
DNBSEQ-T7RS

System Guide

**For Research Use Only.
Not for use in diagnostic procedures.**

Complete Genomics, Inc.

About this guide

CG intends to provide this product solely for research use.

This guide is applicable to Genetic Sequencer (DNBSEQ-T7RS) and DNBSEQ-T7RS High-throughput Sequencing Set. The guide version is 1.0 and the software version is V1.

This guide and the information contained herein are proprietary to Complete Genomics, Inc. (hereinafter referred to as CG), and are intended solely for the contractual use of its customers in the use of the products described herein and for no other purpose. This guide and its contents shall not be reprinted, reproduced, modified, distributed, or disclosed to others, in whole or in part, without prior written consent from CG.

CG makes no commitment to this guide, including (but not limited to) any special purpose commercial and any reasonable implied warranties. CG has taken measures to ensure the correctness of this guide. However, CG is not responsible for any missing parts of the guide and reserves the right to revise the guide and modify the device, so as to improve the reliability, performance or design.

Figures in this guide are for illustrative purpose only. The content may be slightly different from the device. For the most up to date details, refer to the device purchased.

DNBSEQ™ is a trademark of CG or its affiliates in the U.S. and/or other countries. Microsoft® and Windows® are trademarks or registered trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel® and Intel Core™ are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. USB Type-C™ is a trademark of USB Implementers Forum. Qubit™ is the trademark of Thermo Fisher Scientific, or its subsidiaries. Kimwipes® is a trademark of Kimberly-Clark Worldwide, Inc. Other names and trademarks mentioned in this guide may be the property of their respective companies and subsidiaries.

©2023 Complete Genomics, Inc. All rights reserved.

Revision history

	Date	Version
Initial release	March 24, 2023	1.0

Contents

Safety	1
Conventions used in this guide	2
General safety	2
Electrical safety	4
FCC statement	4
IC statement	5
Mechanical safety	6
Components safety	6
Biological safety	6
Symbols	7
.....	7
Packaging	7
.....	8
Device	8
.....	9
Label	9
.....	10
System guide	10
Devices overview	9
Intended use	10
Working principle	10
Sequencer overview	11
.....	11
Structural composition	11
.....	13
Basic components	13
Front view	13
Flow cell	16
Back view	17
Ports	18
.....	19
Control software	19
Overview	19
Self-test interface	19
Main interface	20

Operation area	20
Main interface A	21
Menu area	22
Log interface	24
Settings interface	24
Maintenance interface	25
Shutdown or restart interface	26
About interface	26
Sequencing interface	27
DNB loader overview	27
Working principle	27
Structural composition	28
Front view	29
Back view	31
Flow cell stage A	32
Plate tray unit	33
Control software	33
Self-test interface	33
Main interface	34
Operation area	34
Main interface A	35
Icon and button area	36
Log interface	36
Settings interface	37
Maintenance interface	37
Shutdown or restart interface	37
About interface	37
Loading interface	38
CG-ZTRON-LITE overview	39
Introduction	39
Technical specifications	40

.....	40
Bandwidth requirement	40
Sequencing sets overview	41
Introduction	42
Available sequencing set list	42
Sequencing read length	42
Sequencing time	43
User-supplied equipment and consumables	44
Preparing the pure water container	45
Preparing the waste container	47
Sequencing	49
Workflow	50
Preparing DNBs	50
.....	50
Recommended library insert size	50
.....	51
DNA library concentration and amount requirement	51
.....	52
Library pooling	52
Number of samples that can be pooled together	52
Verifying the base balance for barcode	53
.....	53
Making DNBs	53
Making DNBs for FCL PE100	54
Making DNBs for FCL PE150	57
Making DNBs for stLFR FCL PE100	60
.....	63
Quantifying DNBs and pooling	63
Quantifying DNBs	63
DNB pooling	63
Preparing the flow cell	64
Preparing the devices	65
.....	65
Powering the device on	65
Powering the sequencer on	65
Powering the DNB loader on	66

.....	
Logging in to the control software	66
Loading DNBs	66
.....	
Preparing DNB Load Plate and buffers for FCL PE100 or stLFR FCL PE100 sequencing	67
Preparing DNB Load Plate (T7 FCL PE100 or T7 stLFR FCL PE100)	67
Preparing DNB Load Buffer II	67
Preparing the 0.1 M NaOH reagent	68
Preparing DNB loading mixture	68
.....	
Preparing DNB Load Plate and buffers for FCL PE150 sequencing	68
Preparing DNB Load Plate (T7 FCL PE150)	68
Preparing DNB Load Buffer IV	69
Preparing the 0.1 M NaOH reagent	69
Preparing DNB loading mixture	69
.....	
Perform DNB Loading	69
Preparation before sequencing	78
.....	
Preparing the Sequencing Reagent Cartridge	79
.....	
Preparing the Washing Cartridge	82
.....	
Filling the pure water container	84
Performing a sequencing run	85
.....	
Loading the cartridges	85
.....	
Entering sequencing interface	86
.....	
Loading the flow cell	86
.....	
Sequencing parameters	88
.....	
Reviewing parameters	90
.....	
Starting sequencing	91
Automatic post-wash	92
Disposing of cartridges and flow cells	93
(Optional) Powering the devices off	93

