Part No.: H-020-000137-00

DNB Loader

MGIDL-T7RS

User Manual | Version: 3.0

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Wuhan MGI Tech Co., Ltd.

About the user manual

This user manual is applicable to MGIDL-T7RS DNB Loader. The manual version is 3.0 and the software version is V1.

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Revision history

	Date	Version
Revision	May 24, 2022	3.0
	February 22, 2021	2.0
Initial release	December 30, 2020	1.0

Contents

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Safety

This chapter describes basic safety information about the device. Carefully read and understand the information before use to ensure correct operations, best performance, and personnel safety. Keep this manual at hand for reference at any time.

Conventions

The following table describes conventions that are used in the manual:

Item	Description
	Indicates that the operator should operate the device by following the instructions. Otherwise, it might result in personal injury.
	Indicates that the operator should operate the device by following the instructions. Otherwise, it might result in device malfunction, damage or inaccurate experiment result.
	Indicates that the operator should pay special attention to the note information, and operate the device by following the instructions.
	Indicates biological risk. The operator should operate the device by following the instructions.
Boldface	Indicates the printings and on-screen characters on the device.

General safety

- Ensure that the device is operated under the conditions specified in this manual. Otherwise, it might result in device damage, incorrect experiment results, or even cause personal injury.
- Ensure that the components of the device are completely installed before operation. Otherwise, it might result in personal injury.
- Maintain the device by following the instructions in *Maintaining the device on Page 37* to ensure best performance. Otherwise, it might result in device malfunction or even personal injury.

- Only the technical support authorized by the manufacturer or the qualified and trained personnel can unpack, install, move, and maintain the device. Incorrect operation might cause inaccurate experiment results or damage to the device.

- Do not move the device after the technical support have installed and debugged the device. Incorrect operation will result in inaccurate experiment result. If you require to re-position the device, contact the technical support.
- Only trained professionals such as doctors, technicians, or laboratory assistants can operate the device.
- Do not operate the device in the presence of flammable or explosive liquids, vapors or gases. Otherwise, it might result in device malfunction.
- Do not disconnect the power cord under the power-on status.
- Do not place tubes or plate on the device. Liquids seeping into the device might cause malfunction.
- Do not reuse the disposable items.
- Only the peripheral devices and consumables specified by the manufacturer can be used.
- If malfunctions related to fluidics lines (for example, bubble) occur during an experiment, solve the problems before you restart an experiment.
- If you have maintenance questions that are not mentioned in this manual, consult the technical support.
- Only the components provided by the manufacturer can be used for device maintenance. Unapproved components might damage the device or degrade performance.
- The device is verified before delivery. If serious deviation occurs during use, contact the technical support for calibration.

Electrical safety


Warning

- Before initial use of the device, assess the electromagnetic environment in which the device will be used.
- Do not use the device in close proximity to the sources of strong electromagnetic fields, such as unshielded sources of radiated emissions. Radiated signals can reduce the accuracy of the results.
- Ensure that the device is properly grounded, and the grounding resistance is less than 4 Ω. Failure to do so might result in inaccurate experiment results or even electric shock.
- Do not remove the device cover and expose the inner component outside. Otherwise, it might cause electric shock.

- Only the power cord supplied by the manufacturer can be used.


Caution

- Prepare the laboratory and power supply according to *Getting started on Page 23*.
- Ensure that the input voltage meets the device requirement.

FCC statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment should be installed and operated with a minimum distance of 25cm between the radiator and your body.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IC statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

The distance between user and products should be no less than 20 cm.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La distance entre l'utilisateur et de produits ne devrait pas être inférieure à 20 cm.

Industry Canada ICES-003 Compliance:CAN ICES-3(B)/NMB-3(B)

Mechanical safety

Warning

To avoid falling off and personal injury, place the device on a level surface and ensure that the device cannot be easily moved.

Components safety

Warning

Only the software that have been provided by the manufacturer can be installed and used on the computer. Unknown software might interfere with normal device functions, or even cause data loss. If you need to install antivirus software, contact the technical support in advance.

Caution

- If the fuse blew, replace the fuse with the specified type. For details, contact the technical support.

- Do not uninstall the control software by yourself. If any problem occurs during software operation, contact the technical support.
- Ensure that the peripheral devices meet the IEC/EN 60950-1 standards.

Biological safety

- Chemicals in reagents and waste might cause personal injury through contact with the skin, eyes, and mucosa. Follow the safety standards of your laboratory and wear protective equipment (such as laboratory coat, disposable bouffant cap, protective glasses, mask, gloves, and shoe covers).
- If you accidentally splash the reagent on the skin or into eyes, immediately flush the affected area with large amounts of water and get medical aid immediately.
- Use and store the reagents according to the reagent kit user manual. Failure to do so might negate the reagent effects and cause inaccurate results.
- Check the expiration date of all reagents before use. Do not use expired reagents.
- When disposing of the expired reagents, waste liquids, waste samples, and consumables, comply with local regulations.

Symbols

Device

The following table describes symbols on the device:

Symbol	Name	Description
	"ON" (power)	Indicates connection to the mains supply.
	"OFF" (power)	Indicates disconnection from the mains supply.
	General warning sign	Signifies a general warning.
	Warning; biological hazard	Warns of a hazard from a biological hazard.

Symbol	Name	Description
	Warning; dangerous voltage	Indicates hazards arising from dangerous voltages.
	Protective earth	Indicates the terminal of a protective earth (ground) electrode.
F10AL250V	Fuse specification	Indicates the fuse specification.
	RFID (Radio frequency identification) reader indication	Identifies the ID of the item placed near the area.
SWITCH	Power switch	Powers on or off the device.
SOCKET	Power port	Connects to the mains supply.
LAN	RJ45 network port	Connects the network of the computer and server.
	USB 2.0 port	Connects to the USB device.
	USB 3.0 port	Connects to the USB device.

Label

The following table describes symbols on the label:

Symbol	Name	Description
Research Use Only	/	Indicates a device that is for research use only, and cannot be used for clinical diagnosis.
	Manufacturer	Indicates the medical device manufacturer.
EC REP	Authorized representative in the European Community	Indicates the Authorized representative in the European Community.

