Power Cord for Europe, 1.96 m (6.4 ft) • Power Cord for China, 2.5 m (8.5 ft)
	Stage Insert Accessory Pack (includes Plate Holder and 4-Slide holder)
	6-Dish Holder for 35 mm Dishes (optional)
	Filter Cube, FITC (other optional filter cubes may also be included)
	Objectives, 4x and 10x (other optional objectives may also be included)
	Fluorescent Bead Plate Molecular Devices Technical Support may ask you to insert the bead plate into the instrument to remotely troubleshoot your system. Store the bead plate in its foil pouch away from room light.

Item	Description
	Hardware Key Case, including the SafeNet Sentinel USB hardware key (also called a "dongle"), which is required to run the CellReporterXpress software

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

Item	Description
	Humidifying Column
	Humidifying Column Tubing/Wiring (delivered inside Environmental Control Tray)
	Environmental Control Tray
	Environmental Control Cassette
	Three (3) Plate Skirt Height Adapters
	Gas Supply Tubing, 10 m (32.8 ft)
	Three (3) Push-to-Connect Straight Fittings, 6 mm O.D. - ¼" NPT Male
	Two (2) Blind Plugs
	Two (2) Humidifying Column Stoppers

The workstation and monitor bundle includes the following items:

Item	Description
	• Dell Precision Tower • Dell 24 Touch Monitor • Microsoft Windows 10 • Mouse/Keyboard • Cables

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

See Optional Parts and Accessories on page 69 for details on the items available from Molecular Devices for the ImageXpress Pico system.

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 affect performance.

Avoid the following lab conditions or situations:

- Avoid installation in or near any 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 with a weight rating of at least 50 kg (110.2 lb).

Note:
- 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).

We recommend that the table or lab bench be at least 94 cm (37.0 in.) wide by 61 cm (24.0 in.) deep. Additional space or a separate table is required for the host computer.

The front and the top of the instrument must be accessible to allow access to the objectives, filter cubes, and the stage holder. In addition, you must maintain 20 cm to 30 cm (7.9 in. to 11.8 in.) of clearance at the rear of the instrument to ensure sufficient ventilation and provide access for disconnecting power from the instrument.

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

- Ergotron (www.ergotron.com/en-us/anthro)
- RDM (www.rdm-ind.com)
- SteelSentry (www.steelsentry.com)

See Instrument Specifications on page 65 for details on instrument dimensions.

Power Requirements

Consider the following power requirements:

- Direct connections available to all international supply voltages.
- 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 with a monitor is 452 watts (that is, 200 + 200 + 52).

Power Requirement	Watts	Power Cables
Instrument	200	1
Host Computer	200	1
Monitor, 24" (each)	52 (maximum) 18 (typical)	1

Unpacking the Instrument

Note: If you have chosen to have your instrument installed by a Molecular Devices field service engineer, do not open any boxes until the field service engineer is present (unless instructed to do so by Molecular Devices).

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

A foam transport lock is placed in the sample 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 packing materials. You will need them when you pack the instrument for transport.
- When transporting the instrument, warranty claims are void if improper packing results in damage to the instrument.

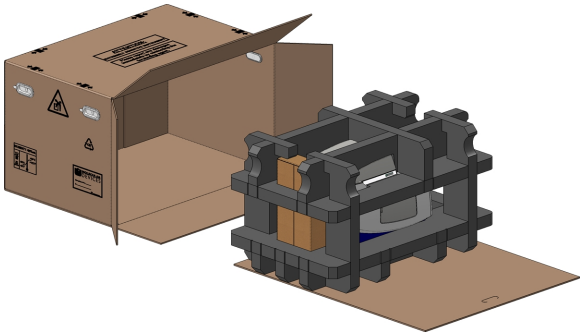
To unpack the instrument:

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.

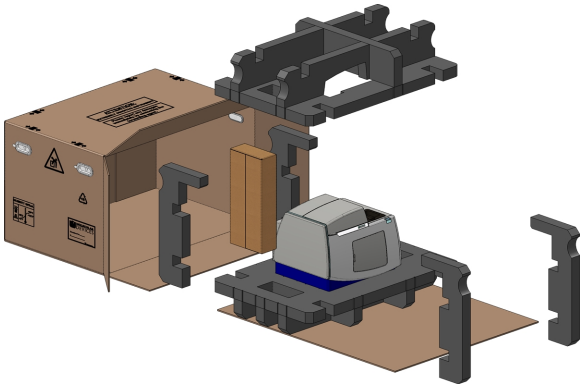
2. Cut the binding straps.
3. With one person on each end, remove the box from the palette.
4. With the box facing up as shown, cut open the side of the box labeled **Open Here**.

5. Grasp the handle on the cardboard and slide the instrument out of the box.



Note: You may need another person to hold the box while you slide the instrument.

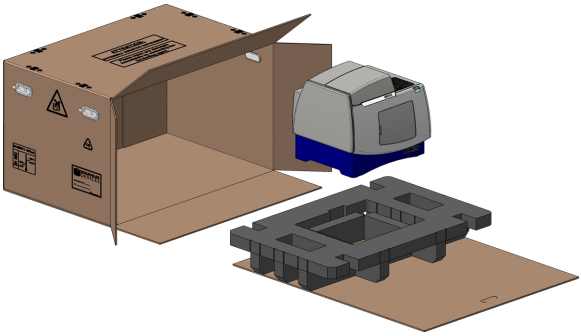
6. Remove the accessory boxes and the foam side supports.



7. Remove the foam top packing.

8. 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.



9. Remove the instrument from the plastic bag.

CAUTION! Retain the shipping box and all packing materials. You will need them when you pack the instrument for transport.

Placing the Instrument

Consider the following when placing 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 11 for details.

Removing the Transport Lock

Remove any tape and the foam transport lock that secures the sample stage the top of the instrument.

CAUTION! Retain the foam transport lock. You will need it when you pack the instrument for transport.

Setting Up the Workstation and Monitor Bundle

The workstation and monitor bundle includes a host computer and touch-screen monitor designed and set up for the ImageXpress Pico system. The bundle includes the following:

- Dell Precision Tower
- Dell 24 Touch Monitor
- Microsoft Windows 10
- Mouse/Keyboard
- Cables

Note: See the *CellReporterXpress Installation Guide* for details on the host computer specifications.

Carefully unpack the computer and monitor and set them up according to the enclosed instructions. Windows, Excel, and the CellReporterXpress software are pre-installed on the host computer at the time of delivery.

CAUTION!
The host computer provided by Molecular Devices is an integral part of the ImageXpress Pico system and is covered under warranty and any subsequent service plans. We strongly recommend that you do not replace the host computer or perform any updates other than those described in the *CellReporterXpress Installation Guide* or as advised by Molecular Devices Technical Support.

If you do replace or update the computer without authorization, you may invalidate the installation of the software or the connection with the instrument. In this case, you may be responsible for the cost if Molecular Devices Technical Support is needed to troubleshoot instrument issues (even when the instrument is covered under warranty or service plan). It is also possible that Molecular Devices Technical Support will be unable to troubleshoot instrument issues.

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 up a system that meets your needs.

The package contains the following cables:

Cable	Description
	Two (2) CAT6 Ethernet cable, 2 m (6.6 ft)
	One of the following: • Power Cord for USA/Canada, 2.29 m (7.5 ft) • Power Cord for Europe, 1.96 m (6.4 ft) • Power Cord for China, 2.5 m (8.5 ft)

The following shows the bottom 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.

CAUTION!
Do not use a wireless connection or a USB-to-Ethernet adapter to connect the host computer to the instrument.
In a standalone configuration, where the instrument is directly connected to the host computer, you may also want to connect the host computer to your network. In this case, connect the host computer to the network using a second Ethernet port, a wireless connection, or a USB-to-Ethernet adapter.

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 or an uninterruptible power supply (UPS). See Power Requirements on page 26 for details.

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 or an uninterruptible power supply (UPS). See Power Requirements on page 26 for details.

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.

Starting the System

Use the following procedures to power on the ImageXpress Pico system.

- Powering On the Instrument, see below
- Powering On the Host Computer, see page 34

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 light on the Power button is green, the instrument is fully powered on.

Powering On the Host Computer

Power on the host computer and monitor, and log in to Windows.

Note: You will also use the Windows user name and password to log in to the CellReporterXpress software.