Powering the sequencer off	93
Powering the DNB loader off	93
Sequencing data	95
Sequencing output files	96
Folder structure	96
File type description	97
Summary report	97
Report parameter review	98
Diagram description	101
Other reports	111
Data Processing	113
Device maintenance	115
Service plan	116
Wash	116
Wash introduction	116
Wash preparation	117
Preparing washing reagents	117
Preparing the loader washing plate	118
Preparing washing cartridges	119
Preparing the washing flow cell	119
Wash procedures	119
Performing a manual wash on the loader (~20 minutes)	120
Performing a manual wash on the sequencer (~40 minutes)	120
Reusing the washing flow cell, washing cartridge, and washing plate	121
Sequencer maintenance	122
Daily maintenance	122

Weekly cleaning	122
Monthly maintenance	122
Maintaining the device	122
Maintaining the power supply	123
Maintaining the software	123
Maintaining the pure water container	123
Replacing the waste container	124
DNB loader maintenance	124
Daily maintenance	124
Weekly cleaning	124
Monthly cleaning	125
Maintaining the device	125
Maintaining the power supply	125
Annual maintenance	125
Maintaining the flow cell stage	125
Maintaining the software	126
Storage and transportation	126
Disposal of the device	126
FAQs	127
Sequencer FAQs	128
DNB loader FAQs	129
Reagent FAQs	131
Instructions for importing barcode	139
Preparing a barcode file	139
Single barcode file	140
Single and DualBarcode file	141
Importing a barcode file	143
Instructions for customizing a run	145

Introductions	145
Important interfaces for customizing a run	146
Examples of customized run	148
1. Read1/Read2 lengths are not the same as those predefined in the Recipe list	148
2. Length of the single barcode is not 10	151
3. Different barcode lengths for DualBarcode sequencing	153
4. Dark reaction cycles are required in Read1 and/or Read2 sequencing	156
5. stLFR FCL PE100	158
6. UMI+UDI	161
Instructions for using Qubit to quantify the DNBs	165
List of sequencing set components	167
Device specifications	173
Compliance information	177
Research use only	179
Manufacturer information	181
Order information	183
Acronyms and abbreviations	185
Index	187

---This page is intentionally left blank.---

01

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 guide at hand for reference at any time.

Conventions used in this guide

The following table describes conventions that are used in this guide:

Item	Description
shall	Means compliance with a requirement or it is mandatory for compliance with this document
should	Means compliance with a requirement but it is not mandatory for compliance with this document
may	Used to describe possibility or probability
can	Used to describe permission and capability
must	Used to express a constraint
Boldface	Indicates the printings and on-screen characters on the device
Reagent name	Indicates the name of a reagent

General safety



- DANGER**
- Ensure that the device is operated under the conditions specified in this guide. Otherwise, it may cause altered experimental results, device malfunction, or even personal injury.
 - Ensure that the components of the device are completely installed before operation. Otherwise, it may result in personal injury.
 - A laser is installed in the device. Laser radiation can cause eye injury and skin burns. Before performing a sequencing run, ensure that the optics maintenance door, fluidics maintenance door, and flow cell retrieval compartment door of the device are closed. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
 - Maintain the device by following the instructions described in this guide to ensure best performance. Otherwise, it may result in device malfunction or even personal injury.
 - Do not operate the device in the presence of flammable or explosive liquids, vapors, or gases. Otherwise, it may result in device damage, or even personal injury.
 - Do not operate the device during maintenance or transportation.

**WARNING**

- Only CG Technical Support or qualified and trained personnel may unpack, install, move, debug and maintain the device. Incorrect operations may cause altered experimental results or damage to the device.
- Do not move the device after CG Technical Support have installed and debugged the device. Unauthorized moves of the device may cause altered experimental results. If you require to move the device, contact CG Technical Support.
- Only trained personnel can operate the device.
- Do not disconnect the power cord when the device is on. Otherwise, it may result in device malfunction.
- Only the components provided by the manufacturer can be used for device maintenance. Unapproved components may degrade device performance or result in device malfunction.
- Do not reuse disposable items, except where noted in this guide.
- Do not place tubes or reagent kits on the device. Liquids seeping into the device may damage it.

**CAUTION**

- Only the peripheral devices and consumables specified by the manufacturer can be used.
- If you have maintenance questions that are not mentioned in this guide, contact CG Technical Support.
- The device has been verified before delivery. If serious deviation occurs during use, contact CG Technical Support for calibration.
- After the device is powered off, a key is needed to open the fluidics maintenance door. The key is only accessible to CG Technical Support, or other trained/qualified individuals. Please do not open the fluidics maintenance door by force.
- After the device is powered off, a screwdriver is needed to open the optics maintenance door. The door should only be opened by CG Technical Support, or other trained/qualified individuals. Please do not open the optics maintenance door by force.

