

LEVICELL SYSTEM

INSTALLATION GUIDE

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SYMBOLS USED IN THIS GUIDE AND ON THE LEVICELL INSTRUMENT



Attention symbol. The associated message contains safety-related information.



Operating temperature range



Operating humidity range



For information, contact



Catalog number reference



Serial number



Date of manufacture



Manufacturer of record
(LevitasBio)



Do not reuse

SAFETY AND WARNINGS



ATTENTION: use the mains supply cords provided with the LeviCell system. Do not substitute a mains supply cord with inadequate rating (< 10 A current).

Use the LeviCell-1.0 system only as directed by LevitasBio. Use in a manner not specified by LevitasBio, especially including removal of any cover or portion of the enclosure, may create a risk of hazards.

The LeviCell instrument contains no user-serviceable parts. Do not remove any portion of the enclosure. The LeviCell system does not require any maintenance beyond the cleaning described in the section “Cleaning the LeviCell-1.0” below.

In the event of any fault, turn the instrument off using the rocker switch on the upper left of the rear panel, and disconnect the AC power plug from its outlet. Contact LevitasBio Technical Support at +1-408-663-4260 or support@levitasbio.com.

Do not obstruct access to the 24 V power supply plug leading into the instrument. It should be easily removable in an emergency.

To shut down the instrument in an emergency, disconnect the AC power plug leading to the 24V supply brick. Contact LevitasBio Technical Support.

In addition to contamination control features within the LeviCell-1.0 instrument, a primary safety feature to prevent contamination is that the cartridges are single-use only. Do not attempt to reuse cartridges, as this may increase the risk of cross-contamination and exposure to any biohazard associated with the sample. If a cartridge is reused or a leak is suspected, contact Technical Support.

Dispose of used cartridges according to your approved lab guidelines.

For indoor use only. The LeviCell-1.0 is not designed for outdoor use and is not rated for resistance to precipitation. See the Specifications section for details.

INSTALLATION INSTRUCTIONS

Destination preparation

The LeviCell™ system arrives with all components packed within two cardboard boxes on a pallet.

1. First, ensure that the bench space where the LeviCell will be installed is clear.
 - a. The bench should be at least 24" (60 cm) deep
 - b. The available width suggested is at least 48" (120 cm)
 - c. There should be at least 18" (45 cm) vertical space available above the bench.
2. The LeviCell instrument requires access to 3 standard power outlets.
3. The LeviCell control PC is supplied with Wi-Fi; however, if desired, there is an ethernet port available for a network cable (not supplied).



TIP: network connectivity is highly recommended, for access to image data and for remote technical support. Secured network access is not required for support (for example, a building's guest Wi-Fi is sufficient).



Unpacking and assembling the LeviCell-1.0 Instrument

The LeviCell system arrives with all components packed on a single wooden pallet. After removing the straps, the outer cardboard shell should be lifted off without opening the top. Two boxes are inside: Box 1 contains the instrument unit, and Box 2 contains the control PC and accessories – see Figure 1 below.



Figure 1. LeviCell-1.0 system shipment format, and inner cartons.

1. If possible, place the pallet (or the two boxes) near the installation location. Ensure that there is clear standing room on all sides of the pallet and boxes.
2. Remove the outer shell of the cardboard on the pallet.
3. Unpack the main instrument unit.
 - a. Open Box 1 containing the main instrument. See Figure 2.

*Figure 2. Main instrument unit
in opened carton #1.*



- b. Lift the unit out of the box and place it on the bench. It is best to lift the instrument by reaching under the middle of the unit (front and rear) and lifting it vertically out of the carton. It is OK if the foam end pieces stay attached.



ATTENTION: Do not lift using the sample door as a handle. Use safe lifting techniques: weight is 33 lbs (15 kg). Perform a 2-person lift if needed.