With the workstation and monitor bundle, the default Windows user name and password is printed on a sticker on the top of the host computer.

CAUTION! We strongly recommend that you change the default Windows password.

Changing the Windows Password

To change the Windows password:

1. From the Windows desktop, press **CTRL** + **ALT** + **DELETE**.
2. Click **Change a password**.
3. In the **Old password** field, enter the current password. The default password is printed on a sticker on the top of the host computer.
4. In the **New password** field, enter the new password.
5. In the **Confirm password** field, enter the new password again.
6. Click  **Submit**.

Chapter 3: Installing the CellReporterXpress Software

The CellReporterXpress software is the user interface for the ImageXpress Pico system. You will use the software to work with the ImageXpress Pico system and control its functions.

After you set up the ImageXpress Pico system as described in the previous section, you are ready to install the CellReporterXpress software. See the *CellReporterXpress Installation Guide* for details.

Note: With the workstation and monitor bundle, the CellReporterXpress software is already installed on the host computer. You may still need to install the software on any remote analysis and remote storage computers. You may also want to set up workstation clients.

After you install the CellReporterXpress software, return to this guide to finish setting up the ImageXpress Pico system.

Chapter 4: Finishing Setup of the ImageXpress Pico System

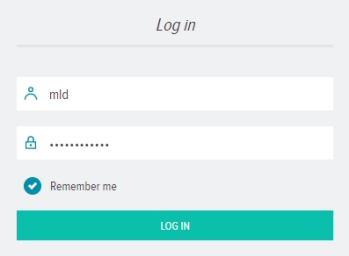
4

Logging In to the Software

Note: If you have just powered on or restarted the host computer, wait five minutes before logging in. This allows time for the CellReporterXpress software services to start.

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 user name for a Windows account on the host computer.
3. In the **Password** field, enter the required password for the Windows account.

Note:
- A password is required to log in to the CellReporterXpress software. If the Windows account has no password, you cannot log in to the software.
- With the workstation and monitor bundle, the default Windows user name and password is printed on a sticker on the top of the host computer. Note that the default password may have been changed.

4. Click **LOG IN**.
5. If you are prompted to accept the license agreement, do the following:
   a. Select the **I accept the End-User License Agreement** check box.
   b. Click **Continue**.

Note: If you do not accept the license agreement when prompted, you cannot use the software.

See the *CellReporterXpress User Guide* for details on logging in to the software from a client workstation.

Registering an Instrument

You can register an instrument in the software on the **Devices** page in **Configuration** mode. Registered instruments use one of the following connections:

- **Direct Connection**: A direct Ethernet connection between the instrument and the host computer running the CellReporterXpress software in a standalone configuration.
- **Remote Connection**: A network Ethernet connection between the instrument and the host computer running the CellReporterXpress software in a network configuration or a server configuration.

The **Devices** page contains two tabs:

- **My Devices**: Lists all registered instruments available to you for acquisition and maintenance.
- **Add Device**: Lists all registered instruments connected to the host computer. From here, you can add instruments to the list on the **My Devices** tab, which makes them available for acquisition and maintenance.

You must add at least one instrument to the list on the **My Devices** tab to acquire an image.

For each instrument, a status indicator shows one of the following:

 **Online**

 **Offline** or **Incompatible**

 **Busy**

 **Error**

Note: If the status indicator for an instrument shows  **Incompatible**, the instrument firmware version may not be compatible with the software version. For details on updating the firmware, log in to the Molecular Devices Knowledge Base at support.moleculardevices.com, and search for **ImageXpress Pico: Firmware Update**.

Registering a Directly Connected Instrument

To register a directly connected instrument:

1. Confirm that the instrument is connected to the host computer running the CellReporterXpress software using the **LAN1** port on the back of the device.
2. In the CellReporterXpress software, on the **Home** page, click  **Configuration**.
3. On the left side of the screen, click  **Devices**.
4. On the **Devices** page, on the **Add Device** tab, click **Connect LAN1**.
   The instrument appears in the list on the **Add Device** tab.
5. If needed, in the tile for that instrument, click  **Add to My Devices**.
   The instrument appears in the list on the **My Devices** tab.

Tip: We recommend that you do not directly connect an instrument to the host computer using the LAN2 port unless advised to do so by Molecular Devices Technical Support.

Registering a Remotely Connected Instrument Using Autodiscovery

To register a remotely connected instrument using autodiscovery:

1. Confirm that the instrument is connected to the network using the **LAN2** port on the back of the device.
2. Confirm that the host computer running the CellReporterXpress software is connected to the network.
3. In the CellReporterXpress software, on the **Home** page, click  **Configuration**.
4. On the left side of the screen, click  **Devices**.
   Within five minutes, the instrument appears in the list on the **Add Device** tab. It may initially indicate offline status, but it should change to online status shortly after it appears.
   If the instrument does not appear in the list on the **Add Device** tab, your computer or your network may be set up to block autodiscovery. In this case, do one of the following:
   - Enable network discovery on the computer where the CellReporterXpress software is installed and try again.
   - Register the instrument using manual discovery. See Registering a Remotely Connected Instrument Using Manual Discovery on page 40 for details.
5. If needed, in the tile for that instrument, click  **Add to My Devices**.
   The instrument appears in the list on the **My Devices** tab.

Registering a Remotely Connected Instrument Using Manual Discovery

The host computer or your network may be set up to block autodiscovery. In that case, you can register a remotely connected instrument using manual discovery.

To register a remotely connected instrument using manual discovery:

1. Confirm that the instrument is connected to the network using the **LAN2** port on the back of the device.
2. Confirm that the host computer running the CellReporterXpress software is connected to the network.
3. In the CellReporterXpress software, on the **Home** page, click  **Configuration**.
4. On the left side of the screen, click  **Devices**.
5. On the **Devices** page, on the **Add Device** tab, in the **Remote Connection** field, enter the name or the IP address of the instrument you want to add.

   Note: The instrument name begins with "IXP-" followed by the serial number, which is on the back of the instrument. See the *ImageXpress Pico User Guide* for details on locating the serial number.

   The device IP address is determined by your network. Contact your network administrator for details.

6. Click  **Register Device**.
   The remotely connected instrument appears in the list on the **Add Device** tab.
   If the instrument does not appear in the list on the **Add Device** tab, contact your network administrator.
7. If needed, in the tile for that instrument, click  **Add to My Devices**.
   The instrument appears in the list on the **My Devices** tab.

Installing a Filter Cube

Before installing a filter cube, review the following:

- Access only the user-serviceable components inside the instrument as described in this guide. Avoid contact with other components as they can be damaged or knocked out of alignment.
- To prevent dust from collecting inside the instrument, keep the top door and the maintenance door closed (unless you are inserting labware or performing maintenance tasks).
- Ensure that the top door and the maintenance door are closed before starting the instrument.

CAUTION! To prevent skin oils from damaging the optical coatings, we recommend that you wear powder-free disposable gloves when handling objectives and filter cubes.

The following filter cubes are available:

- DAPI
- CFP
- FITC
- TRITC
- Texas Red
- Cy5

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 (in both the instrument and the software).

To install a filter cube:

1. In the CellReporterXpress software, on the **Home** page, click  **Devices**.
2. Click  **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  **Component Exchange**.

Note: Do not install a filter cube in slot 6 of the turret. Slot 6 must be empty (in both the instrument and the software).

5. Click the **Choose Filter** drop-down list box, 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! Retain the filter cube packaging. 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**.

Installing an Objective

Before installing an objective, review the following:

- Access only the user-serviceable components inside the instrument as described in this guide. Avoid contact with other components as they can be damaged or knocked out of alignment.
- To prevent dust from collecting inside the instrument, keep the top door and the maintenance door closed (unless you are inserting labware or performing maintenance tasks).
- Ensure that the top door and the maintenance door are closed before starting the instrument.

CAUTION!

- To prevent skin oils from damaging the optical coatings, we recommend 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	Notes
1	4x	The 4x objective is required for autofocus and must be installed in slot 1.
2	10x	The 10x objective is required for autofocus and must be installed in slot 2.
3	2.5x	Do not install the 2.5x objective and the 20x objective in the instrument simultaneously.
	20x	
4	empty	Slot 4 must be empty.
5	40x	Do not install the 40x objective and the 63x objective in the instrument simultaneously. The 63x objective is not compatible with the environmental control cassette. Do not install the 63x objective when the environmental control cassette is loaded.
	63x	
6	empty	Slot 6 must be empty.

