



ImageXpress HCS.ai

High-Content Screening System

Pre-Installation Guide



ImageXpress HCS.ai High-Content Screening System Pre-Installation Guide

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ImageXpress HCS.ai High-Content Screening System Pre-Installation Guide

Welcome to the family of Molecular Devices ImageXpress users. This guide provides you with the necessary information to prepare for the installation of your new ImageXpress® HCS.ai High-Content Screening System.

This guide covers the following:

- [Environmental Requirements, see below](#)
- [Space and Table Requirements, see page 6](#)
- [Power Requirements, see page 10](#)
- [Facility Receiving Requirements, see page 11](#)
- [Installation Requirements, see page 12](#)
- [Environmental Control System Gas Requirements, see page 13](#)
- [Computer and Network Requirements, see page 20](#)

Environmental Requirements

As with any precision optical instrument, take special care to maintain a stable, low-dust, and low-vibration environment. Temperature and humidity extremes, dust, and vibration can compromise performance.

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

The ImageXpress HCS.ai instrument is designed to operate under the following laboratory conditions:

Item	Description
Operating Environment	Indoor use only
Altitude Restrictions	Not to exceed 2,000 m (6,562 ft)
Operating Temperature	Permissive ambient temperature: 15°C to 30°C (59°F to 86°F) Recommended ambient temperature: 18°C to 25°C (64.4°F to 77°F)
Operating Relative Humidity	35% to 50% non-condensing

Consider the lab conditions where you will install the ImageXpress HCS.ai instrument, and observe the following:

- Do not install the instrument directly in the path of air vents. Sudden temperature changes and air-flow vibrations can degrade performance.
- Do not install the instrument in direct sunlight or in intense artificial light.
- Avoid installation in or near any room with high-motion equipment, including vacuum pumps, centrifuges, elevators, air conditioners, or heaters.
- Avoid installation near external vibration caused by trains or excessive vehicle traffic.
- Avoid installation within 5 m (16.4 ft) from a refrigerator.
- Avoid installation within 2 m (6.5 ft) from a door.
- Avoid installation near shakers, stirrers, mixers, or centrifuges.

Biological Safety



WARNING! BIOHAZARD. Normal operation of the system can involve the use of materials that are toxic, flammable, or otherwise biologically harmful.

Consult your safety officer when considering the placement of the CellXpress.ai Automated Cell Culture System.



Note: Molecular Devices makes no claim or representation of biosafety or any biosafety lab (BSL) level when using the CellXpress.ai system. If your use of the system requires a biosafety cabinet, contact Molecular Devices. See [Obtaining Support on page 24](#) for details.

See the *CellXpress.ai Safety Guide* on the Molecular Devices Knowledge Base at support.moleculardevices.com for details on safely using the system.

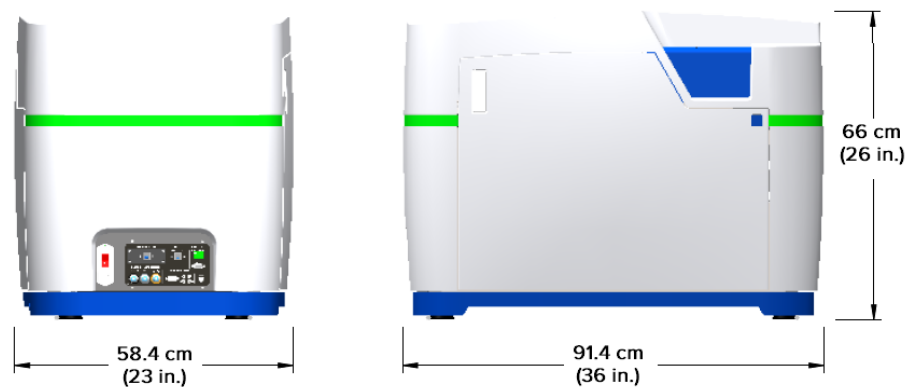
Space and Table Requirements

The ImageXpress HCS.ai High-Content Screening System requires a table or lab bench suitable for the size and weight of the instrument and its components.