Electrical safety

**DANGER**

- Ensure that the device is properly grounded, and the grounding resistance meets the requirements. Failure to do so may result in altered experiment results, electric leakage, or even electric shock.
- Do not remove the device cover and expose the inner components. Otherwise, electric shock may be caused .

**WARNING**

Do not use the device in close proximity to sources of strong electromagnetic fields, such as unshielded sources of radiated emissions. Radiated signals may reduce the accuracy of the results.

**CAUTION**

- Before initial use of the device, assess the electromagnetic environment in which the device will be used.
- Ensure that the input voltage meets the device requirements.
- Ensure that the voltage of the power outlet in your laboratory or the UPS (if any) meets the voltage requirements before using the device. Failure to do so may damage the electrical components.
- Prepare the laboratory and power supply according to the instructions described in this guide.

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 25 mm 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

**DANGER**

To avoid device damage and personal injury, place the device on a level surface that meets the load-bearing requirements and ensure that the device cannot be easily moved.

Components safety

**WARNING**

- Only the software that has been provided by the manufacturer can be installed and used on the device. Other software may interfere with normal device functions, or even cause data loss.
- Do not uninstall the control software by yourself. If any problem occurs during software operation, contact CG Technical Support.

**CAUTION**

Ensure that the peripheral devices meet the requirements of IEC/EN 62368-1.

Biological safety



- Reagents and waste chemicals may cause personal injury through skin, eye, or mucosal contact. Follow the safety standards of your laboratory and wear protective equipment (such as a laboratory coat, protective glasses, mask, gloves, and shoe covers) when using the device.
- If you accidentally splash reagents or waste liquids on your skin or into your eyes, immediately flush the affected area with large amounts of water and seek medical aid immediately.
- When disposing of expired reagents, waste liquids, waste samples, and consumables, comply with local regulations.

**WARNING**

- Use and store the reagents according to the guide. Failure to do so may negatively impact performance.
- Check the expiration date of all reagents before use. Using expired reagents may cause inaccurate results.

Symbols

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 crated unit for transport and/or storage
	Fragile, handle with care	Indicates a device that can be broken or damaged if not handled carefully
	Keep dry	Indicates a device that needs to be protected from moisture
	Do not stack	Indicates that stacking of the crated unit is prohibited and no item shall be placed on top during transport or storage
	Do not roll	Indicates that the crated unit shall not be rolled or turned over. It shall remain in the upright position at all times
	Temperature limit	Indicates the temperature limits to which the device can be safely exposed
	Humidity limitation	Indicates the range of humidity to which the device can be safely exposed
	Atmospheric pressure limitation	Indicates the range of atmospheric pressure to which the device can be safely exposed

Device

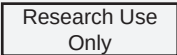
The following table describes symbols on the device:

Symbol	Name	Description
	General warning sign	Signifies a general warning
	Warning; biological hazard	Biological hazard warning
	Caution; hot surface	Indicates that the marked item can be hot and should not be touched without taking proper safety precautions
	Warning; dangerous voltage	Indicates hazards arising from dangerous voltages
	Protective earth	Indicates the terminal of a protective earth (ground) electrode
	Warning; laser beam	Warns of a hazard from laser beam
	"ON" (power)	Indicates the main power supply is on
	"OFF" (power)	Indicates the main power supply is off
SBC-LAN	Network port	Connects to the network
BCS-LAN	Network port	Connects the server to the network
SBC-USB 3.0	USB 3.0 port	Connects USB devices, such as the keyboard and mouse, to the computer
BCS-USB 3.0	USB 3.0 port	Connects USB devices, such as the keyboard and mouse, to the server
VGA	VGA port	Used for display adjustment
BCS-Fiber	Optical fiber port	10 Gigabit network port

Symbol	Name	Description
	RFID (Radio frequency identification) reader indication	Scans the ID of the flow cell or cartridge placed near the area
SWITCH	Power switch	Powers the device on or off
SOCKET	Power port	Connects to the main power 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
	/	Indicates a device that is for research use only, and cannot be used for clinical diagnosis.
	Manufacturer	Indicates the name and address of the device manufacturer
	Date of manufacture	Indicates the date when the device was manufactured
	Serial number	Indicates the manufacturer's serial number so that a specific device can be identified
	Consult instructions for use	Indicates the need for the user to consult the instructions for use
	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.
	Catalog number	Indicates the manufacturer's catalog number so that the device can be identified