Note:

- Depending on how your ImageXpress Pico system is configured, you may not have all the objectives.
- If no filter cubes are installed, an installed objective will appear to be not installed. We recommend that at least one filter cube be installed before installing an objective. See Installing a Filter Cube on page 41 for details.

To install an objective:

1. In the CellReporterXpress software, on the **Home** page, click **Devices**.
2. Click **Show Device Options** to expand the details for the instrument 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**.

   Note: As described above, you must install objectives in specific slots in the turret.

5. Click the **Choose Objective** drop-down list box, 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.

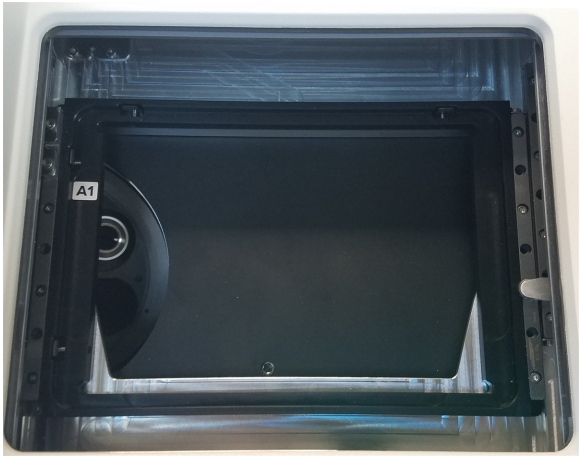
   CAUTION! Retain the objective case. When not installed in the instrument, an objective should always be stored in its case.

8. Do both of the following:
   a. Manually close the maintenance door.
   b. In the CellReporterXpress software, click **Close Maintenance Door**.
9. Click **Apply**.

Inserting a Labware Holder

Open the top door of the instrument to insert a labware holder in the sample stage. The ImageXpress Pico System includes a plate holder for standard multi-well microplates and a 4-slide holder for standard microscope slides. An optional 6-dish holder for standard 35 mm culture dishes is also available. See Accessories on page 70 for details on the items available from Molecular Devices for the ImageXpress Pico system.

The sample stage has an **A1** label to indicate its top left corner.



Inserting the Plate Holder

Like the sample 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 top door.
2. Confirm that the spring-loaded clamp on the plate holder is 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 stage.

   Note: The pin at the bottom right of the plate holder should fit into the small recess in the sample stage.

4. Confirm that the plate holder is seated flat in the sample stage.
5. Press the button at the top right of the instrument to close the top door.

CAUTION! To prevent from spilling liquid inside the instrument, always use a lid on the plate. Spilling liquid can damage the instrument.

Inserting the Slide Holder

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

To insert the slide holder:

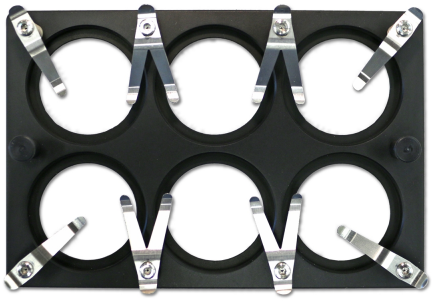
1. Press the button at the top right of the instrument to open the top door.
2. With the **A1** label at the top left (as shown), insert the slide holder in the sample stage.

   Note: The pin at the bottom right of the slide holder should fit into the small recess in the sample stage.

3. Confirm that the slide holder is seated flat in the sample stage.
4. If any slides are loaded, confirm that they are seated flat in the slide holder.
5. Press the button at the top right of the instrument to close the top door.

Inserting the Dish Holder

The optional dish holder fits inside the plate holder in the sample stage. It can be inserted in either direction, so there is no label on it.



To insert the dish holder:

1. Press the button at the top right of the instrument to open the top door.
2. Insert the plate holder in the instrument. See Inserting the Plate Holder on page 46 for details.
3. Insert the dish holder in the plate holder.
4. Confirm that the dish holder is seated flat in the plate holder.
5. Press the button at the top right of the instrument to close the top door.

When you insert dishes in the dish holder, use the clamps to hold each dish in place.

CAUTION! To prevent from spilling liquid inside the instrument, always use a lid on the dish. Spilling liquid can damage the instrument.

Chapter 5: Environmental Control System

5

The optional environmental control system enables you to control the environment of your sample in a plate. You can regulate temperature, humidity, CO_2, and O_2 inside the environmental control cassette to do the following:

- Keep cells alive for several days, growing at a rate comparable to that expected with a standard cell culture incubator. This enables you to perform experiments using multi-day, live-cell, time-lapse imaging.
- Reduce the oxygen inside the environmental control cassette. This enables you to perform hypoxia experiments.

Note: Environmental control is fully supported for plate and dish 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 can be no higher than 19°C (66.2°F).
- To achieve the minimum temperature setting of 25°C (77°F) with the environmental control cassette, the room temperature can 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. See Obtaining Support on page 20 for details.

Environmental Control System Safety

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

WARNING!

- **Do not operate the environmental control system with substances or under conditions that can cause a risk of explosion, implosion, or the release of gases.**
- **Use compressed gas supplies 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 defined by your safety officer to maintain a safe work environment, such as the use of an automatic warning system.**
- **Use only the compressed gases described in this guide, which are CO_2, N_2, and compressed air. NEVER attempt to connect a pure O_2 tank or any other unsupported gas supply to the instrument.**

WARNING! BIOHAZARD. You are responsible for decontaminating all instrument components before returning 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.

Before returning parts, contact Molecular Devices Technical Support if you have questions about decontamination. See Obtaining Support on page 20 for details.

CAUTION!

- 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.
- To prevent damage to the instrument, do not allow the gas pressure to exceed 1.2 bar (17.4 psi).
- With multiple gas supplies, use the same gas pressure for each gas supply.
- Do not use the instrument with hazardous substances.
- If you use any substances or materials that pose a risk of infection, you are responsible for applying best practices when handling these materials.
- If the CO_2 port or the N_2 port is not connected to a gas supply, use a blind plug (included) to close it off.

See Using the Environmental Control System on page 54 for details on other cautions and important information on using the environmental control system.

Environmental Control System Hardware

The environmental control system uses a magnetically sealed cassette that contains the sample labware. 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 control the gas concentration inside the environmental control cassette. CO_2 is typically supplied from a gas cylinder. N_2 can be supplied from gas cylinders or a lab gas line. Compressed air can be supplied from a gas cylinder, a lab gas line, or an oil-free air pump or compressor. Gas pressure to the instrument 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 labware over the duration of a time-lapse experiment.

This section contains information on the following:

- Items Provided by Molecular Devices, see page 52
- Items Provided by You, see page 53

Items Provided by Molecular Devices

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

- **Environmental control cassette** to hold the labware during acquisition. The cassette is magnetically sealed to maintain the environment and is compatible with most plate and dish formats from 6-well to 384-well with a plate bottom clearance of at least 1.3 mm (0.05 in.) and 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).

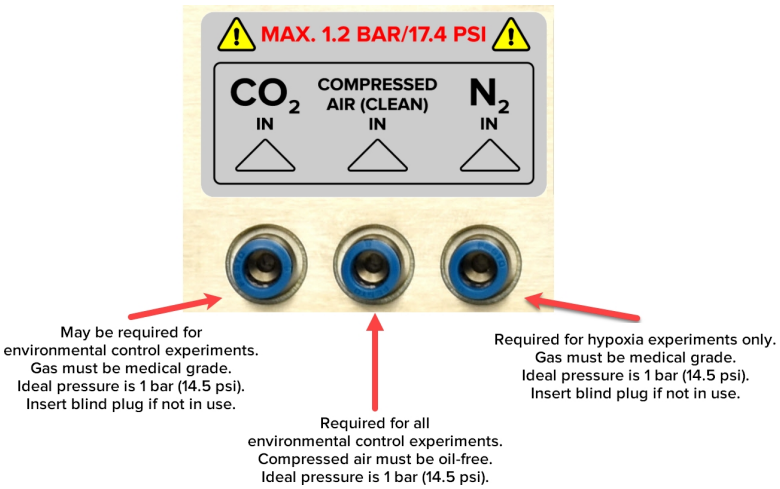
  Note: Plate bottom clearance is defined by subtracting well depth and bottom thickness from plate height, as follows:

- **Environmental sensors** to provide accurate readings of temperature, humidity, CO_2, and O_2.
- **Environmental control tray** to hold the humidifying column and the tubing/wiring at the back of the instrument.
- **Humidifying column** to humidify the mixed gases. 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** to connect the humidifying column to the instrument.
- **Push-to-connect fittings** to easily connect the gas supply to the instrument.
- **Blind plugs** to close off the CO_2 port, the N_2 port, or both ports when not in use.
- **Humidifying column stoppers** to seal the access port on the humidifying column.
- **Plate skirt height adapter** to raise the plate inside the environmental control cassette.