Instrument Dimensions

The instrument weighs 109 kg (240 lb) and has the following dimensions:

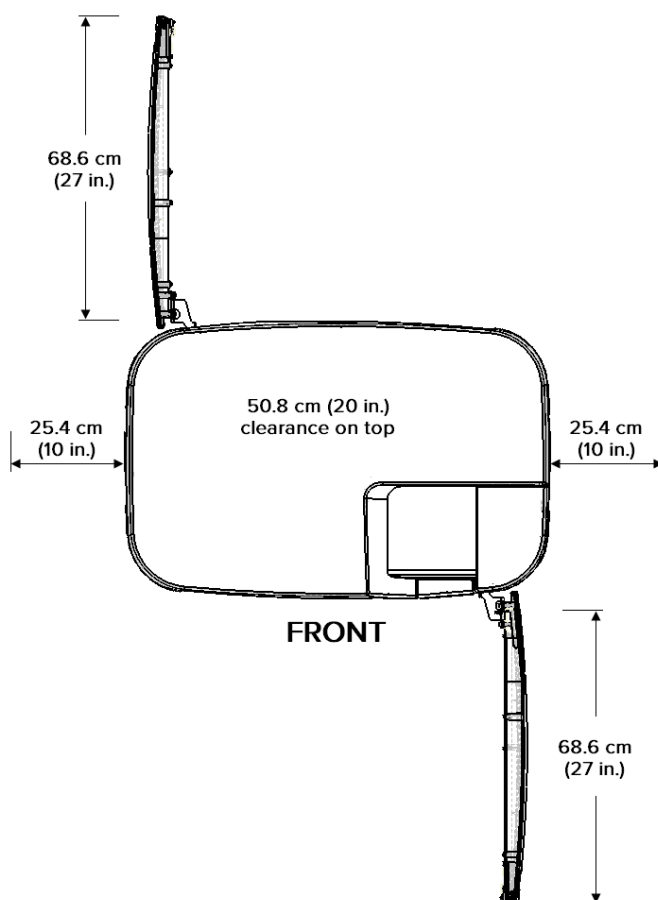
	Width	Depth	Height
Instrument	91.4 cm (36 in.)	58.4 cm (23 in.)	66 cm (26 in.)



Instrument Clearance

On its table, the instrument requires a footprint of 0.5 m² (5.75 ft²). In addition, the instrument requires the following clearances:

Side	Clearance	Purpose
Top	50.8 cm (20 in.)	Load plates and allow access for service.
Front	68.6 cm (27 in.)	Open the front door to access objectives and filters.
Left	25.4 cm (10 in.)	Allow access to power, light source, and gas supply connections.
Rear	68.6 cm (27 in.)	Allow access for service.
Right	25.4 cm (10 in.)	Ventilation.



Note: If you are unable to provide the required clearance, we recommend that you do one of the following to allow the instrument to be moved for maintenance or service:

- Retain and store the rolling cart from the installation crate.
- Use the optional system table, which is designed specifically for the ImageXpress HCS.ai instrument and components. Contact Molecular Devices Technical Support for details. See [Obtaining Support on page 24](#).

Components

The dimensions of the ImageXpress HCS.ai system components are as follows:

Component	Width	Depth	Height	Weight
Workstation Computer	19 cm (7.5 in.)	48.3 cm (19 in.)	44.5 cm (17.5 in.)	21.8 kg (48 lb)
Water Immersion Controller	25.4 cm (10 in.)	25.4 cm (10 in.)	25.4 cm (10 in.)	9.1 kg (20 lb)
Laser Light Source (Advanced Gen1 model)	15.2 cm (6 in.)	34.3 cm (13.5 in.)	20.3 cm (8 in.)	9.1 kg (20 lb)
Laser Light Source (Advanced Gen2 model)	19 cm (7.5 in.)	34 cm (13.4 in.)	25 cm (9.8 in.)	13.6 kg (30 lb)
LED Light Source (Widefield and Confocal models)	12.7 cm (5 in.)	19.1 cm (7.5 in.)	19.1 cm (7.5 in.)	3.2 kg (7 lb)
Workstation Monitor 27"	61.2 cm (24.1 in.)	18.5 cm (7.3 in.)	53.6 cm (21.1 in.)	7.3 kg (16 lb)
Workstation Monitor 32"	71.1 cm (28 in.)	23.4 cm (9.2 in.)	62 cm (24.4 in.)	10 kg (22 lb)



CAUTION!