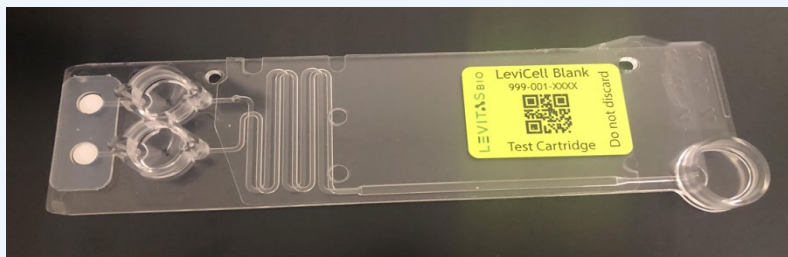
- c. Once the instrument is on the bench, lift one end at a time to remove the foam end pieces.
- d. Remove the antistatic bag from around the instrument.
- e. Carefully remove the padded bag from the cartridge access door on the instrument (remove the tape holding the padded bag, as shown in Figure 3b).



Figure 3.
Bubble wrap padded bag on
cartridge access door.

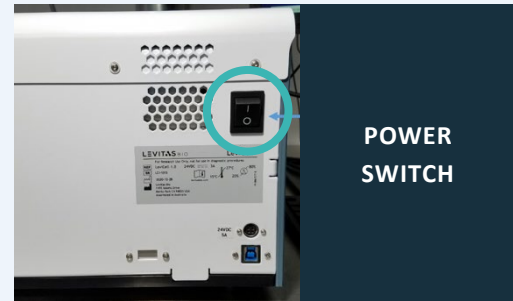
To protect the pneumatic interface, the LeviCell-1.0 instrument is shipped with a blank Test Cartridge loaded – see Figure 4. Do not discard this test cartridge.

Figure 4.
Blank test cartridge



- f. Load the blank testing cartridge into the instrument, engage the cartridge clamp and close the front cover whenever the instrument is not in use.

Figure 5. Instrument power switch, shown in the OFF “O” position. Leave it OFF (“O”) until instructed.



4. Check that the instrument power switch is in the Off (“O”) position. The power switch is on the upper left of the rear panel, as shown in Figure 5.
5. Open Box 2 containing the instrument power supply and control PC: see Figure 6.

Figure 6. Contents of Box 2, power supplies and control PC.



6. Open the inner box containing the power supplies and cables (Figure 7).



Figure 7. Contents of power and cables box.

7. Locate the instrument 24V DC power supply adaptor, which is shown in Figure 8.

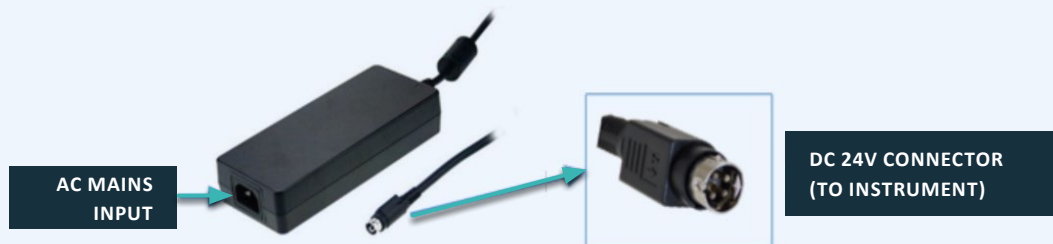
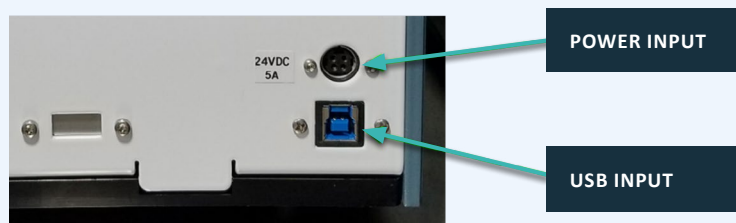


Figure 8. *Instrument DC power supply adaptor. Inset: detail of connector at the end which connects to the main instrument enclosure.*

8. Connect cables to rear of main instrument unit.

Figure 9. *Rear connector sockets on instrument.*



- a. Connect the 24 V power supply's circular connector (see inset in Figure 8) to the instrument socket labelled "Power input" in Figure 9. Note the alignment notch in the outer metal ring and corresponding slit in the power input.