Items Provided by You

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



- **Required Gas Supplies**: The following gas supplies are required for all experiments using environmental control:
  - **Pressurized compressed air** from a gas cylinder, a house gas line, or an oil-free air compressor.
  - **Pressurized, medical-grade CO_2** from a gas cylinder.

    Note: CO_2 is used to regulate the pH of cell culture media for mammalian cells. If you are using an organic buffer solution (for example, HEPES) to regulate the pH of your media, then a CO_2 source may not be required.
- **Optional Gas Supply**: The following gas supply is required only for hypoxia experiments:
  - **Pressurized, medical-grade N_2** from a gas cylinder or a house gas line. Required for hypoxia experiments; otherwise optional.
- **Pressure regulators** to deliver gases to the instrument. Gas pressure to the instrument 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).
- **Gas supply tubing** to connect the instrument to the regulator. If the 10 m (32.8 ft) of tubing provided by Molecular Devices is not sufficient, you must provide an appropriate length of 4 mm I.D. / 6 mm O.D. polyurethane tubing.
- **Teflon tape and hose clamps** to secure the tubing and fittings.
- **Ultrapure water (18 Mohm•cm)** to maintain 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).

See Environmental Control System Gas Requirements on page 71 for details on the gas supplies and pressure regulators required for the environmental control system.

Using the Environmental Control System

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

Tip: To watch a video on setting up and using the environmental control system, log in to the Molecular Devices Knowledge Base at support.moleculardevices.com and search for **How to install the ImageXpress Pico Environmental Control System**.

Setting Up the Environmental Control System

To set up the environmental control system:

1. Confirm that the valves on the gas cylinders 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 amber, the instrument is fully powered off.

Note: If the ImageXpress Pico system doesn't respond, you can perform a hard shutdown by holding the Power button for five seconds.

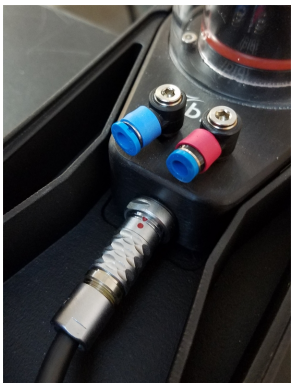
3. On the environmental control tray, loosen the large screw to remove the top piece from the tray.
4. On the bottom piece of the environmental control tray, slide the tab under the instrument so it engages the two screws.

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

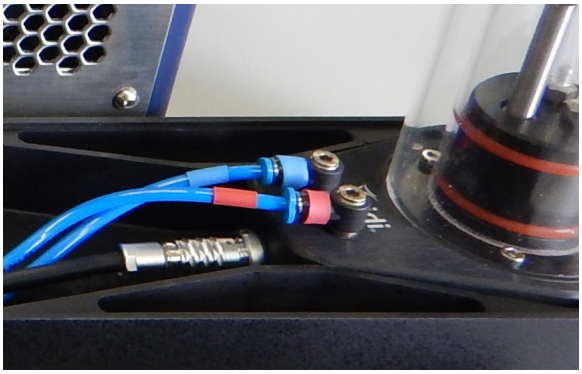
6. Do the following to connect the humidifying column:

   Note: See Connecting and Disconnecting Tubing on page 58 for details on connecting tubing.

   a. Align the red dots to connect the electronics cable to the lower port on the humidifying column.

   b. Connect the tubing with the blue band to blue port on the humidifying column.
   c. Connect the tubing with the red band to red 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 gas cylinder to the instrument:
   a. Connect the tubing from the CO_2 source to the **CO_2 IN** port.
   b. Connect the tubing from the compressed air source to the **COMPRESSED AIR (CLEAN) IN** port.
   c. If you will be performing hypoxia experiments, connect the tubing from the N_2 source to the **N_2 IN** port.

CAUTION! For any port not connected to a gas cylinder, close off the port with one of the included blind plugs (as shown below).

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

Connecting and Disconnecting Tubing

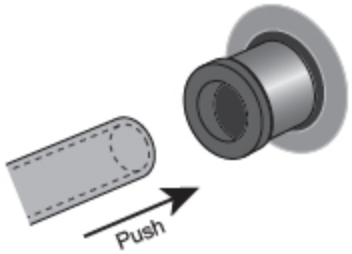
As part of working with the environmental control system, you must connect and disconnect tubing.

WARNING! Do not connect or disconnect tubing when there is pressure from the gas cylinder.

Connecting Tubing

To connect tubing:

1. Confirm that the pressure from the gas cylinder is turned off.
2. Push the tubing in to the port to connect it.

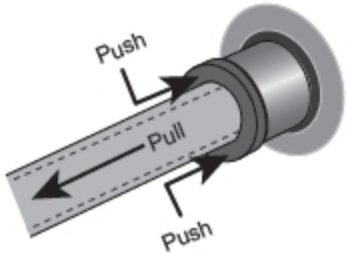


3. After inserting the tubing, gently pull the tubing to confirm it is seated.

Disconnecting Tubing

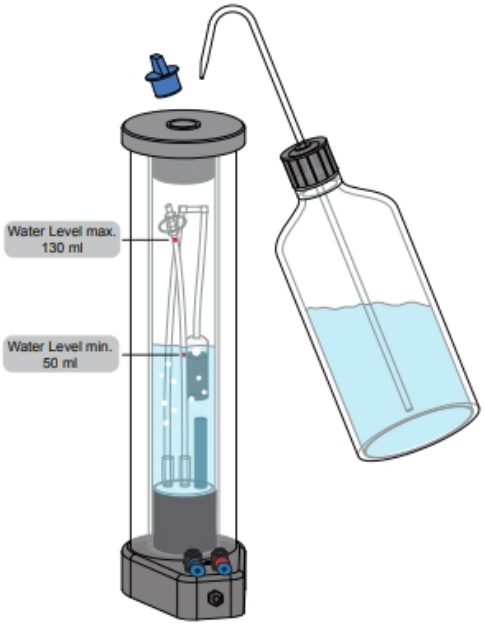
To disconnect tubing:

1. Confirm that the pressure from the gas cylinder 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) of ultrapure water, which is enough to continuously provide humidity for up to 72 hours. 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 in the humidifying column 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.)
- Use only 18 Mohm•cm ultrapure water to fill the humidifying column.
- It can be easy to accidentally overfill the humidifying column. When filling the humidifying column, use care not to fill beyond the maximum indicator.
- Confirm that the rubber stopper is firmly seated in the humidifying column. A loose stopper can allow gas leakage and other environmental control system issues.
- Before emptying the humidifying column, power off the instrument and disconnect all tubing/wiring. Trying to empty the humidifying column with the tubing/wiring connected can damage the instrument and the humidifying column. See Connecting and Disconnecting Tubing on page 58 for details.

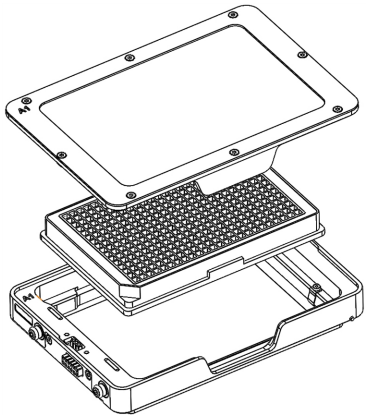
Note: If the humidifying column does run dry, restart the instrument after refilling the column.

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).
3. Replace the rubber stopper at the top of the humidifying column.

Loading the Environmental Control Cassette

The environmental control cassette is a magnetically sealed, glass enclosure that holds the plate or dishes in the instrument.