- We recommend that the base of the water immersion controller be level with the instrument.
- Do not move the water immersion controller after installation by the Molecular Devices Field Service Engineer. To ensure high-performance acquisition with water immersion, the Field Service Engineer calibrates the water dispense rate. Changing the position of the water immersion controller can negatively affect the calibration.

Table Details

Molecular Devices offers a system table that is designed to support the ImageXpress HCS.ai instrument and components. Contact Molecular Devices Technical Support for details. See [Obtaining Support on page 24](#).

Most low-magnification applications tolerate non-optical tables, which can be purchased from vendors specializing in industrial furniture such as:

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

For high-magnification or vibration-sensitive applications, we recommend a sturdy table, such as an optical breadboard, which can be purchased from vendors such as:

- Newport (www.newport.com)
- Kinetic Systems (www.kineticsystems.com)
- TMC (www.techmfg.com)

It is your responsibility to verify the weight capacity and sturdiness of products from third-party vendors. An optical table reduces the vibration transmitted to the instrument, allowing for better imaging performance in relatively poor vibration environments. We do not recommend air or hydraulic isolation tables.

Do not set up the light source and workstation computer on the same table as the ImageXpress HCS.ai instrument. We recommend you place these items on the floor below the instrument table. The optimal configuration is to keep these components within 1.2 m (4 ft) of the instrument as cables are approximately 1.8 m (6 ft) in length. You can connect multiple monitors to the workstation computer, so ample desk space for monitor placement is needed.

Power Requirements



WARNING! HIGH VOLTAGE. Within the ImageXpress HCS.ai instrument is the potential of an electrical shock hazard existing from a high voltage source. You must read and understand all safety instructions before installing, maintaining, and servicing any part of the system. Always turn the power switch off and disconnect the power cord from the power source before performing any maintenance procedure that requires removal of a panel or cover or disassembly of an interior component.

Consider the following power requirements for the ImageXpress HCS.ai system:

- Direct connections to all international supply voltages available.
- Use the included IEC power cords to connect all system components to a GROUNDED power receptacle rated for 15 A.
- Input voltage range is 100-240 VAC, 50/60Hz, 6 amps maximum.
- Fluctuations must be within 10% of the nominal voltage.
- If using a power strip, ensure that the power strip is rated for 15 A or higher.
- To limit the risk of interruption during power loss, we recommend using an uninterruptible power supply (UPS) to provide backup power and power line conditioning for the instrument and computer. We recommend that the UPS capacity be 20% higher than the power requirement for your system.

The power requirements for the ImageXpress HCS.ai system and components are as follows:

Component	Watts	VA	Power Cables
Instrument	1,000 W	100–240 VAC, 50/60 Hz	1
Laser Light Source (Advanced Gen1 model)	220 W	100–240 VAC, 50/60 Hz	DC Power Supply (220 W, 24 V/9.2 A) AC cord included
Laser Light Source (Advanced Gen2 model)	480 W	100–240 VAC, 50/60 Hz	24 VDC Power Adapter (600W, 24 V/25 A) AC cord included
LED Light Source (Confocal and Widefield models)	102 W	100–240 VAC, 50/60 Hz	1
Computer Workstation	1,000 W	100–240 VAC, 50/60 Hz	1
32" Monitor (each)	180 W (typical use)	100–240 VAC, 50/60 Hz	1
27" Monitor (each)	169 W (typical use)	100–240 VAC, 50/60 Hz	1



Note: The water immersion controller is powered by the instrument and does not require its own power.

To determine the power consumption (watts) or apparent power (volt-amperes or VA) for your ImageXpress HCS.ai system, add the power requirements of all applicable components. For example, the maximum power consumption for a system with an Advanced Gen2 model with a laser light source and two large monitors is 2,840 watts (that is, 1,000 + 480 + 1,000 + 180 + 180).

Grounding/Earthing



WARNING! The ImageXpress HCS.ai 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 system—or disconnection of the protective earth ground terminal can result in personal injury.

The system must be connected to a properly grounded power outlet to protect users from the risk of electric shock. The main chassis of the system is grounded together with all associated electrical components.

Facility Receiving Requirements

The ImageXpress HCS.ai instrument arrives in two crates.



