PRE-INSTALLATION GUIDE

ImageXpress Pico Automated Cell Imaging System with CellReporterXpress Image Acquisition and Analysis Software

Welcome to the family of ImageXpress system users. This document provides you with the information required to prepare for the installation of your new ImageXpress Pico Automated Cell Imaging 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 compromise performance.

Avoid the following lab conditions:

- Avoid installation in or near a room with high-motion equipment, including vacuum pumps, centrifuges, elevators, air conditioners, or heaters.
- Avoid installation directly in the path of air vents. Sudden temperature changes and air-flow vibrations can degrade performance.
- Avoid installation near external vibration caused by trains or excessive vehicle traffic.

- Avoid installation in any room with noticeable vibration on floors or walls.
- Avoid installation in direct sunlight.
- Avoid installation within 5 m (16.4 ft) from a refrigerator.
- Avoid installation within 2 m (6.5 ft) from a door.
- Avoid installation on a table that is mechanically attached to a wall.
- Avoid installation on a table with shakers, stirrers, mixers, or centrifuges.

Space and Table Requirements

The ImageXpress Pico system requires a sturdy table or lab bench with a weight rating of at least 50 kg (110.2 lb).

With no options, the instrument weighs 38 kg (83.8 lb). With the optional Environmental Control System, the instrument weighs 40 kg (88.2 lb).

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.

Most low-magnification applications 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)

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.
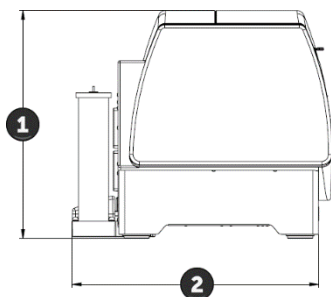
(The following diagrams are shown with the optional Environmental Control System.)
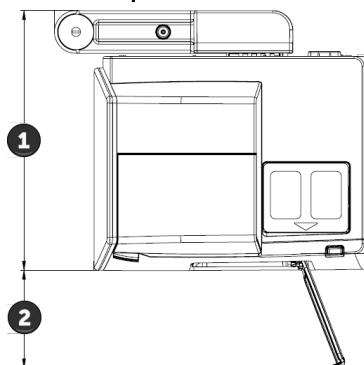
Instrument Front View
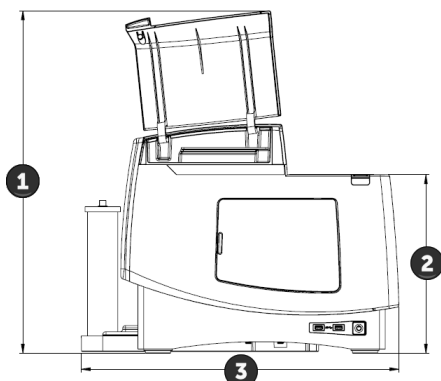
Dimension	Description
1	67.8 cm (26.7 in.)
2	35.3 cm (13.9 in.)
3 (without EC)	55.1 cm (21.7 in.)
3 (with EC)	62.9 cm (24.8 in.)

Instrument Side View

Dimension	Description
1	45.3 cm (17.8 in.)
2 (without EC)	39.7 cm (15.6 in.)
2 (with EC)	49.0 cm (19.3 in.)

Instrument Top View

Dimension	Description
1 (without EC)	42.5 cm (16.7 in.)
1 (with EC)	51.6 cm (20.3 in.)
2	19.5 cm (7.7 in.)

Host Computer

A host computer is required to serve as the interface to the instrument. The optional Workstation and Monitor Bundle includes a host computer that includes a computer and monitor designed and set up for the ImageXpress Pico system. If you are providing your own host computer, it must meet the specifications described in the CellReporterXpress Installation Guide.

The following table lists the dimensions of the host computer included with the optional Workstation and Monitor Bundle:

Host Computer	Specification
Width	9.3 cm (3.6 in.)
Length	29.2 cm (11.5 in.)
Height	29.0 cm (11.4 in.)