Symbol	Name	Description
	Use by date	Indicates the date after which the device is not to be used
	Batch code	Indicates the manufacturer's batch code so that the batch or lot can be identified
	Keep away from sunlight	Indicates a device that needs protection from light sources
	Do not re-use	Indicates a component or reagent that is intended for a single use only
	Part number	Indicates the part number of an individual box in the reagent set
	Version	Indicates the version of the device or reagent kit
	Caution	Indicates that caution is necessary when operating the device, or that the current situation needs operator awareness or operator action in order to avoid undesirable consequences

System guide

The following table describes symbols that are used in this guide:

Symbol	Description
 DANGER	Indicates that the operator should operate the device according to the instructions in this guide. Failure to do so will result in death or serious injury
 WARNING	Indicates that the operator should operate the device according to the instructions in this guide. Failure to do so could result in death or serious injury
 CAUTION	Indicates that the operator should operate the device according to the instructions in this guide. Failure to do so could result in minor or moderate injury
	Indicates that the operator should pay special attention to the noted information, and operate the device by following the instructions
	Indicates biological risk. The operator should operate the device by following the instructions

02

Devices overview

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

Intended use

**WARNING**

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

This device is a sequencing instrument that measures optical and electronic signals of the reporting molecules, which decode the sequence information of a DNA or RNA fragment. This is accomplished through the use of instrument-specific reagents, flow cells, imaging hardware, and data analysis software. The sequencing input is intended to be prepared as DNA Nanoball (DNB) libraries, which can be used for whole genome, whole exome, and de novo sequencing.

Working principle

The device adopts the advanced DNA Nanoball (DNB) and the core technology of combinatorial probe-anchor synthesis (cPAS). It uses a regular, arrayed flow cell with special surface sites. Each site contains a single DNB, which is evenly arrayed across the flow cell, ensuring that the optical signals of nearby Nanoballs cannot be interrupted by each other. This improves the accuracy of signal processing.

The following figure demonstrates how to make DNBs:

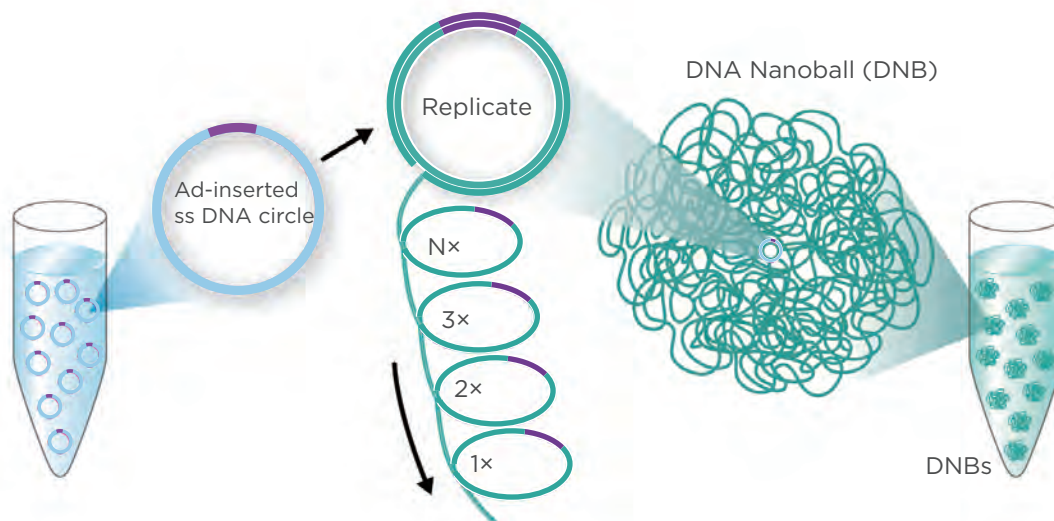


Figure 1 Making DNBs

The following figure demonstrates how to load DNBs:

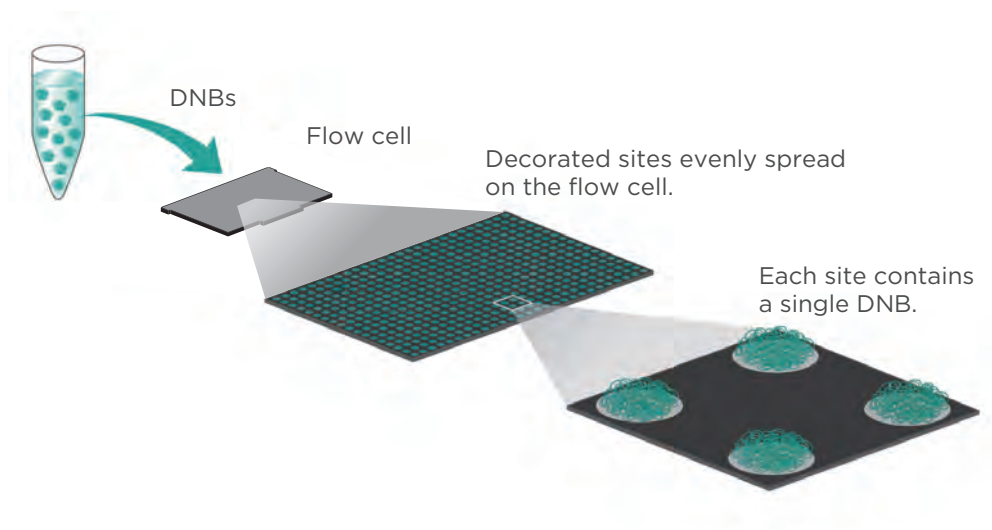


Figure 2 Loading DNBs

The DNBs and sequencing reagents are pumped into the sequencing flow cell through the device's liquid delivery system. Each DNB combines the respective fluorescence group. The laser excites the fluorescence group to emit light, and the optical signals are acquired by the camera. The optical signals are converted to digital intensities and processed by the computer to determine the nucleotide sequence of the DNB.

Sequencer overview

Structural composition

The device consists of the main unit and pre-installed control software (software version: V1). The main unit includes the shell, host, optical system, XYZT-stage, flow cell stage, gas-liquid system, electric control system, reagent storage system, power supply system, display system, robotic arm, flow cell drive, and flow cell retrieval compartment.

The following table describes the function of each component:

Component	Description
Shell	Provides the stable support for the main unit.
Host	Controls the device, collects, analyzes, and stores data.
Optical system	Images the fluorescence signal on the flow cell.
XYZT-stage	Moves the flow cell and focuses automatically.
Flow cell stage	Connects the flow cell to fluidics lines and controls the temperature of the flow cell.
Gas-liquid system	Provides the gas-liquid support that is required for the biochemical reaction.
Electric control system	Controls the electric system.
Reagent storage system	Provides the reagent storage environment.
Power supply system	Provides the power supply for the device.
Display system	Provides the human-computer interaction interface.
Robotic arm	Transfers and loads flow cells.
Flow cell drive	Loads a flow cell for sequencing or washing.
Flow cell retrieval compartment	Holds used flow cells.