ATTENTION: when positioning the instrument on the bench, do not obstruct access to the 24 V power supply plug leading into the instrument. It should be easily removable in an emergency.

- b. Verify that the instrument power switch (Figure 5) is still in the OFF position.
- c. Plug the mains supply cable into the AC input of the power supply adaptor, then plug the mains plug into a power outlet.



ATTENTION: use the mains supply cords provided with the LeviCell system. Do not substitute a mains supply cord with inadequate rating (< 10 A current).

- d. Plug in the instrument USB cable's "B" type connector to the port labelled "USB input" in Figure 9. Lay the other end (type "A") out towards the right of the instrument, where the PC will be positioned.
8. Set up the control PC.
 - i. Unpack the CPU unit, and then the all-in-one PC stand (see Figure 10). Check that the screw on the underside of the base is still tight after shipping.
 - j. Install the PC CPU module into the all-in-one stand. Lock in place with the screw highlighted in Figure 11.



TIP: graphical instructions from Dell are also included in the package.

Figure 10. *Control PC's CPU unit and all-in-one stand.*



- k. Unpack the keyboard and display (for their packing location, refer to Figure 6).
- l. Install the flat panel display:
 - i. Plug the display AC cable into the socket on the rear of the display.
 - ii. Plug the display signal cable (DisplayPort connector) into its socket on the rear of the display.
 - iii. Install the display onto the all-in-one stand.
 - iv. Plug in the computer end of the display cable.
 - v. Connect the display's mains cable to a power outlet.

Figure 11. Control PC's CPU unit and locking screw to the all-in-one stand.



- f. LevitasBio highly recommends that the Wi-Fi antenna be connected to the PC for support and data access purposes – see Figure 12.

Figure 12. Wi-Fi antenna and connections.



- g. Connect the AC mains supply cord for the PC to the PC power supply (see Figure 7 and Figure 13), then connect the DC connector (cylindrical) to the power input port on the CPU module.

Figure 13. Control PC power supply.





ATTENTION: use the mains supply cords provided with the LeviCell system. Do not substitute a mains supply cord with inadequate rating (< 10 A current).

- h. Identify the correct USB ports for the instrument and peripherals – see Figure 14.
 - i. Connect the keyboard and mouse to USB ports on the PC.
 - j. Connect the barcode reader to the front (right hand side) USB port on the PC.
 - k. Power up the PC and log in: user is “LeviCell”, and the password is “Levitas2020”.
12. Connect the PC and instrument: plug the “A” end of the USB cable from the instrument to the lower left blue port on the left side of the PC (see Figure 14).