Symbol	Name	Description
	Date of manufacture	Indicates the date when the medical device was manufactured.
	Serial number	Indicates the manufacturer's serial number so that a specific medical device can be identified.
	CE Mark of Conformity	Indicates that this device conforms with the specified Council Directive.
	RoHS mark	Indicates that this device meets the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
	NRTL Listing and Certification Mark	Used to designate conformance to nationally recognized product safety standards. The Mark bears the name and/or logo of the testing laboratory, product category, safety standard to which conformity is assessed and a control number.
	Consult instructions for use	Indicates the need for the user to consult the instructions for use.
	WEEE symbol	Indicates that waste electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.

Packaging

The following table describes symbols on the packaging or on the label of the packaging:

Symbol	Name	Description
	This way up	Indicates the correct upright position of the transport package for transport and/ or storage.
	Fragile, handle with care	Indicates a medical device that can be broken or damaged if not handled carefully.
	Keep dry	Indicates a medical device that needs to be protected from moisture.
	Do not stack	Indicates that stacking of the transport package is not allowed and no load shall be placed on the transport package.
	Do not roll	Indicates that the transport package shall not be rolled or turned over but shall remain in the upright position.
	Temperature limit	Indicates the temperature limits to which the medical device can be safely exposed.
	Humidity limitation	Indicates the range of humidity to which the medical device can be safely exposed.
	Atmospheric pressure limitation	Indicates the range of atmospheric pressure to which the medical device can be safely exposed.

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Device overview

This chapter describes the intended use, working principle, and structural composition of the device.

Intended use

The device is used to prepare sequencing flow cells by loading the pre-prepared DNBs (DNA Nanoball) and/or reagent to a flow cell.

This device is intended only for scientific research and should not be used for clinical diagnosis.

Working principle

The device loads the sample libraries and/or reagent to a sequencing flow cell through defined and optimized vacuum procedures.

Structural composition

The device consists of the touch screen monitor, PCR board assembly, Y-Z motion stage, flow cell stage, syringe pump, vacuum pump, and RFID reader.

The following table describes functions of each component:

Component	Description
Touch screen monitor	Displays the information and performs on-screen operation.
PCR board assembly	Controls the system, drives the components, collects status, and feeds back to the system.
Y-Z motion stage	Switches among different reagents.
Flow cell stage	Connects the fluidics line and the flow cells and controls the flow cell stage temperature.
Syringe pump	Aspirates the reagent to the flow cell and discharges the waste to the post-loading plate.
Vacuum pump	Firmly attaches the flow cell to the inlet and outlet of the sealing rings, to avoid liquid leakage.
RFID reader	Identifies the ID of an item.

Front view

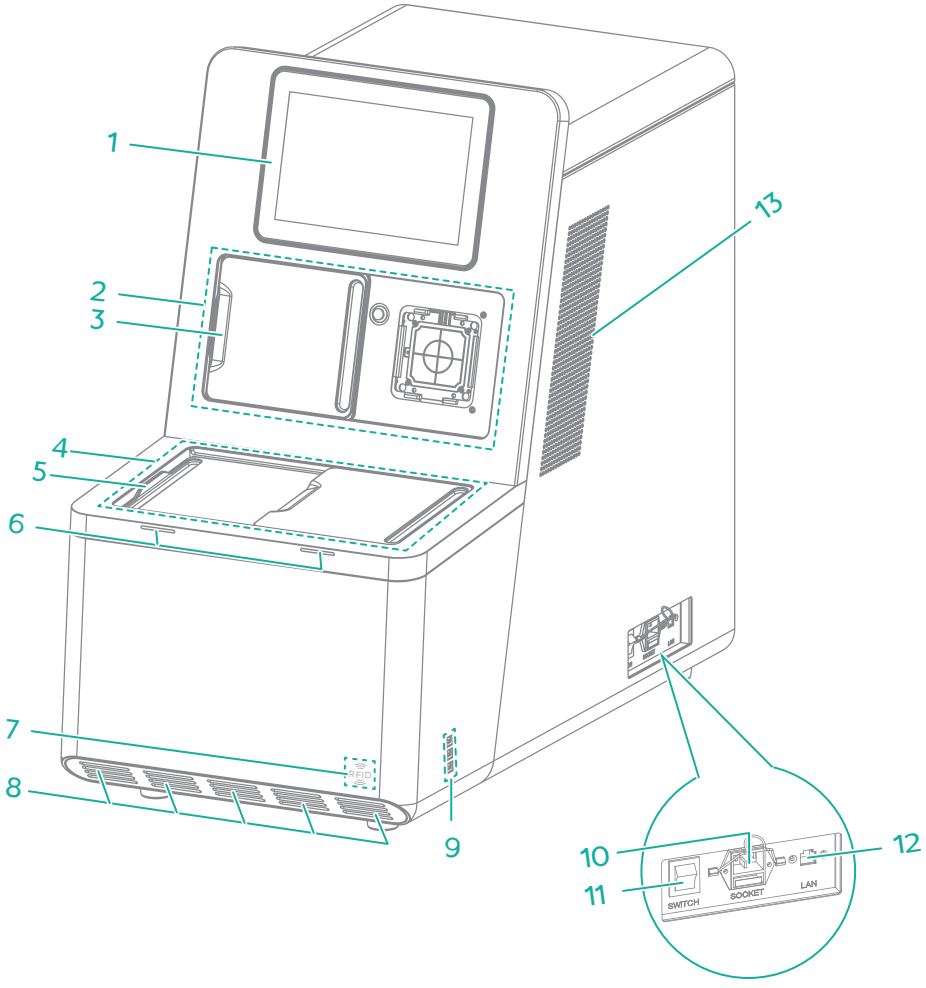

Figure 1 Front view

No.	Name	Description
1	Touch screen monitor	Facilitates the on-screen operation and displays information.
2	Flow cell compartment	Holds the flow cell.
3	Flow cell compartment door	Pushes it right or left to open or close the flow cell compartment door.
4	Loading compartment	Places the post-loading plate and load the liquid.

No.	Name	Description
5	Loading compartment door	Pushes it right or left to open or close the loading compartment door. NOTE When opening or closing the left compartment door, handle with care in case of injury to hands.
6	LED status bar	Displays the current status of the device. ● Blue: the device is in standby status. ● Green: the device is running. ● Yellow: a warning appears. ● Red: an error occurs.
7	RFID scanning area	Identifies the ID of the item placed near the area.
8	Ventilation outlet	Ventilates the device.
9	USB port panel	Connects to the USB devices such as mouse and keyboard.
10	Power port	Connects to the mains supply. Fuses are installed in the port.
11	Power switch	Powers on or off the device. ● Switch to the | position to power on the device. ● Switch to the ○ position to power off the device.
12	RJ45 Network port	Connects to the network of the computer and server.
13	Ventilation outlet	Ventilates the device.