WARNING! Do not open the crates upon receipt. Only Molecular Devices personnel are authorized to open the crates.

Due to its weight, the instrument must be moved to the installation site on the included 81.3 cm (32 in.) by 50.8 cm (20 in.) rolling cart.

The size and weight of the crates are as follows:

Crate	Width	Depth	Height	Weight
Instrument Crate	133.9 cm (52.7 in.)	80.6 cm (31.7 in.)	133.5 cm (52.6 in.)	292.6 kg (645 lb)
Accessory Crate	121.9 cm (48 in.)	101.6 cm (40 in.)	88.9 cm (35 in.)	108.9 kg (240 lb)

At the installation site, the instrument crate requires 3 m (9.8 ft) of clearance on one side to allow removal of the instrument and the rolling cart.

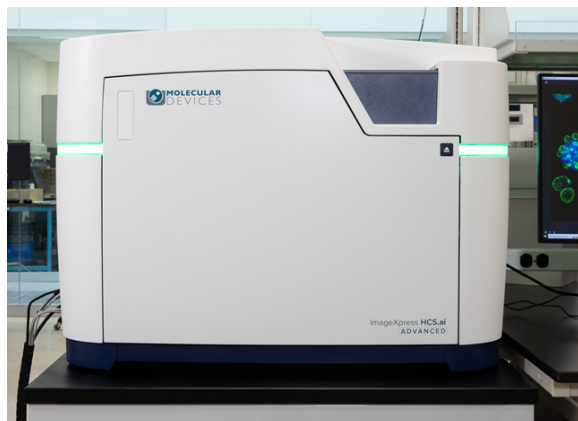
The crates and boxes can be shipped at a temperature from -25°C (-13°F) to +55°C (+131°F) with 10% to 50% relative humidity (non-condensing). At your site, we recommend storing the system crates and boxes indoors to protect from environmental extremes.

If the instrument crate is stored in conditions significantly colder than room temperature, it should not be opened until the temperature has reached equilibrium (typically at least 6 hours) to avoid the formation of condensation inside the imager.

Installation Requirements



WARNING! The system must be installed by a Molecular Devices Field Service Engineer.



The ImageXpress HCS.ai instrument is designed to be installed facing front. This allows access for loading plates, refilling the humidity tank, and accessing objectives, filters, and confocal disks.

The system includes an external workstation computer (with keyboard, mouse, and monitor) to run the MetaXpress® Acquire Image Acquisition Software and interface with the system. The workstation computer must be directly connected to the instrument using the provided USB 3.0 cable. If you plan to acquire images directly to a network storage device, connect the workstation computer to a 10 Gb network (or faster) using an Ethernet cable. See [Computer and Network Requirements on page 20](#) for details.

The workstation computer arrives with the MetaXpress Acquire Image Acquisition Software and the IN Carta Image Analysis Software already installed.



Note: To upgrade the IN Carta software to include advanced analysis features, contact Molecular Devices Technical Support. See [Obtaining Support on page 24](#) for details.

No firewall settings are required; all services are local on the workstation computer. Molecular Devices will configure an antivirus exclusion on the workstation computer. Take care not to change this setting.

At the installation site, the instrument crate requires 3 m (9.8 ft) of clearance on one side to allow removal of the instrument and the rolling cart.

At the time of installation, you must provide the following:

- **Sturdy table or lab bench** to support the footprint and weight of the ImageXpress HCS.ai instrument and other system components with minimal vibration.
- **Table space** for the workstation computer, keyboard, mouse, and monitor. See [Space and Table Requirements on page 6](#) for details.
- Optionally, an **uninterruptible power supply (UPS)**. See [Power Requirements on page 10](#) for details.

If your system includes environmental control, you must provide medical grade **gas supplies** from either a gas cylinder or a lab gas line. See [Environmental Control System Gas Requirements on page 13](#) for details.

Environmental Control System Gas Requirements

The ImageXpress HCS.ai 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:

- [Required Items, see page 14](#)
- [Supported Gas Supplies, see page 15](#)
- [Unsupported Gas Supplies, see page 15](#)
- [Using a Gas Cylinder, see page 16](#)
- [Using a Lab Gas Line, see page 18](#)
- [Using an Oil-Free Air Compressor, see page 19](#)

It is important to consider the proper connections and fittings to connect the instrument to the gas supply. The environmental control system allows independent control of both CO₂ and O₂ 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 HCS.ai 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 CO₂** from a gas cylinder.