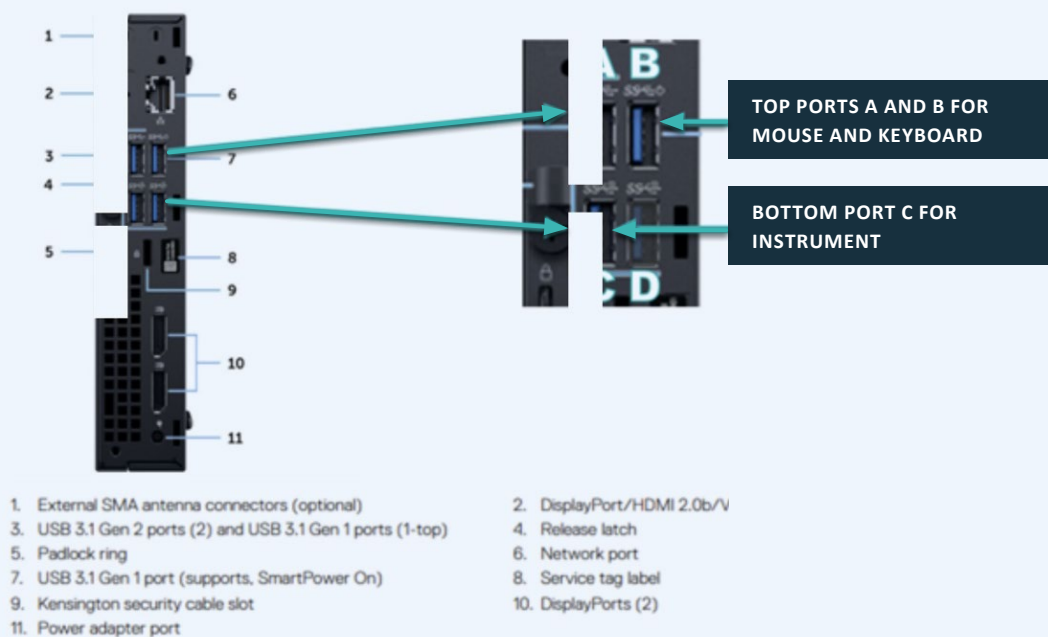


Figure 14. *Identifying the correct USB port for the instrument cable.*

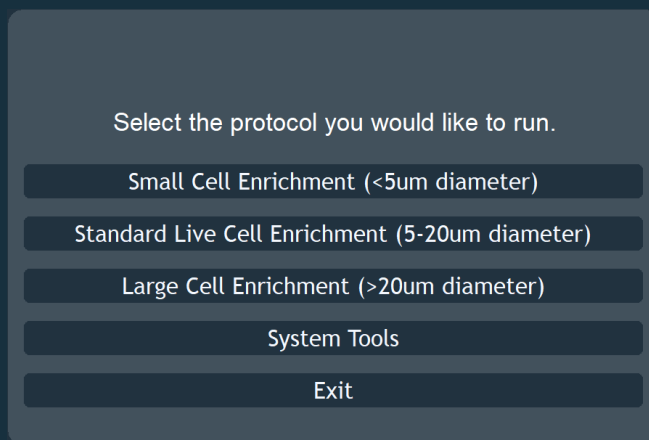
Powering up and starting the LeviCell™ System

1. Turn on the instrument by flipping the power switch to the ON “I” position as shown in Figure 5.
2. Start the Experiment Manager software by clicking either on the Task Bar icon or double-clicking on the desktop icon:



NOTE: the application takes several seconds to start up while establishing connections to instrument hardware components.

3. You will see the main activity selection screen for the Experiment Manager application (Figure 15). From here, Experiment Manager will guide you through the protocol, step by step. The options are:
 - » Small, Standard or Large Live Cell Enrichment. These options will launch the appropriate experimental protocol for the specified sample size.
 - » System Tools. This option provides a set of utilities including a System Check which is used for testing the instrument after shipment.
 - » Exit. This option closes the Experiment Manager front-end interface.



4. If you Exit from the Experiment Manager front-end interface, the back-end software interface will still be visible - see Figure 16. In the back-end software the user can:
 - » Close the application by clicking on the “X” at the upper right.
 - » Resume the Front-End interface by clicking the LevitasBio icon button
5. Refer to 90-00204 LeviCell System User Guide and Live Cell Enrichment Protocol to perform the operational and performance qualification of the system.