Back view

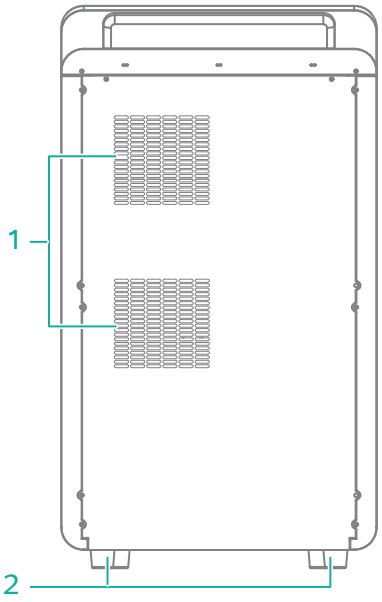

Figure 2 Back view

No.	Name	Description
1	Ventilation outlet	Ventilates the device.
2	Supporting feet	Supports the main unit to ensure stability.

Flow cell stage A

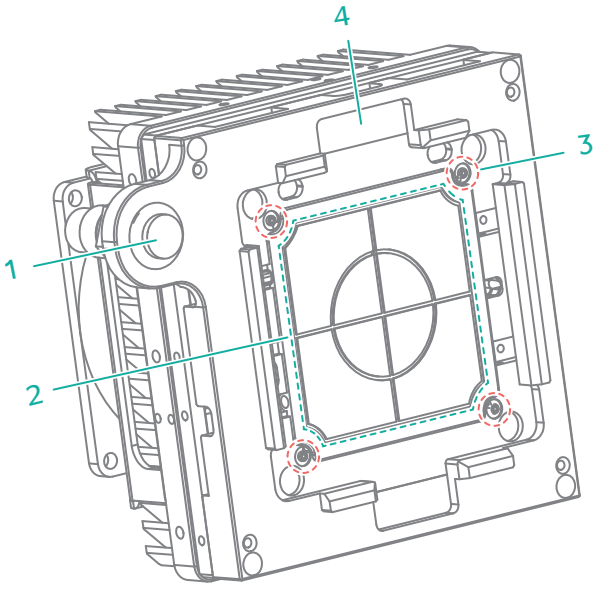

Figure 3 Flow cell stage A

The following description uses flow cell stage A as an example.

No.	Name	Description
1	Flow cell attachment button A	Press to activate the vacuum for attachment or release of the flow cell.
2	Aluminum chuck	Loads and attaches the flow cell.
3	Sealing ring	/
4	Alignment groove	Used for aligning with the flow cell.

Flow cell

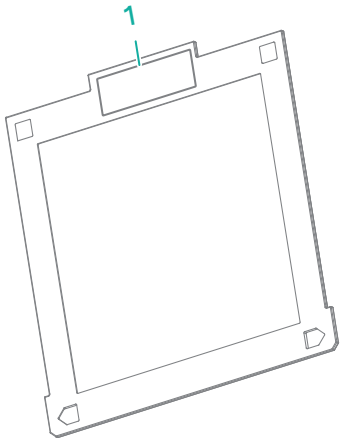

Figure 4 Flow cell

No.	Name	Description
1	Label location	Posts the label of the flow cell.

Plate tray unit

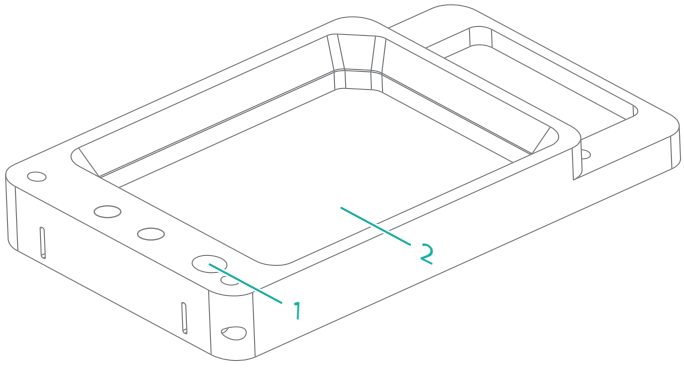

Figure 5 Plate tray unit

No.	Name	Description
1	DNB tube hole	Holds the DNB tube.
2	Plate tray	Holds the post-loading plate and brings it to the specified position while Y-Z motion stage moves.

Control software

The software of the device can guide the user to load different sample libraries and/or reagents to a sequencing flow cell according to experimental requirements.

The following table describes the function of each functional module:

Item	Description
Self-test	Checks whether the components of the system are functional.
Loading	Loads the required sample library and/or reagent to the flow cell.
Wash	Performs wash and maintenance for the fluidics lines of the system.

Self-test interface

After you power on the device, self-test starts. If the self-test succeeds, the main interface appears.

If the self-test fails, perform the following steps:

1. In the main interface, tap , and select **Log** to check the detailed self-test results that are recorded in the log.
2. Follow the on-screen instructions or the solutions that are mentioned in *Troubleshooting on Page 41*.
3. Perform self-test again:
   - Tap , select **Maintenance** > **Self-test**.
   - Tap , select **Shut down** > **Restart**.

If the problems still persist, contact the technical support.

Main interface

Figure 6 Main interface

The main interface includes the following areas.

No.	Name	Description
1	Icon and button area	Displays the icon and buttons.
2	Operation area	Select a flow cell stage and perform the relevant operations.

If you select flow cell stage A, the main interface A appears.

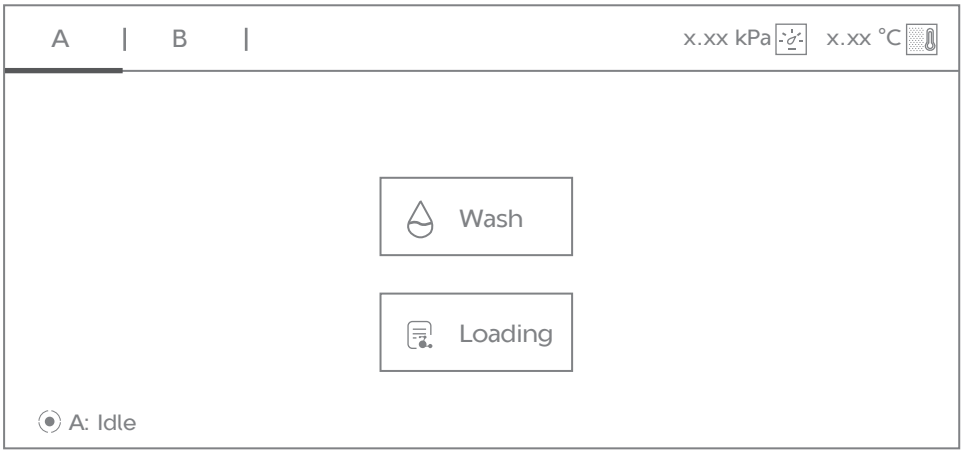

Figure 7 Main interface A

The following table describes the function of controls in the interface:

Item	Description
	Displays the temperature of the flow cell stage.
	Displays the negative pressure.