Note: CO₂ 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 CO₂ source may not be required.

- **Optional Gas Supply:** The following gas supply is required only for hypoxia experiments:
 - **Pressurized, medical-grade N₂** 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 1.0 bar and 2.1 bar (15 psi and 30 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.
- **Deionized water** to maintain humidity inside the environmental control cassette. The environmental control reservoir holds 330 ml (11.2 oz) of deionized water, which is enough to continuously provide humidity for about 30 days. Refill the environmental control reservoir when the level drops to around ¼ full.

See the *ImageXpress HCS.ai User Guide* 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 CO₂. These make it possible to enrich the CO₂ gas environment above ambient levels.
- An N₂ source is required for hypoxia experiments, where O₂ levels are to be depleted to sub-ambient levels. If you are planning to perform hypoxia experiments, all three gases—compressed air, CO₂ and N₂—are required.

Supported Gas Supplies

The environmental control system requires that the gas supply be oil-free and medical grade. CO₂ and N₂ 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 the environmental control system may damage the instrument and void the warranty.
 - Never connect pure O₂ or any other unspecified gas supply to the instrument.
-

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

- Pre-mixed gas supplies
- N₂ or CO₂ boil-off from a Dewar flask
- N₂ from an N₂ 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 1.0 bar and 2.1 bar (15 psi and 30 psi)

Using a Gas Cylinder

Gas pressure to the instrument must be regulated within the range of 1.0 bar and 2.1 bar (15 psi and 30 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 ft³/hr). So, for example, for typical CO₂ regulation at 5% volume, a 10 l (0.35 ft³) liquid CO₂ cylinder can last at least six months.

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 easier to set the required pressure.



CAUTION! To prevent damage to the instrument, do not allow the gas pressure to exceed 2.1 bar (30 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.

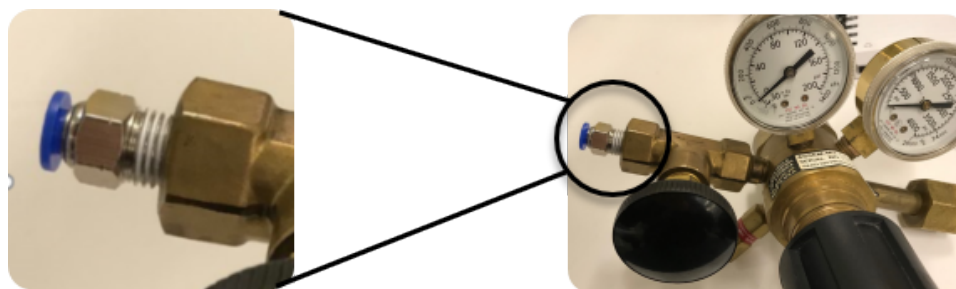
You can also purchase an acceptable regulator from one of the following vendors:

- 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 1/4" NPT male fitting. Use Push-to-Connect fittings (1/4" NPT male to 6 mm O.D.) to easily connect this type of gas cylinder to the instrument. Attach the fitting to the regulator to easily connect the hose; no other connectors are required.

The following shows an example of a CO₂ regulator with 1/4" NPT male to 6 mm O.D. Push-to-Connect fitting:



If your regulator terminates with a 1/4" NPT male fitting, you will need to provide a 1/4" NPT female to 1/4" 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 N₂. The line output is typically greater than 2.1 bar (30 psi), which is the maximum allowed pressure for the environmental control 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 easier 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 a 1/4" NPT male to 6 mm O.D. Push-to-Connect fitting. The finished assembly should look like the one shown on the right.



It is also possible that your lab gas line terminates with a line regulator. In this case, attach the 1/4" 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 1/4" Female NPT FIP FPT Straight Brass Fitting
EDGE INDUSTRIAL	E.I. BARB 53	1/4" Hose ID to 1/4" Female NPT FNPT Straight Brass Fitting
EDGE INDUSTRIAL	E.I. BARB 58	3/8" Hose ID to 1/4" 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 1.0 bar and 2.1 bar (15 psi and 30 psi). Otherwise, you will need to connect a line regulator as with a lab gas line. See [Using a Lab Gas Line on page 18](#) 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 1/4" 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 a 1/4" NPT male to 6 mm O.D. Push-to-Connect fitting. The finished assembly should look like the one shown on the right.