Power Requirements

- Connections to all international supply voltages are available.
- The instrument requires an input voltage range from 100 VAC to 240 VAC, 50/60 Hz, 4 amps maximum at 115 VAC.
- Fluctuations must be within 10% of the nominal voltage.
- When using a power strip, the computer and monitor should be connected 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 is 452 watts (that is, 200 + 200 + 52).

Power Requirement	Watts	Power Cables
Instrument	200	1
Host Computer	200	1
Monitor, 24"	52	1

CellReporterXpress Software Requirements

The CellReporterXpress Image Acquisition and Analysis software resides on the host computer to offer a uniquely designed, user-friendly interface and allows the ImageXpress Pico to be networked in a variety of configurations. The software features over 25 available predefined experiment protocols and high-powered analysis tools.

The optional Workstation and Monitor Bundle includes a Dell Precision Tower pre-installed with the CellReporterXpress software. You can also choose to provide your own host computer.

The host computer must meet the following minimum requirements:

Item	Minimum	Notes
Operating System	Microsoft Windows 10 (64-bit)	Pro, Enterprise, and Education editions are supported.
	Microsoft Windows Server 2016	Standard edition is supported.
CPU	Intel Sixth Generation or later @ 2.4 GHz	---
Logical Processors	10	10 logical processors can support 4 concurrent analyses. For each additional concurrent analysis, add 2 logical processors.
RAM	16 GB	16 GB of RAM supports 4 concurrent analyses. For each additional concurrent analysis, add 2 GB of memory.
Ethernet Ports	Intel Gigabit Network Connection	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. Do not use a wireless connection or a USB-to-Ethernet adapter to connect the host computer to the instrument.
Display Resolution	---	Optimized for 1920 x 1080 (Full HD).

In a server configuration, analysis and storage operations can be performed remotely. See the CellReporterXpress Installation Guide for details of computer requirements for each configuration.

Supported Browsers for Remote Clients

In a network configuration or a server configuration, you can connect to the host computer using other computers and tablets as remote clients. The remote client can be any desktop computer, laptop computer, or iPad or Android tablet with a screen size of at least 9 inches.

Remote clients use a browser to display the user interface and interact with the software. The following browsers are supported:

Operating System	Browser
Microsoft Windows	Google Chrome or Mozilla Firefox
Apple macOS	Google Chrome or Apple Safari
Apple iOS	Apple Safari
Google Android	Google Chrome
Linux	Google Chrome

Facility Receiving Requirements

Your ImageXpress Pico system will arrive on a pallet in one box; which contains the instrument and its accessories.

Instrument Box	Specification
Width	66 cm (26 in.)
Length	112 cm (44 in.)
Height	74 cm (29 in.)
Weight	50 kg (110 lb)
Ambient Storage Conditions	Temperature: -20°C to +60°C (-4°F to 140°F) Relative Humidity: 15% to 75% (noncondensing)

With the optional Workstation and Monitor Bundle, the host computer and monitor will arrive separately.

Computer Box	Specification
Width	48.7 cm (19.2 in.)
Length	39.4 cm (15.5 in.)
Height	26.4 cm (10.4 in.)
Weight	6.8 kg (15.1 lb)

Use a pallet jack (recommended) or rolling cart to move the boxes to the installation location. Always use great care when transporting the instrument within your facility.

All boxes should be stored indoors and protected from environmental extremes until the instrument and accessories are unpacked. If the boxes are stored in conditions significantly colder than room temperature, they should not be opened until the temperature has reached equilibrium (typically at least 6 hours) to avoid the formation of condensation inside the instrument.

If a Molecular Devices field service engineer is installing your system, do not open any boxes until the field service engineer is present (unless instructed to do so by Molecular Devices).

Installation Guidelines

The ImageXpress Pico system is designed to be user installable. All installation documentation is available in the Knowledge Base on the Molecular Devices Support website. Before you begin, review the documentation so you know what to expect.

With the optional Workstation and Monitor Bundle, the CellReporterXpress software is pre-installed on the host computer, which is set up to optimize the software. Note that if you connect the host computer to your organization's domain, it is possible that some settings may be overwritten and may need to be set again.