Basic components

Front view

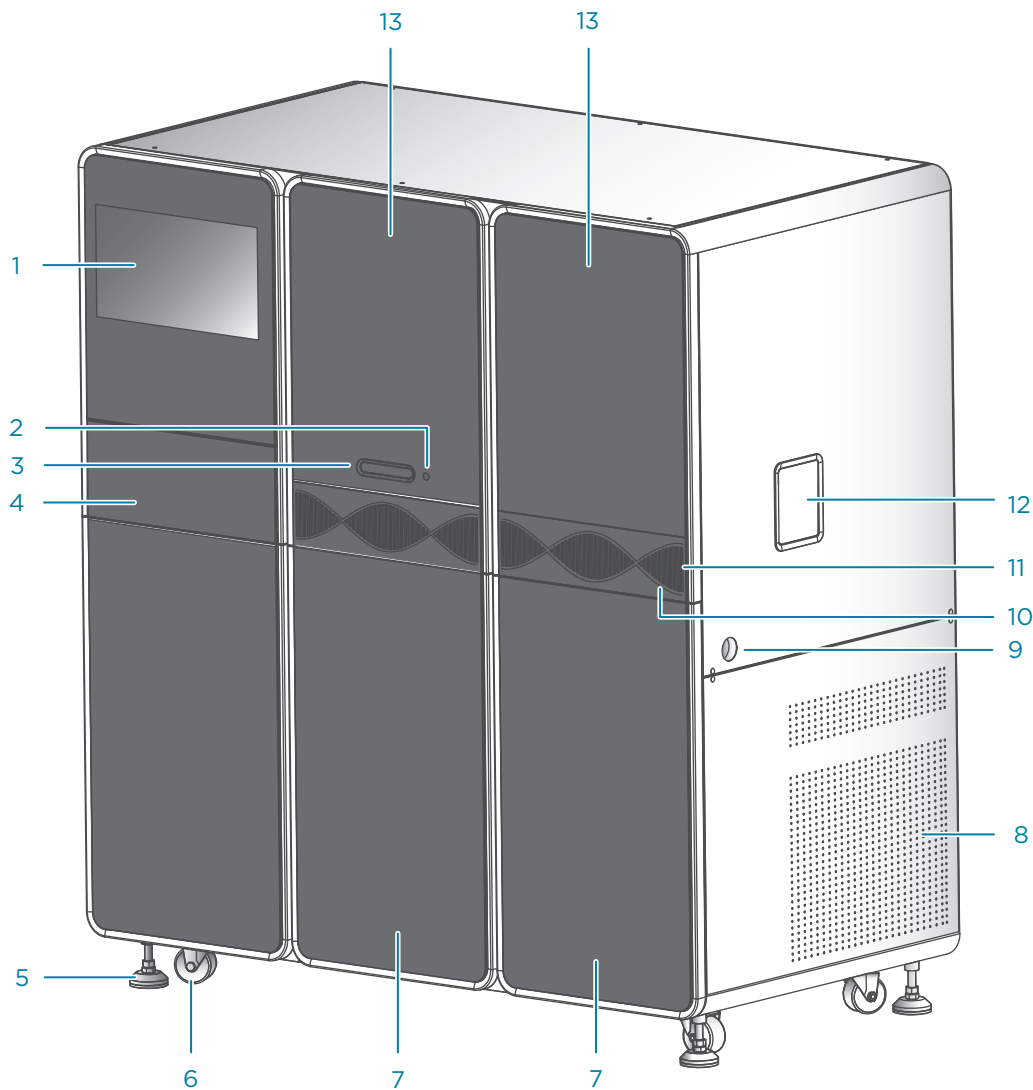


Figure 3 Front view of the sequencer

No.	Name	Description
1	Touch screen monitor	Facilitates on-screen operations and displays information.
2	Flow cell drive button	Touch to eject the flow cell drive.

No.	Name	Description
3	Flow cell drive	Touch the flow cell drive button to eject the flow cell drive.
4	Keyboard tray	When unfolded, you can power the computer on or off and connect USB devices, such as the keyboard and mouse, to the computer.
5	Supporting feet	Supports the main unit to ensure stability.
6	Caster	Used for moving the device.
7	Reagent compartment	Holds reagent kits and samples at appropriate temperatures. You can press to open the door.
8	Ventilation inlet	Ventilates the device.
9	Waste container port	Used for connecting the waste container.
10	Status indicator	Displays the current status of the device: • Green: the device is running. • Blue: the device is in standby status. • Red: an error occurs. • Yellow: a warning notification appears.
11	Ventilation inlet	Air enters the air filter in the device through this inlet.
12	Flow cell retrieval compartment	Retrieves used flow cells.
13	Fluidics maintenance door	Used by CG Technical Support or trained personnel to maintain the fluidics system.

Keyboard and ports

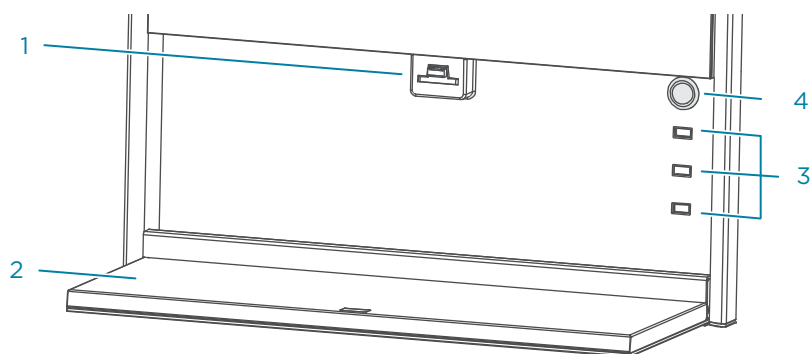


Figure 4 Keyboard and ports

No.	Name	Description
1	Keyboard tray latch	Used to secure the keyboard tray in the closed position.
2	Keyboard tray	Used to support the keyboard and mouse. When not in use, fold the keyboard tray up and press it towards the latch until you hear a click.
3	USB 3.0 port	Connects to USB devices, such as the keyboard and mouse.
4	Host power button	Press to power the computer on or off.

Reagent compartment

The reagent compartments include the sequencing cartridge compartments and washing cartridge compartments. The system automatically identifies the QR code of the cartridges by built-in RFID readers.

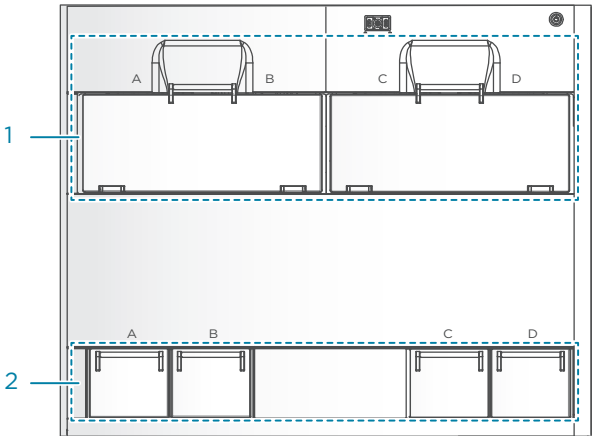


Figure 5 Reagent compartment

No.	Name	Description
1	Sequencing cartridge compartment	Holds the sequencing cartridges at appropriate temperatures.
2	Washing cartridge compartment	Holds the washing cartridges.

Flow cell

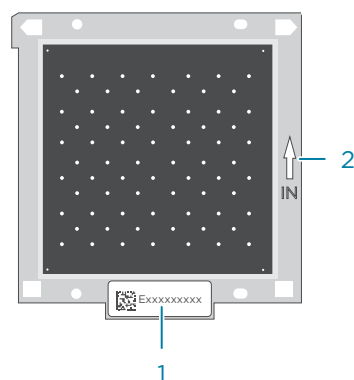


Figure 6 Top view (front side) of the flow cell

No.	Name	Description
1	Label location	Shows the QR (quick response) code of the flow cell.
2	Flow cell orientation marker	Shows correct flow cell orientation.