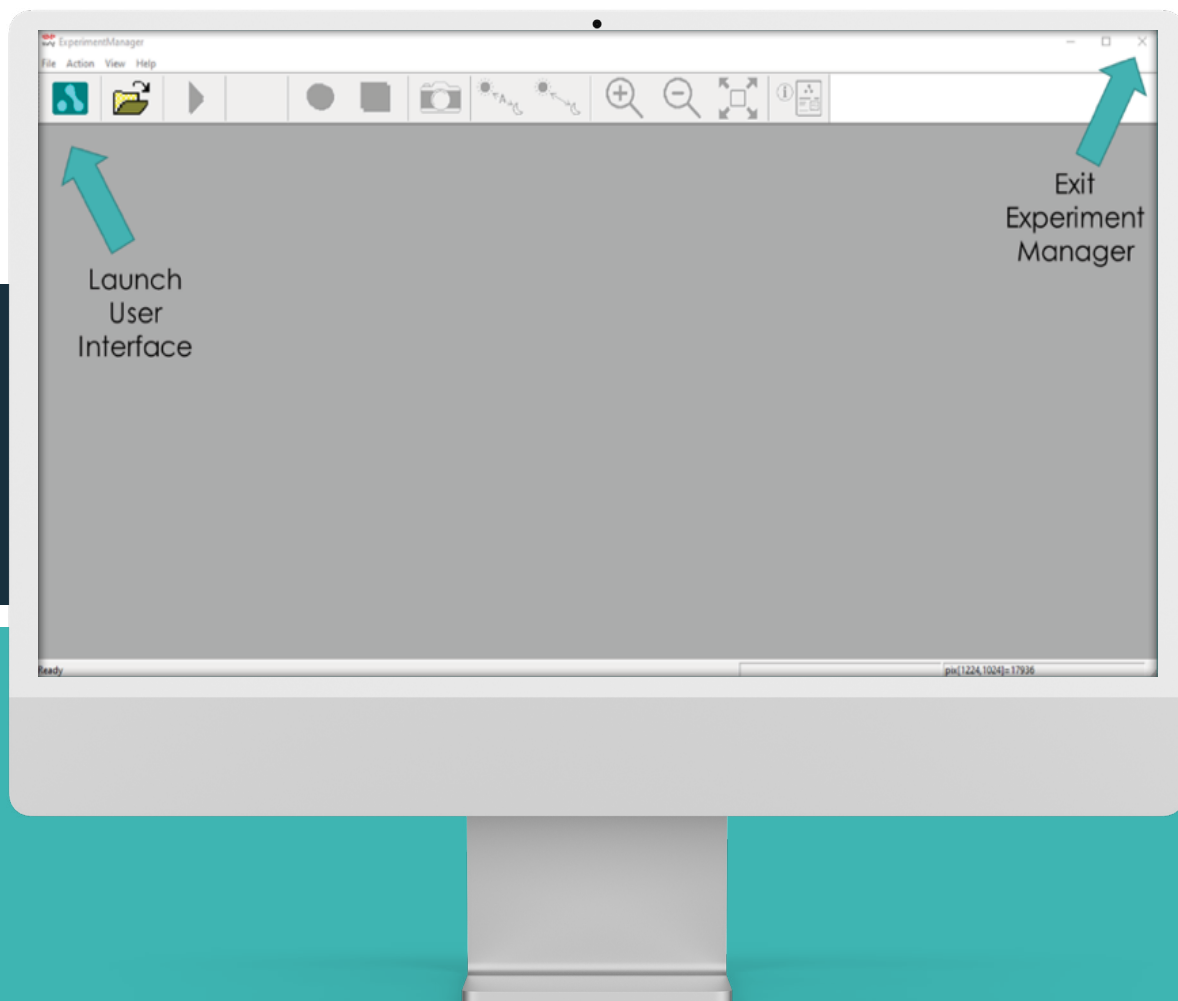


Figure 16.
*Experiment Manager back-end interface,
highlighting some key controls.*

LEVICELL SHUTDOWN

The blank testing cartridge should be loaded into the instrument whenever the instrument is shut down. When shut down, the cartridge clamp should be engaged and the front cover should be closed.

Once the experiments for the day are complete, LevitasBio recommends to power down the instrument.