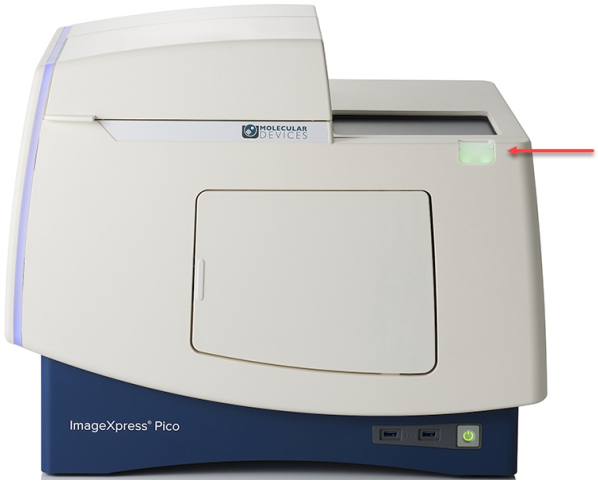


Like the sample stage, both the environmental control cassette and lid also have an **A1** label to indicate their top left corners.

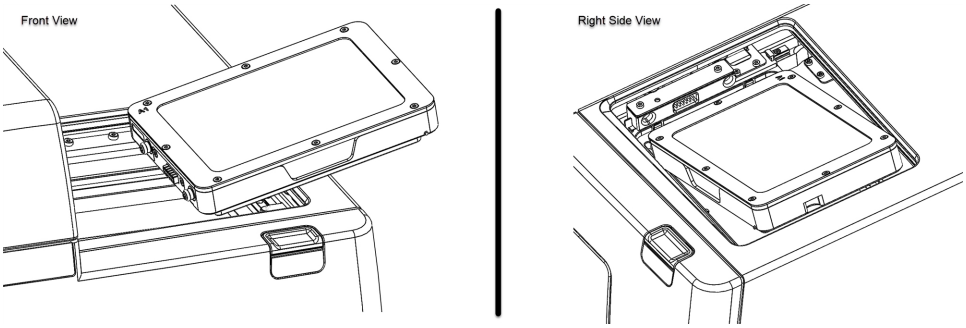
Note: Do not touch the glass parts of the environmental control cassette.

To load the environmental control cassette:

1. If the instrument is powered off, press the Power button on the front of the instrument to turn on the power. See Powering On the Instrument on page 33 for details.
2. Press the button at the top right of the instrument to open the top door.



3. If the sample stage already contains a labware holder, remove it.
4. Insert the environmental control cassette (with nothing inside) in the sample stage from the left end so that the contacts on the cassette meet the contacts on the sample stage.



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

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

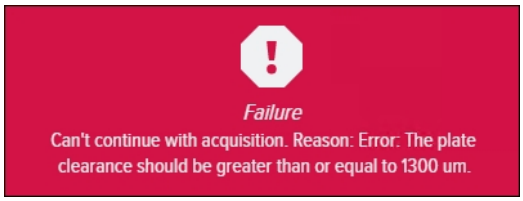
6. Lift the top of the environmental control cassette and insert the plate containing your samples.

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

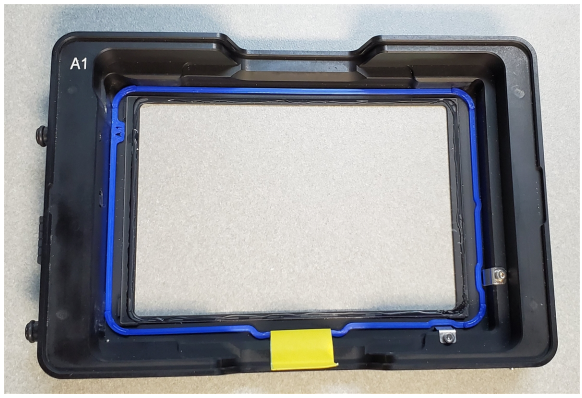
7. Replace the top of the environmental control cassette.
8. Press the button at the top right of the instrument to close the top door.

Using the Plate Skirt Height Adapter

If you are using the environmental control cassette and autofocus fails, the CellReporterXpress software may display the following message:

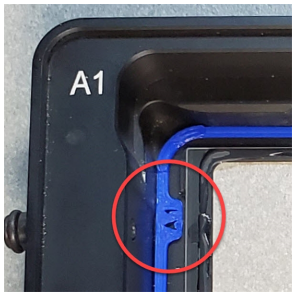


In this case, you may need to insert the plate skirt height adapter.



The plate skirt height adapter sits inside the environmental control cassette to raise the plate, which can help autofocus succeed. When you use the adapter, you must select a labware specification that adds 1.5 mm to the actual **Plate Height** value. See the *CellReporterXpress Help* or the *CellReporterXpress User Guide* for details on adding and selecting a labware specification.

Like the cassette, the adapter also has an **A1** label to indicate its top left corner.



To use the plate skirt height adapter:

1. Press the button at the top right of the instrument to open the top door.
2. Lift the top of the environmental control cassette and remove the plate containing your samples.
3. With the **A1** label at the top left, insert the plate skirt height adapter in the cassette.
4. Confirm that the adapter is seated flat in the cassette.
5. Re-insert the plate containing your samples in the environmental control cassette.
6. Press the button at the top right of the instrument to close the top door.

When you set up an acquisition with the plate skirt height adapter in the optional environmental control cassette, select a plate format that adds 1.5 mm to the actual **Plate Height** value. See the *CellReporterXpress Help* or the *CellReporterXpress User Guide* for details on adding and selecting a labware specification.

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 humidifying column. See the *ImageXpress Pico User Guide* for details.

Troubleshooting the Environmental Control System

If you experience an issue with the environmental control system, review the troubleshooting tips in the *ImageXpress Pico User Guide* before contacting Molecular Devices Technical Support.

Appendix A: Instrument Specifications

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

WARNING!

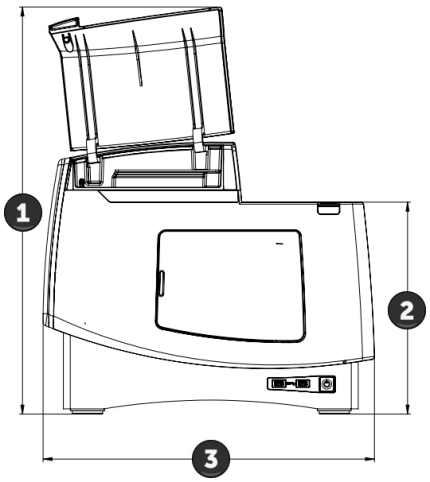
- **If the instrument is used in a manner not specified by Molecular Devices, the protection provided by the equipment might be impaired.**
- **The ImageXpress Pico system is an Equipment Class 1 product that relies on protective earth grounding for safe operation. Any interruption of the protective 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	5 mm × 20 mm 6 A MEDIUM 250 V UL CSA ceramic tube
Dimensions	*without environmental control system* Width: 55.1 cm (21.7 in.) Height: 45.3 cm (17.8 in.) Depth: 42.5 cm (16.7 in.)
	with environmental control system 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 system* 38 kg (83.8 lb)
	with environmental control system 40 kg (88.2 lb)
Sample Formats, dishes (optional)	Standard culture dishes, 35 mm (1.38 in.)
Sample Formats, microplates	ANSI/SLAS compliant Number of Wells: 6, 12, 24, 48, 96, 384 Maximum Height, including lid: 23 mm (0.9 in.)
Sample Formats, slides	Standard microscope slides, 25 mm × 75 mm (1 in. × 3 in.)

Item	Description
Reading Modes	Fluorescence Transmitted Light (Brightfield) Colorimetric
Objectives	2.5x (optional) 4x 10x 20x (optional) 40x (optional) 63x (optional)
Fluorescence Color Channels	DAPI (optional) CFP (optional) FITC TRITC (optional) Texas Red (optional) CY5 (optional)
Environmental Control	CO_2: 1% to 15% (optional) O_2: 1% to 15% (optional) Humidity: 85% (optional)
Temperature Control	*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% (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

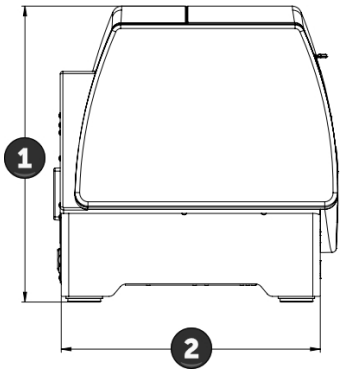
Instrument Dimensions without Environmental Control System

Front View



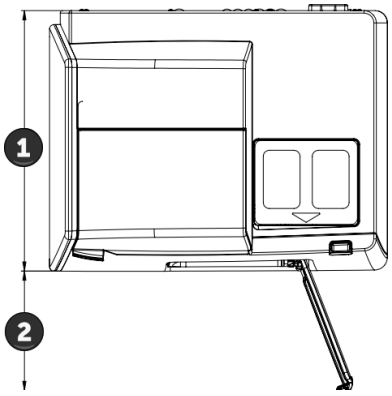
Item	Description
1	67.8 cm (26.7 in.)
2	35.3 cm (13.9 in.)
3	55.1 cm (21.7 in.)