Icon and button area

The following table describes the function of controls in the interface:

Item	Description
	Displays the local date and time.
	Tap to return to the main interface.
	Displays the connection status of the device and the server that ZLIMS is installed on.
	Tap to view prompt details. The prompt icon includes the following status: ● Yellow: a warning appears. ● Red: an error occurs.
	Menu button. You can tap this button to view logs, change system settings, perform system maintenance, shut down or restart the system, or view system information.

Operation area

Item	Description
	Flow cell stage name.
xx%	Task progress.

Item	Description
	The flow cell stage is under loading.
	The fluidics lines of the flow cell stage are under washing.
	The flow cell stage is in idle status.
	Loading or washing is being paused.

Log interface

You can view the log in this interface.

To open the log interface, tap  in the main interface, and select **Log**.

The following table describes the function of controls in the interface:

Item	Description
	Tap to exit the log interface and return to the previous interface.
All	Tap to view all types of logs.
Info	Tap to view information-type logs.
Warning	Tap to view warning-type logs.
Error	Tap to view error-type logs.
	Tap to select the date in the pop-up calendar.
Flow cell	Select the check box to view the logs of a flow cell.
Sort by	Set the display order of the logs.

Settings interface

You can change system settings in this interface.

To open the settings interface, tap , and select **Settings**.

The following table describes the function of controls in the interface:

Item	Description
Language	Tap to change the language of the software. Restart the device to apply the changes.
Network	Input the IP address and port number of the ZLIMS server. Modification takes effect after you restart the software.
Customize	Move the slider to change the volume of the speaker.

Maintenance interface

You can empty the fluidics line and perform self-test in this interface.

To open the maintenance interface, tap , and select **Maintenance**.

The following table describes the function of controls in the interface:

Item	Description
Self-test	Tap to perform a self-test for the hardware of the device. The result of each item is displayed in the interface. After self-test, you will be prompted that the self-test is successful.
Empty fluidics line A/B	Tap to discharge the residual liquid in its fluidics line to the post-loading plate.

Shutdown or restart interface

You can shut down or restart the system in this interface.

To open the shut down or restart interface, tap and select **Shut down**.

About interface

You can view the software version, serial number, and other information in this interface.

To open the about interface, tap and select **About**.

Getting started

This chapter describes laboratory preparations and loading preparations.

Site requirements

Caution

- Ensure that the laboratory floor is level and the laboratory table has a weight capacity of over 200 kg (441 lb).
- Ensure that the laboratory is free of dust, corrosive and flammable gas, and heat and wind sources.
- Ensure that the laboratory is away from direct sunlight and well ventilated. We recommend that you refer to the standard of a biosafety level (BSL) 2 laboratory.
- The device should be used with the ultra-pure water machine and refrigerator, and can be used with the genetic sequencer. Therefore, enough space should be considered when placing the above instruments.
- Ensure that enough space is provided around the device for ventilation, cable connection, and power switch operation.

The following figure indicates distances that are required for optimal operation and access.

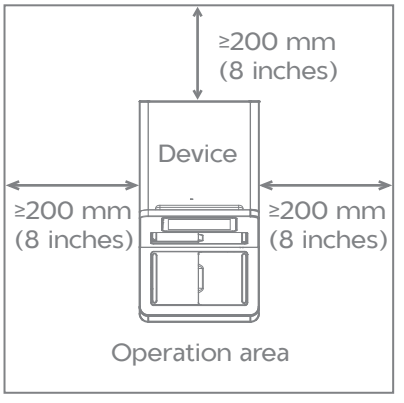

Figure 8 Space requirements

Network requirements

Operating environments of the computer

Minimum configuration

Processor: Intel Celeron CPU J1900

Software environments

Warning Only the software that has been provided by the manufacturer can be installed and used on the computer. Because unknown software might interfere with normal device functions, or even cause data loss. If you need to install antivirus software, contact the technical support in advance.

Software architecture: C/S

Pre-installed software on the computer includes:

- Control software
- Microsoft Windows 10 64 bits operating system
- Microsoft .Net Framework 4.6.1 and above

Network conditions

- Network type: local network
- Network bandwidth: no less than 100 Mbit/s

Software security

If you need to install antivirus software, contact the technical support in advance.

Data and device ports

- RJ45 Network port: connects to the network of the computer and server.
- USB ports: connects to the keyboard, mouse, or other devices.

NOTE The keyboard and mouse are optional, and should be purchased separately.

Inspecting the device

Caution
- Only the technical support of the manufacturer or trained personnel can unpack the device. Contact the technical support to unpack and install the device upon delivery. Failure to do so will void the warranty.
- Ensure that the outer package is intact and the indicator status of the anti-shock and anti-tilt label is normal upon delivery. If any problem occurs, contact the technical support.

The device contains precise components. Therefore, anti-shock and anti-tilt labels are posted on the outer packaging to monitor any effects of transportation.

The following table describes indicator statuses on the label:

Table 1 Indicator status

Label	Indicator status	Description
Anti-shock label	Remains unaffected	Indicates that the device is intact and no strong collision occurs during transportation, or the intensity does not exceed the limit.
	Red	Indicates that the device might not be intact and a strong collision occurs during transportation and the intensity exceeds the limit.
Anti-tilt label	Remains unaffected	Indicates that no tilt occurs, or the gradient does not exceed the limit.
	Red	Indicates that tilt occurs, and the gradient exceeds the limit.

Preparing the power supply

Item	Description
Voltage and frequency range	100 V - 240 V~, 50/60 Hz
Voltage fluctuation	±10%
Grounding resistance	4 Ω
Rated power	600 VA The available current should be equal to or greater than 10 A.
Transient over-voltage category	II

Installing the device

The device can be installed only by the technical support.