1. Insert the blank testing cartridge (Figure 4) into the instrument and close both the cartridge clamp and the door.
2. Select “Exit” in the main action selection screen.
3. Close the Experiment Manager back-end application.
4. Turn off the power to the instrument using the power switch at the upper left of the rear panel.

CLEANING THE LEVICELL-1.0 INSTRUMENT

In the event of a spill or contamination, the exterior and cartridge loading area of the LeviCell-1.0 instrument may be cleaned using a cloth or wipe pre-wetted with mild cleaning agents such as the following:

- Detergents in aqueous solution
- Up to 80% ethanol
- Up to 80% isopropyl alcohol
- Diluted bleach (sodium hypochlorite up to 1 % w/v, aqueous)



ATTENTION:

Use standard precautions for any cleaning agents.

DO NOT USE the following cleaning agents on the LeviCell-1.0 instrument, as damage to finishes may occur:

- aggressive organic solvents such as acetone, methanol, or aromatic compounds (e.g., toluene)
- strong acids
- abrasive compounds

TROUBLESHOOTING

Note: For systems with a network connection, it is possible to grant Levitas Technical Support the ability to view and even control the desktop. This feature is not normally active and must be initiated on a case-by-case basis. The application is RemotePC HelpDesk.

Contact LevitasBio Technical Support to receive a helpdesk ticket number or hyperlink to start a remote support session.

STEP	ISSUE	REASON	SOLUTION
Launch software	Software reports communication errors	Power not on. Loose connector Internal fault or blown fuse	Check power cable and that the power supply is on. Check that the DC supply cable clicks into place when connected. Unplug and re-seat both ends of the USB cable from the PC to the instrument. Disconnect from AC supply and contact support
Entering Experiment Info	Scanned barcode ID has an additional character	The GS1 data standard for 2D barcodes includes a check digit.	No action required.
Software launch or workflow imaging	"Pylon" Camera Error	a) Loose connection at USB port to PC b) Windows communication error to USB ports	a) Seat USB connector fully in port and ensure cable is not strained or bumped b) Turn off instrument, restart PC, turn on instrument and restart software

LEVICELL SYSTEM SPECIFICATIONS

SPECIFICATION	VALUE
Number of sample inputs	1
Number of output fractions	2
Levitation magnets	Rare earth permanent magnets
Separation flow rate	100 µL/min
Imaging modes	Brightfield (transmitted illumination) Two fluorescence channels: Excitation 470 nm, Emission 524 nm (e.g. Calcein, FITC) Excitation 560 nm, Emission 628 nm (e.g. PI, Cy 3.5)
Imaging resolution	Approximately 2 microns
OPERATIONAL	
DC power input to instrument (from supplied AC-DC adaptor)	24 V, maximum current 5.1 A
Input voltage to DC power adaptor	100-240 VAC, universal
AC supply current drawn	1.4A at mains voltage 115VAC; 0.7A at mains voltage 230VAC (Standard wall circuit)
Main enclosure dimensions	475 mm W x 340 mm D x 240 mm H (19" x 13" x 9")
Instrument weight	15.3 kg (33.6 pounds)
Control PC Operating system	Windows 10, Professional, 64 bit
Over-voltage protection	105 ~ 135% rated output voltage. Protection type: shut down o/p voltage, re-power on to recover
Ingress protection rating	Not rated (no protection claimed)
ENVIRONMENTAL	
Operating ambient temperature	15 °C – 27 °C
Operating relative humidity	20% RH – 80% RH ambient, non-condensing
Pollution degree of the intended environment	Pollution Degree 2 (normal indoor laboratory environment)
Altitude	Sea level to 1,700 m (5,500 feet)
For indoor use only	Not designed for outdoor use. Not designed for use in wet locations.
Shipping environment	5 °C to 50 °C, RH 5% - 99%, non-condensing

CONTACT INFORMATION

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LEGAL

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