Back view

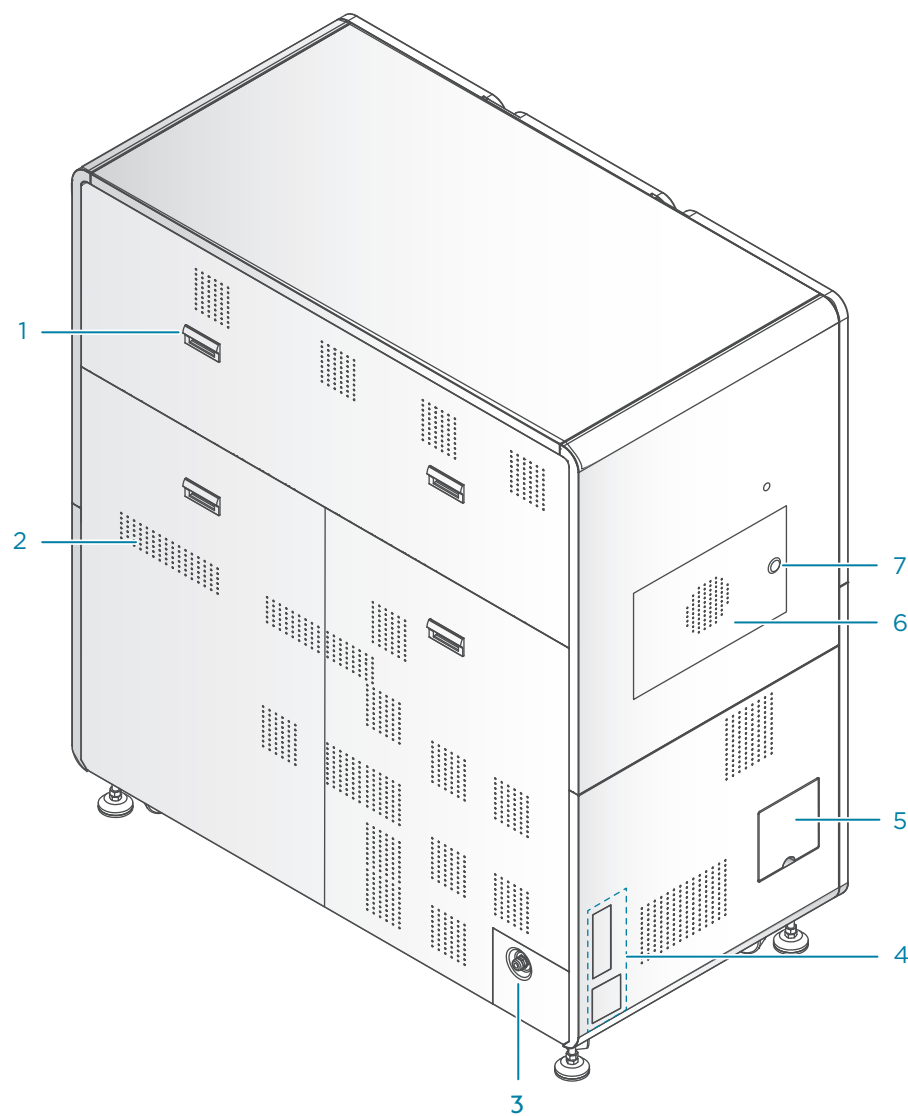


Figure 7 Back view of the sequencer

No.	Name	Description
1	Handle	Used to easily remove the rear panel during maintenance.
2	Ventilation outlet	Ventilates the device.
3	Power inlet	Connects to the power cord.
4	Ports	Used for cable connections.

No.	Name	Description
5	Pure water container port	Connects to the pure water container.
6	Optics maintenance door	Used by CG Technical Support to maintain the optical system.
7	Maintenance door button	Used for opening the door after unlocking.