To ensure that the performance of the device meets the specifications, the technical support will perform a standard loading before customer training and use.

Powering on or off the device

Caution

- Ensure that the power switch is in the ○ position before connecting to the power supply.
- The mains supply socket should be a standard three-prong socket and its protective grounding terminal should be connected to the protective grounding cable of the power supply system. If the requirements above are not met, the device must be protectively grounded as described in *Preparing the power supply on Page 26*.
- Ensure that the grounding cable is connected in accordance with the relevant standard or under the guidance of the experienced electrician.
- We recommend that you use the power cord provided by the manufacturer to connect to the power supply, and the power cord can be only used with this device. Failure to do so might damage the power cord or device.

Powering on the device

Perform the following steps:

1. Connect the power port of the device and the mains supply socket by using the power cord.
2. Turn the power switch to the | position.

   After you power on the device, self-test begins.

Powering off the device

Perform the following steps:

1. Click ⊞ and select **Shut down**. Select **Shut down** in the pop-up dialog box.
2. Turn the power switch to the ○ position.

Preparing materials for post wash

Material list

Prepare the following items:

- Post-loading plate

- Washing flow cell (delivered with the device)

Preparing the post-loading plate

Perform the following steps:

1. Remove the sealing film of the post-loading plate.
2. Add 4 mL of 0.1 M NaOH that is used for washing to well 11 by using the pipette.

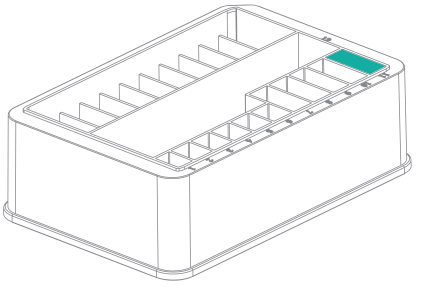

Figure 9 Adding 0.1 M NaOH

3. Place the prepared post-loading plate close to the device.

Preparing materials for loading

Prepare the following items:

- Post-loading plate
- DNB tube
- Sequencing flow cell
- DNBs (for preparation methods, refer to the reagent kit user manual)

Loading

This chapter describes the loading workflow and wash procedures. The following description uses flow cell stage A as an example. Read and follow the instructions to ensure correct operations.

Workflow

Preparing sample libraries and materials

Loading consumables

Performing a post wash

Chemicals in reagents and waste might cause personal injury through contact with the skin, eyes, and mucosa. Follow the safety standards of your laboratory and wear protective equipment (such as laboratory coat, disposable bouffant cap, protective glasses, mask, gloves, and shoe covers) when performing an experiment.

Preparing sample libraries and materials

Refer to *Preparing materials for loading on Page 28*.

Performing a pre-wash (optional)

Warning If the device is not in use for one week or longer, perform a pre-wash before use.

Perform the following steps:

1. Prepare the washing plate for pre-wash. For details, refer to the reagent kit user manual.

   The washing plate is delivered with the device. Before each use, clean the washing plate with the laboratory water for three to five times.

2. Tap **Wash** in the main interface A.
3. Load the washing plate and washing flow cell by following the on-screen instructions.
4. Tap **Start** and a confirmation dialog box appears. Select **Yes** to start washing.

- Tap ⏸, and a confirmation message appears. Select **Yes** to pause the wash. Tap ⏸ again to resume the wash.
- Tap ■, and a confirmation message appears. Select **Yes** to stop the wash.

5. When the wash is complete, take out all the consumables by following the on-screen instructions.
6. Tap **Back** to return to the main interface A.
7. Store the washing flow cell at the room temperature.

   Each washing flow cell can be reused up to three times for washing. Then, dispose of the flow cell according to local regulations and safety standards of your laboratory.
8. Empty any remaining washing solution in the washing plate into an appropriate waste container. Dispose of the waste according to local regulations and safety standards of your laboratory.

   We recommend that you dispose of the washing plate after three months of continuous use.

Loading consumables

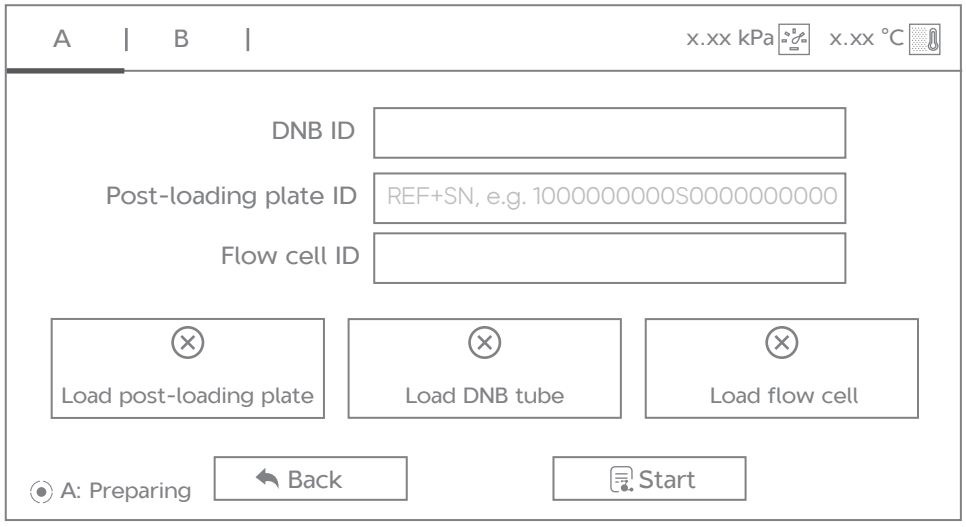

Figure 10 Loading consumables interface

Perform the following steps:

1. Open the loading compartment door.
2. Place the label of the plate near the RFID scanning area. The plate ID is displayed in the box.

If scanning fails, input the plate ID with the on-screen keyboard.

NOTE

- Ensure that the ID format is correct when you input ID manually. Otherwise, you will be prompted that the ID is incorrect and the procedure cannot continue.
- The plate ID consists of 10-digit catalogue numbers and 11-character serial numbers.

3. Load the post-loading plate onto the plate tray in the direction of the arrow shown in the following figure. After that, you will be prompted that the post-loading plate is loaded.

   If you are prompted that loading post-loading plate fails, check whether the plate is placed in the wrong direction.