Side View



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

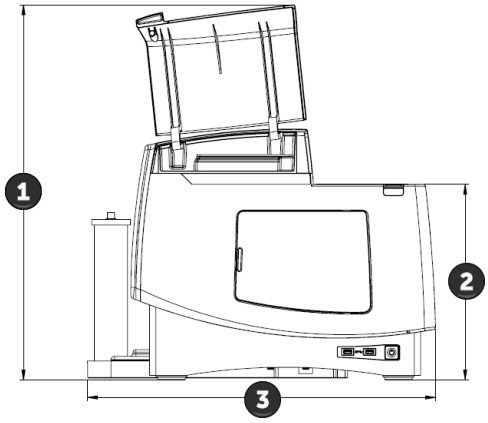
Top View



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

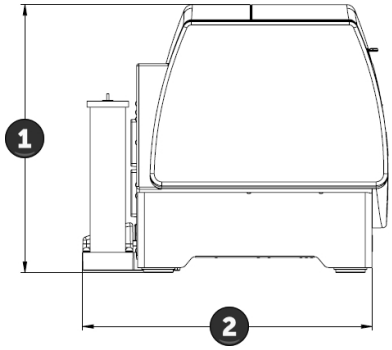
Instrument Dimensions with Environmental Control System

Front View



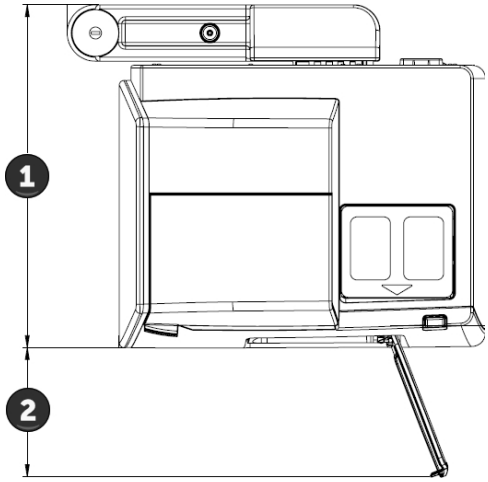
Item	Description
1	67.8 cm (26.7 in.)
2	35.3 cm (13.9 in.)
3	62.9 cm (24.8 in.)

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

This section describes the items available from Molecular Devices for the ImageXpress Pico system, including the following:

- Objectives, see below
- Filter Cubes, see below
- Accessories, see page 70

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
N PLAN 2.5x/0.07	5089752	2.5x	0.07	11.2 mm	No
PL FLUOTAR 4x/0.13	5064345	4x	0.13	17.0 mm	No
HC PL FLUOTAR 10x/0.32	5064346	10x	0.32	11.13 mm	No
HC PL FLUOTAR 20x/0.40	5064347	20x	0.4	7.45 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 sample, 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
CFP	5069940	400/30 nm	480/40 nm	440 nm
FITC	5064351	465/40 nm	525/30 nm	500 nm
TRITC	5064352	530/45 nm	594/40 nm	560 nm
Texas Red	5069939	560/50 nm	645/75 nm	595 nm
Cy5	5064353	630/40 nm	695/45 nm	655 nm

Accessories

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

Base System Accessories

Item	Part No.
4-Slide Holder	5068503
Plate Holder	5068504
6-Dish Holder for 35 mm Dishes	5077007
Calibration Kit	5068505
Fluorescent Bead Plate	1-5590-0010
RGB Test Slide	5087076
Two (2) CAT6 Ethernet Cables, 2 m (6.6 ft)	5052189
Power Cord for USA/Canada, 2.29 m (7.5 ft)	4400-0002
Power Cord for Europe, 1.96 m (6.4 ft)	4400-0036
Power Cord for China, 2.50 m (8.2 ft)	4400-0276
Fuses, 5 mm × 20 mm 6 A MEDIUM 250 V UL CSA ceramic tube	5082137

Workstation and Monitor Bundle Accessories

Item	Part No.
Workstation and Monitor Bundle	5058414

Environmental Control System Accessories

Item	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
Push-to-Connect Straight Fitting 6 mm O.D. - ¼" NPT Male	5075610
Two (2) Blind Plugs	5070106
Three (3) Plate Skirt Height Adapters	5077006

Appendix C: Environmental Control System Gas Requirements

The ImageXpress Pico system is available with the optional environmental control system, which enables you to perform multi-day, live-cell, time-lapse experiments and hypoxia experiments. This section provides the information you need to prepare for the Environmental Control System, including:

It is important to consider the proper connections and fittings to connect the instrument to the gas supply. Unlike other imaging systems, the ImageXpress Pico system allows independent control of both CO_2 and O_2 levels. As a result, you may need to connect up to three separate gas supplies to the system.

The regulators and connections required to connect the instrument are dependent on how the gas is supplied—from a compressed gas cylinder, a lab gas line, or an air compressor.

Required Items

If your ImageXpress Pico system includes the environmental control system, you must provide the following:

- **Required Gas Supplies**: The following gas supplies are required for all experiments using environmental control:
  - **Pressurized compressed air** from a gas cylinder, a house gas line, or an oil-free air compressor.
  - **Pressurized, medical-grade CO_2** from a gas cylinder.

    Note: CO_2 is used to regulate the pH of cell culture media for mammalian cells. If you are using an organic buffer solution (for example, HEPES) to regulate the pH of your media, then a CO_2 source may not be required.
- **Optional Gas Supply**: The following gas supply is required only for hypoxia experiments:
  - **Pressurized, medical-grade N_2** from a gas cylinder or a house gas line. Required for hypoxia experiments; otherwise optional.
- **Pressure regulators** to deliver gases to the instrument. Gas pressure to the instrument 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).
- **Gas supply tubing** to connect the instrument to the regulator. If the 10 m (32.8 ft) of tubing provided by Molecular Devices is not sufficient, you must provide an appropriate length of 4 mm I.D. / 6 mm O.D. polyurethane tubing.
- **Teflon tape and hose clamps** to secure the tubing and fittings.
- **Ultrapure water (18 Mohm•cm)** to maintain 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).

See Environmental Control System Safety on page 50 for specific warning and caution statements for the environmental control system.

Note:

- All applications of the environmental control system require sources of compressed air and CO_2. These make it possible to enrich the CO_2 gas environment above ambient levels.
- An N_2 source is required for hypoxia experiments, where O_2 levels are to be depleted to sub-ambient levels. If you are planning on performing hypoxia experiments, all three gases—compressed air, CO_2 and N_2—are required.

Supported Gas Supplies

The environmental control system requires that the gas supply be oil-free and medical grade. CO_2 and N_2 are typically supplied from a compressed gas cylinder. Compressed air is often supplied from one of the following:

- Gas cylinder
- Lab gas line
- Oil-free air compressor

The connections required to connect the instrument to the gas source vary based on the gas supply you use. This appendix describes each connection.

Unsupported Gas Supplies

WARNING!

- **Using an unsupported gas supply with to the environmental control system may damage the instrument and void the warranty.**
- **Never connect pure O_2 or any other unspecified gas supply to the instrument.**

To avoid damage to the instrument, DO NOT use the following:

- Pre-mixed gas supplies
- N_2 or CO_2 boil-off from a Dewar flask
- N_2 from an N_2 generator
- Any gas supply that is not oil-free
- Any gas supply that is not medical grade
- Any gas supply that cannot be set to supply gas at between 0.8 bar and 1.2 bar (11.6 psi and 17.4 psi)

Using a Gas Cylinder

Gas pressure to the environmental control system 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). A two-stage regulator is required to step-down and regulate the pressure from the gas cylinder.