For a 1/4" NPT-style connection, attach the 1/4" NPT male to 6 mm O.D. Push-to-Connect fitting directly to the line regulator.

Computer and Network Requirements

The workstation computer is connected to the ImageXpress HCS.ai instrument to run the MetaXpress Acquire software, which controls the instrument and the services required to the software.



WARNING! The workstation computer is an essential component of the ImageXpress HCS.ai system. Do not re-image the workstation computer or substitute another computer.

Ensure that the following ports are open on the workstation computer to allow for communication between the software and its services:

- TCP 55410
- TCP 55411
- TCP 55412
- TCP 55413
- TCP 1900
- TCP 1901
- TCP 50001
- TCP 50002

If you plan to acquire images directly to a network storage device, connect the workstation computer to a 10 Gb network (or faster) using an Ethernet cable.

No firewall settings are required; all services are local on the workstation computer.

Molecular Devices will configure an antivirus exclusion on the workstation computer for the `C:\MetaXpress Acquire` folder. Do not change this setting.

Appendix A: System Specifications



WARNING!

- If the ImageXpress HCS.ai system is used in any manner not specified by Molecular Devices, the protection provided by the system may be impaired.
- The ImageXpress HCS.ai 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 system—or disconnection of the protective earth ground terminal can result in personal injury.



Note: Specifications are subject to change without notice.

Item	Description
Instrument Dimensions	Width: 91.4 cm (36 in.) Depth: 58.4 cm (23 in.) Height: 66 cm (26 in.)
Instrument Weight	109 kg (240 lb)
Clearance Requirement	Front/Rear: 68.6 cm (27 in.) Left/Right: 25.4 cm (10 in.) Top: 50.8 cm (20 in.)
Input Power Requirement	100-240 VAC, 50/60Hz, 6 amps maximum
System Power Consumption	2,580 W maximum at start; 6 amps
Fuses	none
Light Source Power	One of the following: • Laser (Advanced models): 100-240 VAC, 50/60 Hz $\pm 10\%$, AC to DC converter included • LED (Confocal and Widefield models): 12 VDC, 102 W, 8.5 amps
Computer Power Input	100 VAC to 240 VAC $\pm 10\%$, 50/60 Hz, 690 VA, 120 W
Monitor Power Input	100 VAC to 240 VAC $\pm 10\%$, 50/60 Hz, 40 W
IEC Installation Category	II
IEC Pollution Degree	2
ISM Equipment Class	1
Ingress Protection	IP20
Operating Environment	Indoor use only
Altitude Restriction	Not to exceed 2,000 m (6,562 ft)
Operating Temperature	Permissive ambient temperature: 15°C to 30°C (59°F to 86°F) Recommended ambient temperature: 18°C to 25°C (64.4°F to 77°F)
Operating Relative Humidity	35% to 50% non-condensing
Shipping Temperature	-25°C to 55°C (-13°F to 131°F)

Item	Description
Shipping Relative Humidity	10% to 50% relative humidity (non-condensing)
Supported Microplates	ANSI/SLAS compliant Number of Wells: 6, 24, 96, 384, 1536 Maximum Height, including lid: 23 mm (0.9 in.)
Imager	5.3-megapixel, sCMOS camera 2,304 × 2,304 image sensor format 89.1 frames per second 95% QE
Imaging Modes	Transmitted Light (Brightfield) and one of the following: • Laser light source: Up to 8 Fluorescence channels • LED light source: Up to 7 Fluorescence channels
Acquisition Speed	Typical value of 3.5 min per 96-well plate (1 FOV, 1 channel)
Light Source	One of the following: • Laser (Advanced model): 7 color (401 to 748 nm) • LED (Confocal and Widefield models): 5 color (377 to 632 nm)
Magnification Changer	1x (standard), 1.5x (optional)
Supported Objectives	2x Plan Apo Lambda 4x Plan Apo Lambda D 10x Plan Apo Lambda D 20x Plan Apo Lambda D 20x S Plan Fluor ELWD 20x Water Apo Lambda S XC WI 40x S Plan Fluor ELWD 40x Water Apo Lambda S XC WI 60x Plan Fluor XC 60x S Plan Fluor ELWD 60x Water Plan Apo VC XC WI
Supported Fluorescence Channel Colors	DAPI FITC TRITC Texas Red Cy5 Cy7 (Advanced model only) CFP YFP
Environmental Control	Temperature: 5°C (9°F) above ambient within a range of 30°C to 40°C (86°F to 104°F) O ₂ : 1% to 21% CO ₂ : 0% to 15%