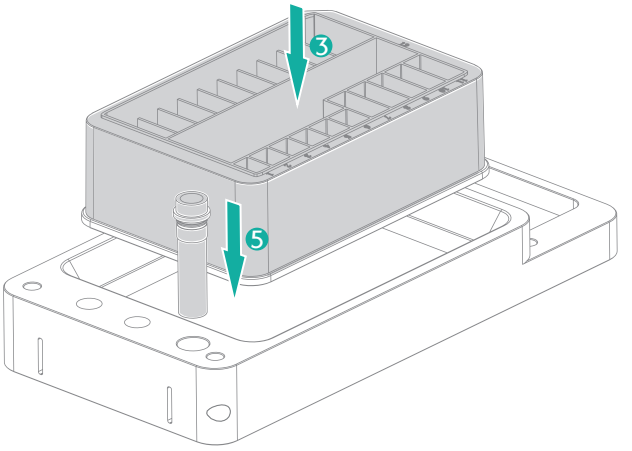

Figure 11 Loading the post-loading plate and DNB tube

4. Tap the **DNB ID** box and input the DNB tube ID with the on-screen keyboard.
5. Load the DNB tube into the DNB tube hole of the plate tray in the direction of the arrow shown in the following figure. After that, you will be prompted that the DNB tube is loaded.

NOTE Press the DNB tube gently to ensure that the tube is placed in position.

6. Place the label of the flow cell near the RFID scanning area. The flow cell ID is displayed in the box.

   If scanning fails, input the flow cell ID with the on-screen keyboard.

7. Open the flow cell compartment.
8. Install the flow cell.

   1) Hold the flow cell by upper and lower edges. Install the flow cell onto the flow cell stage as shown in the following figure.

2) Press the left and right edges and ensure that the flow cell is completely aligned with the flow cell stage.

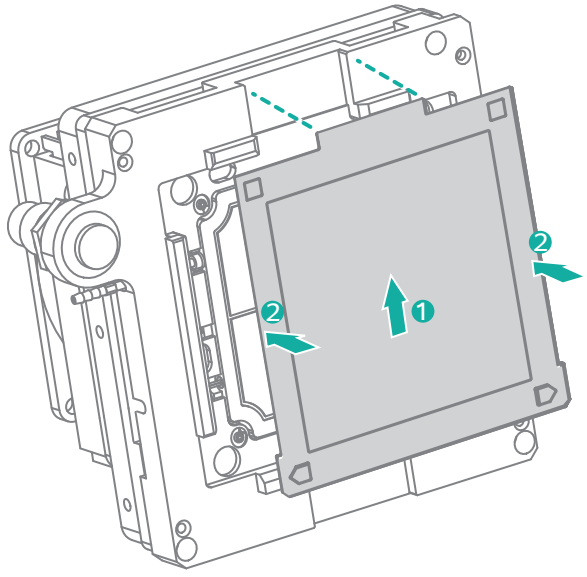

Figure 12 Loading the flow cell

9. Press the flow cell attachment button A. If the indicator in the flow cell attachment button illuminates in green, the vacuum pump works normally. And you will be prompted that the flow cell is loaded.

   After the flow cell is securely seated, do not move it again. Moving the flow cell might cause the sealing rings to misalign with holes of the fluidics line.

NOTE

- If the flow cell is not attached properly, wipe the flow cell stage and the back of the flow cell with a clean cloth moistened with 75% ethanol, and then let it air-dry. Do not press the glass because it might bring particulate matters and fingerprints or damage the flow cell.
- If the flow cell accidentally drops to the floor and breaks, handle with care in case of personal injury.

10. Close all compartment doors.

Performing a load

Warning

- Ensure that the loading compartment door is closed before loading. Loading cannot be started when the loading compartment door is open.
- Do not open the loading compartment door during a loading so as to prevent adverse effects on loading results and damage to the device.
- Do not bump, move, vibrate or impact the device during a loading because it might affect the results.
- Do not place other instruments such as a centrifuge or vortex on the same bench where the loader is placed, because other instruments might cause vibrations to the loader.
- Pay special attention to the LED status bar, icons, and prompts. If errors occur, a message appears on the screen. Follow the prompt to troubleshoot and solve the problem. For information about the troubleshooting, refer to *Troubleshooting on Page 41*. If the problem persists, contact the technical support.

In the loading consumables interface, tap **Start** and a confirmation dialog box appears. Select **Yes** to start loading.

The remaining time for loading appears in the interface and the following table describes the function of each item in the interface:

Item	Description
	Tap to view the loading information, such as DNB ID, and tap **Back** to return to the loading interface.
	The status of the device is displayed on the right of this icon.
	Tap it and a confirmation message appears. Select **Yes** to pause loading. Tap it again to resume loading.
	Tap it and a confirmation message appears. Select **Yes** to stop loading.

After the loading is complete, perform the following steps:

1. Select **Yes,** the loading completed interface is displayed.

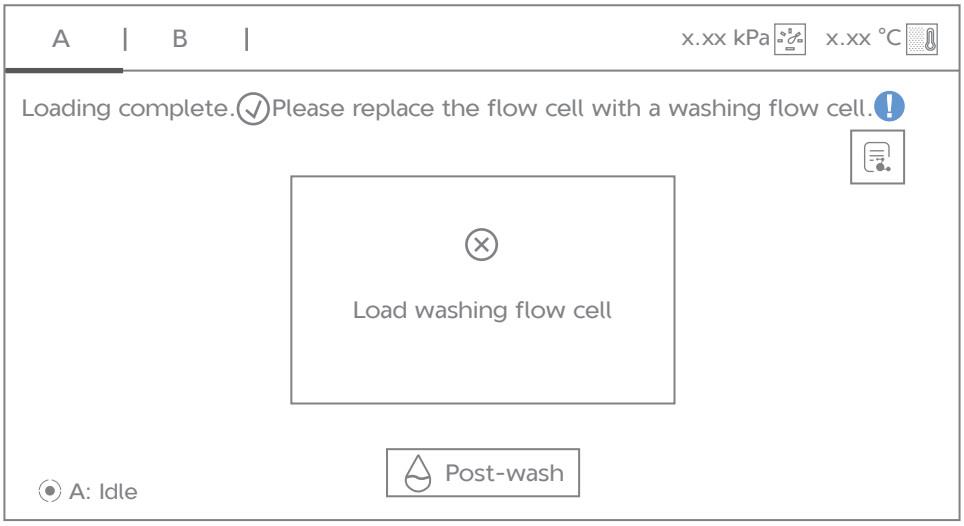

Figure 13 Loading completed interface

2. Remove the sequencing flow cell by following the on-screen prompt.

   1) Open the flow cell compartment door.
   2) Press the flow cell attachment button A.
   3) Press the lower edge of the flow cell to raise the flow cell.
   4) Hold the flow cell by left and right edges and remove the flow cell.