Regulators type designations for gas cylinders vary based on the region. The following table lists examples of region-specific regulator types:

Region	CO_2 Regulator Type	N_2 Regulator Type	Compressed Air Regulator Type
North America	CGA320	CGA580	CGA590
Germany	DIN477-1 Nr.6	DIN 477-1 No.10	DIN477-1 Nr.13
Great Britain	BS 341 No.8	BS 341 No.3 or BS 341 No.30	BS 341 No.3 or BS 341 No.31
Italy	UNI 4406 /UNI2	UNI 4409 / UNI5	UNI 4410 / UNI6
France	ANFOR NF E 29-650/C	ANFOR NF E 29-650/C	ANFOR NF E 29-650/D or ANFOR NF E 29-650/B

Note: The information in the table is not exhaustive and may change without notice.

Tip:

- The regulator type is often stamped on the end of the regulator on the side that will connect to the cylinder.
- Select a cylinder size that meets your needs. Gas within the environmental control system flows at up to 20 l/hr (0.7 ft^3/hr). So, for example, for typical CO_2 regulation at 5% volume, a 10 l (0.35 ft^3) liquid CO_2 cylinder can last a year.

Several vendors offer gas regulators, and the one you use is not critical as long as the following conditions are met:

- The regulator type is appropriate for the tank as indicated in the table above.
- The regulator is a two-stage, gas pressure regulator. Be sure that you are using a gas pressure regulator, not a flow control valve.
- The maximum delivery pressure of the regulator is 10 bar (145 psi) or less. We recommend that you use a regulator with a maximum delivery pressure of 4.14 bar (60 psi), which makes it easy to set the required pressure.

CAUTION! To prevent damage to the instrument, do not allow the gas pressure to exceed 1.2 bar (17.4 psi).

Some examples of regulator vendors in North America are listed in the following table:

Vendor (Website)	Gas	Type	Part Number
McMaster-Carr (www.mcmaster.com)	CO_2	CGA320	7951A67
	N_2	CGA580	7951A62
Airgas (www.airgas.com)	Air	CGA590	Y12244B590-AG
	CO_2	CGA320	Y12244B320-AG
	N_2	CGA580	Y12N245B580-AG
Matheson (store.mathesongas.com)	Air	CGA320	SEQ3121A320
	CO_2	CGA580	SEQ3121A580
	N_2	CGA590	SEQ3121A590

Note: The information in the table is not exhaustive and may change without notice.

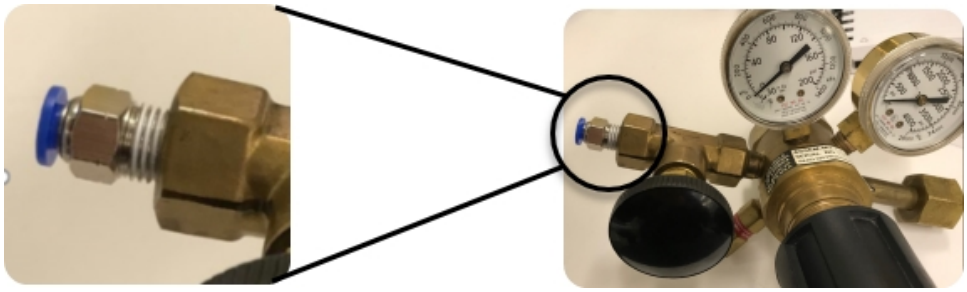
You can also purchase an acceptable regulator from one of the following vendors:

- Air Products (www.airproducts.com)
- Fisher Scientific (www.fishersci.com)
- Linde (www.linde-gas.com)
- VWR (www.vwr.com)

Connecting a Gas Cylinder to the Instrument

Many gas regulators can accommodate a ¼" NPT male fitting. To connect this type of gas cylinder to the instrument, Molecular Devices provides three (3) ¼" NPT male to 6 mm O.D. Push-to-Connect fittings. Attach the fitting to the regulator to easily connect the hose; no other connectors are required.

The following shows an example of a CO_2 regulator with ¼" NPT male to 6 mm O.D. Push-to-Connect fitting:



If your regulator terminates with a ¼" NPT male fitting, you will need to provide a ¼" NPT female to ¼" NPT female connector, as shown below.

You can purchase this fitting from many vendors, including Anderson Metals (part number 56103-04).

Using a Lab Gas Line

Some laboratories are equipped with a gas line to supply compressed air and N_2. The line output is typically greater than 1.2 bar (17.4 psi), which is the maximum allowed pressure for the ImageXpress Pico EC system. In this case, a single-stage line pressure regulator is required.

Several vendors offer single-stage line regulators, and the one you use is not critical as long as the maximum delivery pressure of the regulator is 10 bar (145 psi) or less. We recommend that you use a regulator with a maximum delivery pressure of 4.14 bar (60 psi), which makes it easy to set the required pressure. One example of an acceptable line regulator is the Matheson Model 3470A General Purpose Line Regulator (part number SEQ3473A), which is shown to the right.

Connecting a Lab Gas Line to the Instrument

Many lab gas lines terminate with a hose barb connector, like the one shown to the left.

For a hose barb connector, connect a short piece of tubing and secure it with a hose clamp. Then attach a second hose barb connector and, again, secure it with a hose clamp. Finally attach the supplied ¼" NPT male to 6 mm O.D. Push-to-Connect fitting. The finished assembly should look like the one the right.

It is also possible that your lab gas line terminates with a line regulator. In this case, attach the ¼" NPT male to 6 mm O.D. Push-to-Connect fitting directly to the line regulator.

To connect a lab gas line, you may need the following:

Manufacturer	Part Number	Description
FasParts	FP126-8B	Hose ID / Hose Barb to ¼" Female NPT FIP FPT Straight Brass Fitting
EDGE INDUSTRIAL	E.I. BARB 53	¼" Hose ID to ¼" Female NPT FNPT Straight Brass Fitting
EDGE INDUSTRIAL	E.I. BARB 58	3/8" Hose ID to ¼" Female NPT FNPT Straight Brass Fitting
Various	---	Hose Clamp

Note: The information in the table is not exhaustive and may change without notice.

Using an Oil-Free Air Compressor

If a lab gas line or a gas cylinder is not available, you can connect an oil-free air compressor to the instrument. This is the least preferred option since air compressors tend to be noisy and a source of vibration.

WARNING! The air compressor must be oil-free because hydrocarbons can contaminate the EC system and the instrument. This feature is typically noted on the specification sheet from the supplier. Failure to supply oil-free air may damage the instrument and void the warranty.

Most oil-free air compressors have an internal regulator. The one you use must be adjustable to between 0.8 bar and 1.2 bar (11.6 psi and 17.4 psi). Otherwise, you will need to connect a line regulator as with a lab gas line. See Using a Lab Gas Line on page 76 for details.

Ibidi (ibidi.com) is one example of a vendor of a supported oil-free air compressor.

Connecting a Lab Gas Line to the Instrument

Similar to a lab gas line, most laboratory air compressors terminate with a hose barb connection or a ¼" NPT-style connection.

For a hose barb connector, connect a short piece of tubing and secure it with a hose clamp. Then attach a second hose barb connector and, again, secure it with a hose clamp. Finally attach the supplied ¼" NPT male to 6 mm O.D. Push-to-Connect fitting. The finished assembly should look like the one the right.

For a ¼" NPT-style connection, attach the ¼" NPT male to 6 mm O.D. Push-to-Connect fitting directly to the line regulator.

Appendix D: Packing the Instrument for Transport

This section describes how to pack the instrument for transport.

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. See Obtaining Support on page 20 for details.

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

CAUTION! Take care to pack the instrument properly for transport. Improper packing may void the warranty.

To pack the instrument:

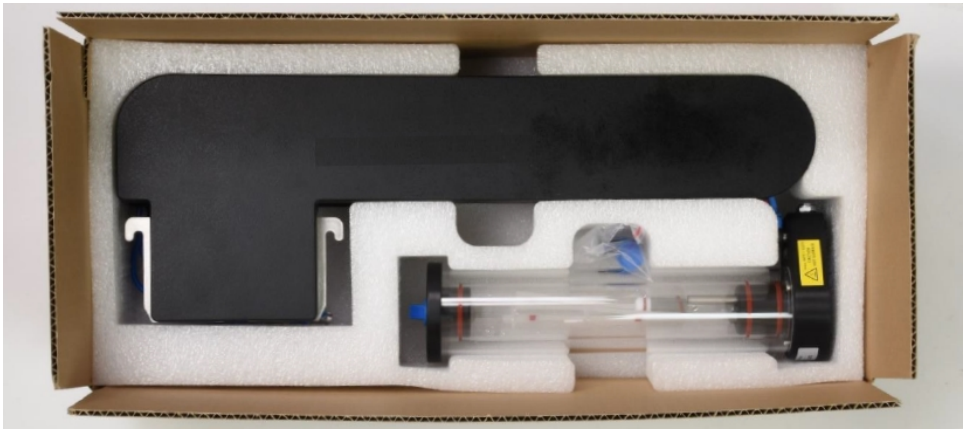
Note: Before you begin, if your instrument includes the optional environmental control system, run air dry to clear any condensation from the environmental control system. See the *ImageXpress Pico User Guide* for details.