The dimensions of the ImageXpress HCS.ai system components are as follows:

Component	Width	Depth	Height	Weight
Workstation Computer	19 cm (7.5 in.)	48.3 cm (19 in.)	44.5 cm (17.5 in.)	21.8 kg (48 lb)
Water Immersion Controller	25.4 cm (10 in.)	25.4 cm (10 in.)	25.4 cm (10 in.)	9.1 kg (20 lb)
Laser Light Source (Advanced Gen1 model)	15.2 cm (6 in.)	34.3 cm (13.5 in.)	20.3 cm (8 in.)	9.1 kg (20 lb)
Laser Light Source (Advanced Gen2 model)	19 cm (7.5 in.)	34 cm (13.4 in.)	25 cm (9.8 in.)	13.6 kg (30 lb)
LED Light Source (Widefield and Confocal models)	12.7 cm (5 in.)	19.1 cm (7.5 in.)	19.1 cm (7.5 in.)	3.2 kg (7 lb)
Workstation Monitor 27"	61.2 cm (24.1 in.)	18.5 cm (7.3 in.)	53.6 cm (21.1 in.)	7.3 kg (16 lb)
Workstation Monitor 32"	71.1 cm (28 in.)	23.4 cm (9.2 in.)	62 cm (24.4 in.)	10 kg (22 lb)

Appendix B: Obtaining Support

B

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.

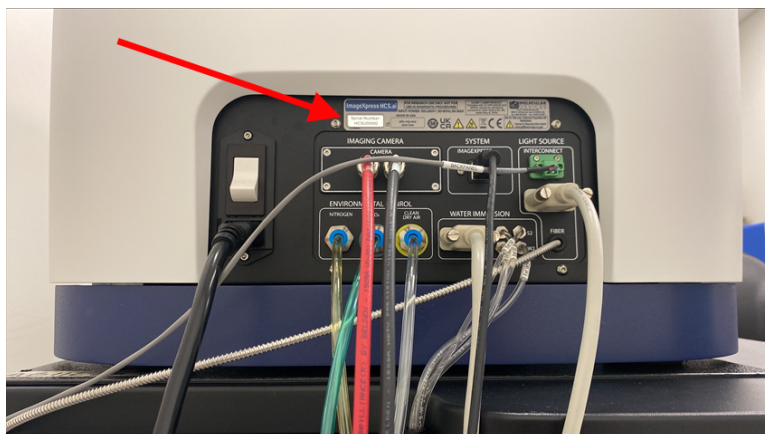
Our Support website—www.moleculardevices.com/service-support—describes the support options offered by Molecular Devices, including service plans and professional services. It also has a link to the Molecular Devices Knowledge Base, which contains documentation, technical notes, software upgrades, safety 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 and the software activation code. In the MetaXpress Acquire software, go to the Home page and click **About**. The **About** dialog displays the activation code and the instrument serial number. The serial number can also be seen above the ports on the left side of the instrument.



Documentation

Review the product documentation on the Molecular Devices Knowledge Base at support.moleculardevices.com. In addition, online Help is available within the MetaXpress Acquire software. Press **F1** to access Help for the current page.

Training

Molecular Devices provides training on the general operation of the ImageXpress HCS.ai system at the time of installation. Contact Molecular Devices Technical Support for details on training after installation.

Additional Resources

Web-based microscopy courses:

- www.microscopyu.com
- www.ibiology.org/online-biology-courses/microscopy-series/

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

Filter information:

- www.semrock.com
- www.chroma.com
- www.omegafilters.com



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Web: moleculardevices.com
Email: info@moldev.com

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