NOTE The prepared flow cell can be used for sequencing. If the flow cell is not used immediately, store the flow cell at 4 °C for up to one week.

Performing a post-wash

Chemicals in reagents and waste might cause personal injury through contact with the skin, eyes, and mucosa. Follow the safety standards of your laboratory and wear protective equipment (such as laboratory coat, disposable bouffant cap, protective glasses, mask, gloves, and shoe covers) when performing an experiment.

Perform the following steps:

1. Load the washing flow cell. You will be prompted that the washing flow cell is loaded.

   For details, refer to *Loading consumables on Page 31*.

2. Close the flow cell compartment door.
3. Tap **Post-wash** and a confirmation message appears. Select **Yes** to start post-washing.
   - Tap ⏸, and a confirmation message appears. Select **Yes** to pause the wash. Tap ⏸ again to resume the wash.
   - Tap ■, and a confirmation message appears. Select **Yes** to stop the wash.
4. When the wash is complete, take out all the consumables by following the on-screen instructions.
5. Tap **Finish** to return to the main interface A.
6. Store the washing flow cell at the room temperature.

   The washing flow cell can be reused for up to three times for washing. Then, dispose of the flow cell according to local regulations and safety standards of your laboratory.
7. Empty any remaining washing solution in the post-loading plate into an appropriate waste container. Dispose of the waste according to local regulations and safety standards of your laboratory.

   Used post-loading plate can be used as washing plate after you clean the plate with laboratory water for three to five times. Then we recommend that you dispose of the plate after three months of continuous use.
8. Dispose of the DNB tube according to local regulations and safety standards of your laboratory.

Maintaining the device

This chapter describes maintenance procedures of the device and its parts. Perform maintenance regularly to ensure that the device runs smoothly.

Maintaining the main unit

Daily maintenance

Perform the following maintenance when the device is powered on:

- Check whether the fan of the device is operational. If not, contact the technical support.
- During loading, pay attention to error messages and check whether the relevant parts can work properly. Contact the technical support if needed. For information about how to find error messages, refer to *Log interface on Page 21*.

Weekly cleaning


Warning

- We do not recommend that you use the disinfectants other than 75% alcohol. Because other disinfectants are not verified for use and their effects to the device are unknown.
- If you have questions about the compatibility of disinfectants, contact the technical support.

Perform the following steps:

1. Power off the device and open the loading compartment door and flow cell compartment door.
2. Clean the touch screen, plate tray, and flow cell stage with a 75% alcohol wipe. Ensure that the surface is free of DNBs, reagents, blood, and saliva.

Monthly cleaning


Warning

- We do not recommend that you use the disinfectants other than 75% alcohol. Because other disinfectants are not verified for use and their effects to the device are unknown.
- If you have questions about the compatibility of disinfectants, contact the technical support.

Perform the following steps:

1. Power off the device.
2. Clean the surface of the device with a 75% alcohol wipe. Ensure that the surface is free of DNBs, reagents, blood, and saliva.

Service plan

Contact the technical support for paid maintenance services if needed.

NOTE We offer free first-year warranty and multi-price extended service plans. For details, contact the technical support.

Maintaining the power supply

- When the device is not in use for seven days or longer, perform a maintenance wash, power off the device, and disconnect the power cord.
- Check whether the power cord and cables are connected correctly and in good condition before each use. Re-connect the cables if needed (ensure that the device is powered off), or contact the technical support if new cables are required.

Maintaining the flow cell stage

Perform cleaning and maintenance for the flow cell stage before use. Failure to do so might affect the attachment of the flow cell to the chuck.

Tools and solutions

- Washing flow cell
- Protective gloves
- Dust-free cloth
- Absolute alcohol
- Dust remover (aerosolized air)

Cleaning the flow cell stage

Perform the following steps:

1. Wear protective gloves.
2. Check for dust, debris, damage, or particulate matters on the back of the flow cell and the surface of the aluminum chuck of the flow cell stage.

3. If necessary, wipe the back of the flow cell or the surface of the aluminum chuck with a dust-free cloth moistened with absolute alcohol, and then let it air-dry.

NOTE Do not wipe the inlet holes and vacuum attachment slot, to prevent the absolute alcohol from entering the holes and damaging the device.

4. Use a dust remover to carefully blow particulate matter and dust from the surface of the silicon chip and aluminum chuck until they are clean.
5. Place the flow cell on the flow cell stage. Ensure that the flow cell and label are facing upward. Press the edges of the flow cell with your hands to ensure that it is securely seated.
6. Press the flow cell attachment button on the flow cell stage.

Replacing the sealing ring

NOTE Use sealing rings that are supplied by the manufacturer for replacement.

Every three to six months, replace the sealing rings of the flow cell stage.

When the sealing ring is evenly installed, but bubbles still exist in the flow cell and liquid leakage occurs on the flow cell stage, we recommended that you replace the sealing ring with a new one.

Perform the following steps:

1. Wear protective gloves.
2. Remove the four sealing rings.

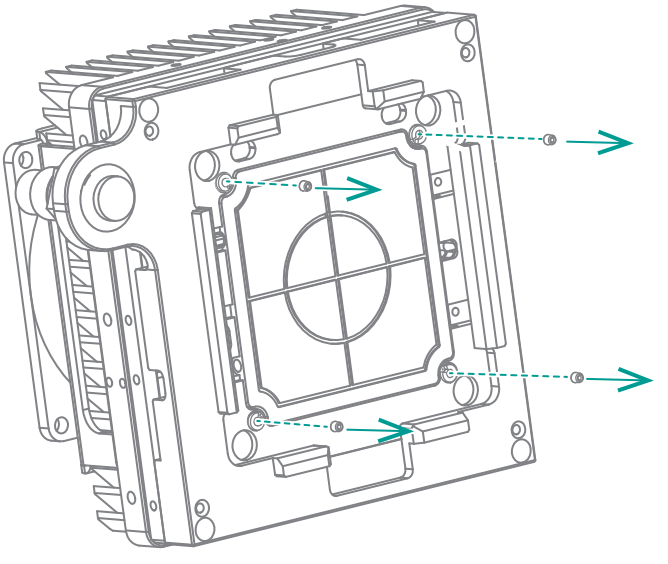

Figure 14 Removing the sealing rings

3. Install the new sealing rings to the flow cell stage in the direction of the arrow shown in the following figure.

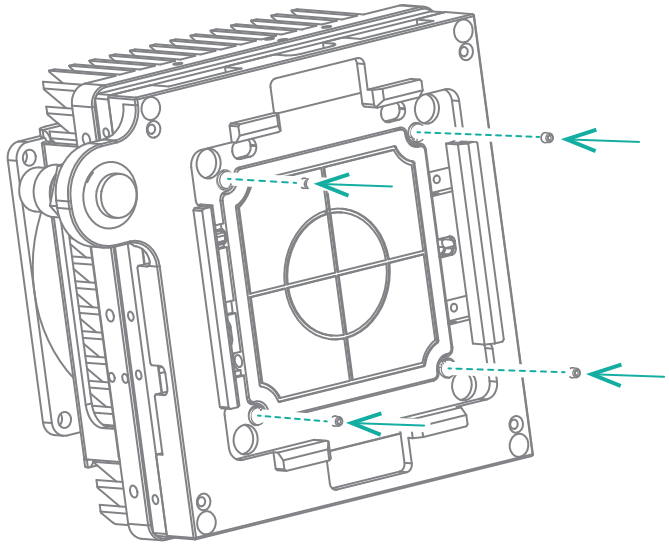

Figure 15 Installing the new sealing rings

4. Press the sealing ring with the finger point. Ensure that the sealing rings are securely and evenly installed.

Maintaining the software

After the receival of *Release Notification*, contact the technical support to update the software.

Troubleshooting

If malfunction occurs during operation, the device beeps or a message appears on the screen. Follow the on-screen prompt to troubleshoot and solve the problem. The following table lists some of the problems and possible solutions. If problems that are not mentioned in this manual arise, or if you need additional assistance, contact the technical support.

Table 2 Troubleshooting

Problem	Possible cause	Recommended action
Compartment door opened is displayed in the interface.	The compartment door is opened.	1. Close the compartment door again. 2. If the problem persists, contact the technical support.
The sampling needle bumps into the post-loading plate and bends during operation.	Position settings are improper.	Contact the technical support to set the position.
Bubbles exist in the fluidics lines of the flow cell.	A small number of bubbles exist in the fluidics line of the flow cell when aspirating the reagent.	1. After loading, press the flow cell attachment button to release the flow cell. 2. Check whether the sealing ring is installed evenly. If not, re-install the sealing ring. 3. If the problem persists, contact the technical support.
The flow cell cannot be attached to the flow cell stage.	• The flow cell attachment button is not pressed. • Dust, debris or damage might be present on the flow cell stage.	1. Check whether the flow cell attachment button is pressed. 2. Check the flow cell stage for dust, debris or damage. Clean the flow cell stage. For details, refer to *Maintaining the flow cell stage on Page 39*. 3. If the problem persists, contact the technical support.

Problem	Possible cause	Recommended action
The liquid does not pass through the fluidics lines of the flow cell.	• There are foreign particles might be present on the sealing ring or the sealing ring is damaged. • There are foreign objects on the rear of the flow cell. • The fluidics lines are blocked.	1. Check whether the sealing ring on the flow cell stage is intact or any foreign particles block the holes of the sealing ring. 2. Check whether there are any foreign particles on the rear of the flow cell and the surface of the flow cell stage. If yes, clean the flow cell stage. For details, refer to *Maintaining the flow cell stage on Page 39*. 3. If the problem persists, contact the technical support.
The flow cell stage leaks.	• The sealing ring is not installed. • The sealing ring is installed incorrectly. • There are foreign objects on the rear of the flow cell. • The fluidics lines are blocked.	1. Check whether the sealing ring is installed. 2. Check whether the sealing ring on the flow cell stage is intact or any foreign particles block the holes of the sealing ring. 3. Check whether there are any foreign particles on the rear of the flow cell and the surface of the flow cell stage. If yes, clean the flow cell stage. For details, refer to *Maintaining the flow cell stage on Page 39*. 4. If the problem persists, contact the technical support.

Storage and transportation

- For information about the environmental requirements for storing the device, refer to *Specifications on Page 45*.

- If you want to move or transport the device, contact the technical support.

Disposal of the device

The service life of this device is seven years, which is determined by the simulated service life evaluation method. For the date of manufacture, refer to the label on the device. Perform the maintenance according to the requirements mentioned in this manual. Dispose of the end of life device according to local regulations.

Specifications

Item	Description
Dimension	430 mm (W) × 750 mm (H) × 780 mm (D) (17 inches × 30 inches × 31 inches)
Net weight	Approximately 81 kg (179 lb)
Touch screen monitor	• Type: LCD touch screen • Size: approximately 13.3 inches • Resolution: 1280 × 600 pixels
Power	• Voltage: 100 V - 240 V~ • Frequency: 50/60 Hz • Rated power: 600 VA • Overvoltage category: II • Cable: min. 16AWG
Fuse specification	F10AL250V
Maximum sound pressure level	75 dB
Degrees of protection provided by enclosures (IP Code)	IPX0

Item	Description
Operating environment requirements	• Temperature: 19 °C to 25 °C (66 °F to 77 °F) • Relative humidity: 30% RH to 80% RH, non-condensing • Atmospheric pressure: 80 kPa to 106 kPa • Altitude: ≤2000 m • Pollution degree: 2 • Indoor use NOTE Because the temperature and humidity fluctuations influence the accuracy of the loading results, we recommend that you install an air conditioning system and a dehumidifier in the laboratory to maintain appropriate temperature and humidity.
Storage/transportation environment requirements	• Temperature: -20 °C to 50 °C (-4 °F to 122 °F) • Relative humidity: 15% RH to 85% RH, non-condensing • Atmospheric pressure: 80 kPa to 106 kPa
Accompanying items	Refer to the packing list

Compliance information

The device complies with following standards:

Item	Standard
Electromagnetic Compatibility (EMC)	IEC 61326-1:2020 Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
Safety requirements	• IEC 61010-1:2010+AMD1:2016 Safety requirements for electrical equipment for measurement, control, and laboratory use-Part 1: General requirements • IEC 61010-2-081:2019 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes • IEC 61010-2-010:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use-part 2-010: Particular requirements for laboratory equipment for the heating of materials

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Manufacturer information

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