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

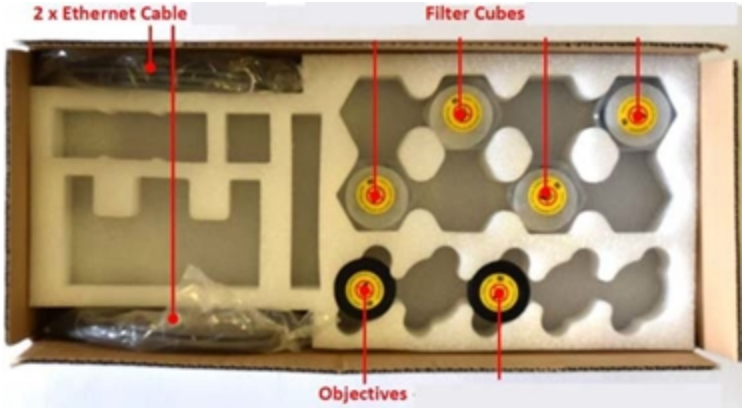
      Note: See Connecting and Disconnecting Tubing on page 58 for details on connecting tubing.

   d. Remove the humidifying column from the environmental control tray.
   e. Empty the humidifying column.
   f. Pull the environmental control tray away from the instrument to remove it.
   g. Pack the tubing/wiring inside the environmental control tray and replace the cover and large screw.

   h. Pack the environmental control system components in their original packaging, as shown.



2. Remove any installed filter cubes and pack them in their original packaging. See Installing a Filter Cube on page 41 for details on removing a filter cube.
3. Remove any installed objectives and pack them in their original packaging, including the objective case. See Installing an Objective on page 43 for details on removing an objective.

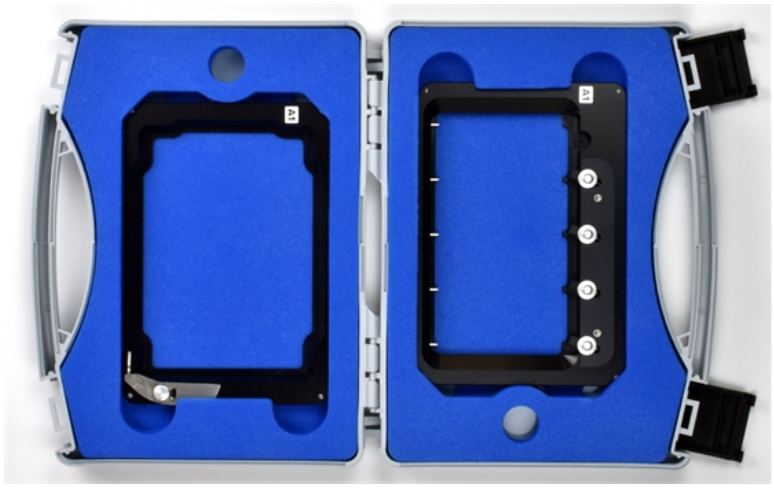


4. Press the button at the top right of the instrument to open the top door.

5. Press the Power button on the front of the instrument.
   When the status light on the Power button is amber, the instrument is fully powered off.

Note: If the ImageXpress Pico system doesn't respond, you can perform a hard shutdown by holding the Power button for five seconds.

6. Disconnect the power cord and the Ethernet cable(s).
7. With the instrument off and all cables disconnected, manually move the sample stage to the center of the opening.
8. If needed, remove the labware holder or the environmental control cassette from the sample stage and pack it in its original packaging.



9. Do the following to secure the sample stage:
   a. Insert the foam transport lock in the opening until it is flush with the top surface of the instrument.

      CAUTION! Do not transport the instrument without properly inserting the foam transport lock. If needed, contact Molecular Devices for a replacement foam transport lock. See Obtaining Support on page 20 for details.

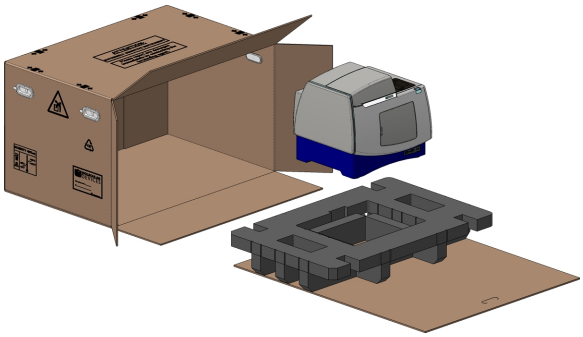
   b. Use shipping tape to secure the foam transport lock to ensure it does not come loose.

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

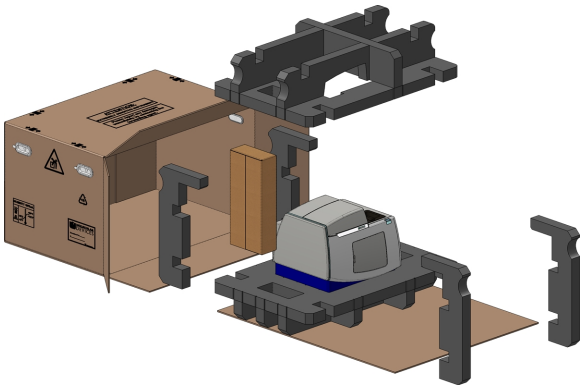
11. With one person on each end, place the instrument in the bottom foam packing as shown below.

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.

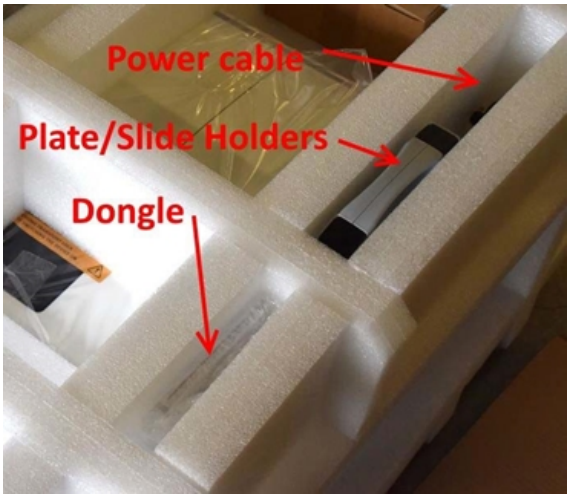


12. Replace the accessory boxes and the foam supports.

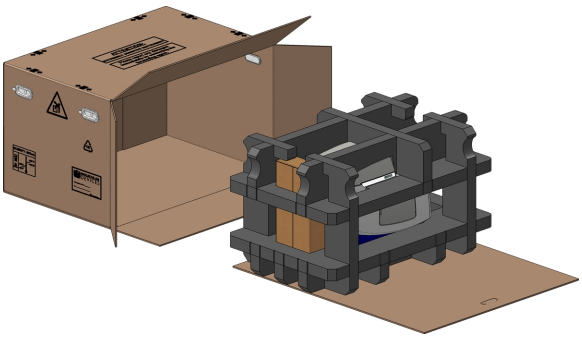


13. Replace the dongle in its case and wrap it in bubble wrap.

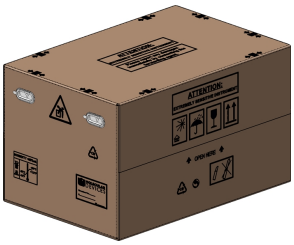
14. Insert the dongle case, the holders case, and the cables between the foam.



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



16. Seal the box.



17. Place the eight (8) edge protectors on the designated positions on the top edges of the box.

18. With one person on each end, place the box on the pallet.
19. Secure four (4) binding straps around the box and pallet.

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

Appendix E: Electromagnetic Compatibility

Regulatory for Canada (ICES/NMB-001:2020)

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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