As an option, a Molecular Devices field service engineer can install the ImageXpress Pico system for you. During installation, the field service engineer will set up a standalone configuration on the host computer to configure and test the system. If you are providing your own host computer, it must meet the minimum requirements described in this document and the CellReporterXpress Installation Guide. If no acceptable host computer is available, the system will be tested and configured with the field service engineer's laptop. You will then be responsible for eventually connecting the host computer to the ImageXpress Pico system and installing the CellReporterXpress software.

Environmental Control System 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. If your instrument is equipped with this option, you must provide the following items to complete installation:

- Pressurized compressed air supplied from a cylinder, lab gas line, or oil-free air pump or compressor. A compressed air supply is required for any environmental control experiment.
- Pressurized CO_2 supplied from a cylinder. Gas must be at least 99% pure. 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 pressurized CO_2 source may not be required.
- Pressurized N_2 supplied from a cylinder. Gas must be at least 99% pure. An N_2 supply is required for hypoxia experiments.
- Pressure regulators as required to supply gases at between 0.8 bar to 1.2 bar (11.6 psi to 17.4 psi). The ideal setting is 1.0 bar (14.5 psi). See the ImageXpress Pico Installation Guide for details on gas regulator requirements.
- Teflon tape and hose clamps to secure 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).

For pressurized gases, select a cylinder size that meets your needs. Gas flows within the Environmental Control System at up to 20 l/hr (0.7 ft^3/hr).

Molecular Devices provides 10 m (32.8 ft) of tubing to connect the instrument to the gas regulator. If this is not sufficient for your needs, you must provide an appropriate length of 4 mm I.D. / 6 mm O.D. polyurethane tubing.

Antivirus Settings

We highly recommend that you use antivirus software for all networked computers in the ImageXpress Pico system. The installation program will attempt to create the required antivirus exclusions, but your antivirus software or network policies may prevent this. In that case, you must create exclusions for the following Windows services:

- MD.CoreService (MolDev.CoreService.exe)
- MD.DataService (MolDev.DataService.exe)
- MD.WebService (MolDev.WebService.exe)
- MD.AnalysisService (MolDev.AnalysisService.exe)
- MD.LocationService (MolDev.LocationService.exe)

In addition, you may want to do the following:

- Create exclusions for all paths to storage devices.
- Enable automatic updates for antivirus definitions to increase system security.
- Enable the ability to turn off virus scanning for troubleshooting.

Firewall Requirements

The ImageXpress Pico system requires that your firewall allow communication to certain ports. The installation program will attempt to configure the ports, but your network policies may prevent this. In that case, you must manually configure the ports. For a server configuration with external analysis and external storage, configure the following ports:

Computer	Port	Direction	Purpose
Host Computer	TCP 80	Inbound	Communication with the host computer (without a security certificate).
	TCP 443	Inbound	Communication with the host computer (with a security certificate).
	UDP 3702	Inbound/ Outbound	Auto detection of the instrument.
	UDP 5353	Inbound	
	TCP 8091 TCP 9090	Outbound	Communication with the instrument. If the instrument is behind a firewall, these ports should be forwarded to the IP address of the instrument.
	TCP 12323	Inbound	Communication with the storage computer and the analysis computer.
	TCP 12324	Outbound	Communication with the storage computer.
	TCP 12325	Outbound	Communication with the analysis computer.
Analysis Computer	TCP 12323	Outbound	Communication with the host computer.
	TCP 12325	Inbound	
Storage Computer	TCP 12323	Outbound	
	TCP 12324	Inbound	

Other configurations require that you configure a subset of these ports. See the CellReporterXpress Installation Guide for details.

Documentation

The CellReporterXpress software includes context-sensitive Help that you can access from within the software. In addition, you can access the following guides on the Knowledge Base at the Molecular Devices Support website:

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

Support and Service

Molecular Devices provides comprehensive support and service solutions for the ImageXpress Pico system supported by a global network of factory trained engineers. To contact us, go to:

Web: www.moleculardevices.com/service-support
          www.moldev.com/support
Email: support@moldev.com