Ports

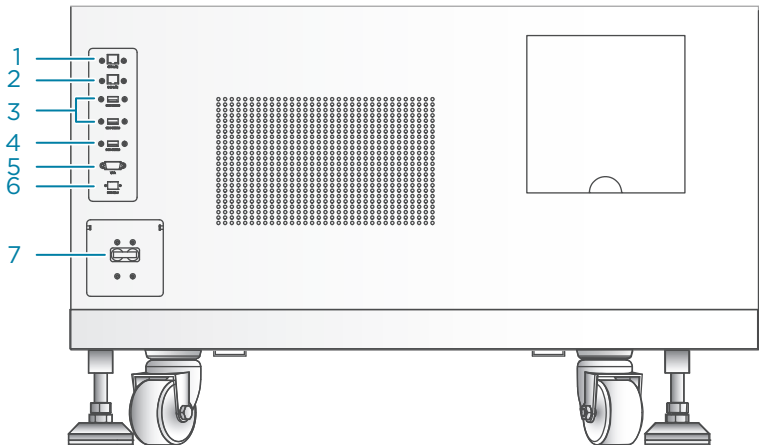


Figure 8 Ports

No.	Name	Description
1	Network port 1	Connects the computer to the network.
2	Network port 2	Connects the server to the network.
3	USB 3.0 port 1	Connects USB devices, such as the keyboard and mouse, to the computer.
4	USB 3.0 port 2	Connects USB devices such as the keyboard and mouse to the server.
5	VGA port	Connects to the LCD screen for adjustment.
6	Optical fiber port	10 Gigabit network port.
7	Power switch	Powers the device on or off: • Switch to the ON position to power the device on. • Switch to the OFF position to power the device off.

Control software

Overview

The system control software initiates the communication protocol through physical ports to coordinate with the hardware, control gas lines, fluidics lines, temperature, mechanical components, and optical components. The software detects the signal on the sequencing flow cell, transfers the photographic information to the base sequence files in standard format, and guides users to perform different processes, such as maintenance and experimental protocols.

The following table describes the function of each functional module:

Item	Description
Self-test	Checks whether the components of the system are functional.
Sequence	Performs different types of sequencing processes.
Wash	Performs wash and maintenance for fluidics lines of the system.

-  Because the flow cell stages have the same functions, flow cell stage A is used as an example in the subsequent sections.
- For interface control, you can use either the touch screen monitor or keyboard and mouse.

Self-test interface

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

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

- In the main interface, select , and select **Log** to check the detailed self-test results that are recorded in the log.
- Follow the on-screen instructions or the solutions that are mentioned in *FAQs on Page 127*
- Perform a self-test again:
 - Select  > **Maintenance** > **Self-test**.
 - Select  > **Restart**.

If the problem persists, contact CG Technical Support.

Main interface

The main interface appears after a successful self-test, as shown in the figure below:

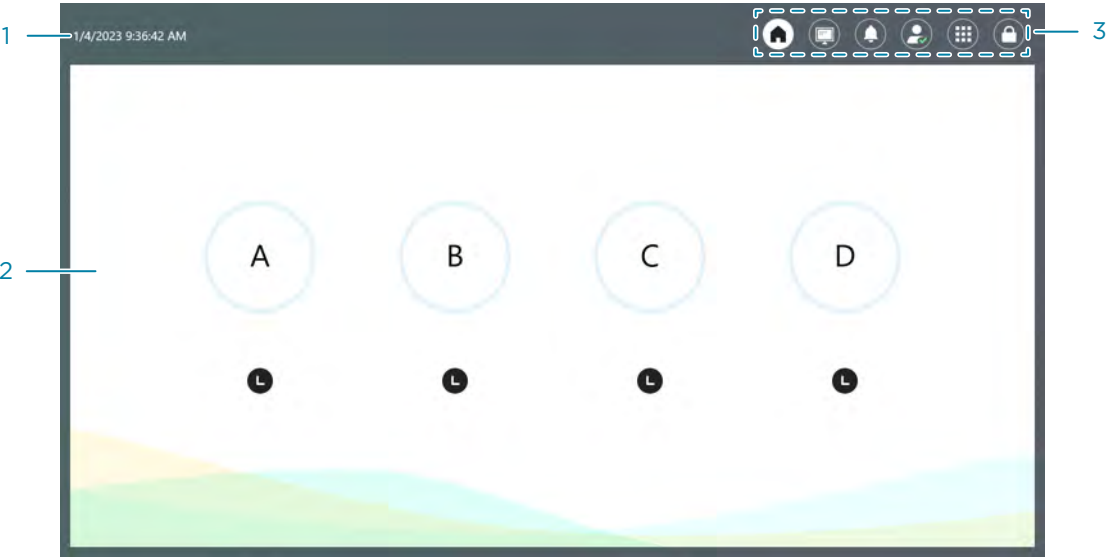


Figure 9 Main interface

The following table describes the function of each area or button in the main interface:

No.	Name	Description
1	Date and time area	Displays the local date and time.
2	Operation area	Indicates the status of flow cells and provides wash and sequence options when you enter the main interface of the selected flow cell stage.
3	Menu area	Select the buttons to perform relative operations.

Operation area

The following table describes the function of icons and buttons in the area:

Item	Description
A	Flow cell stage name If an error occurs in a flow cell stage, an error indicator appears on the progress bar.
xx%	Task progress

Item	Description
	The flow cell stage is in sequencing.
	The fluidics lines of the flow cell stage are being washed.
	The flow cell stage is in idle status.
	The flow cell stage is preparing for sequencing or washing.
	Sequencing or washing is in the process of being paused.
	Sequencing or washing is paused.
	Sequencing or washing is in the process of stopping.

Main interface A

Select a flow cell stage name to enter the main interface for that flow cell stage.

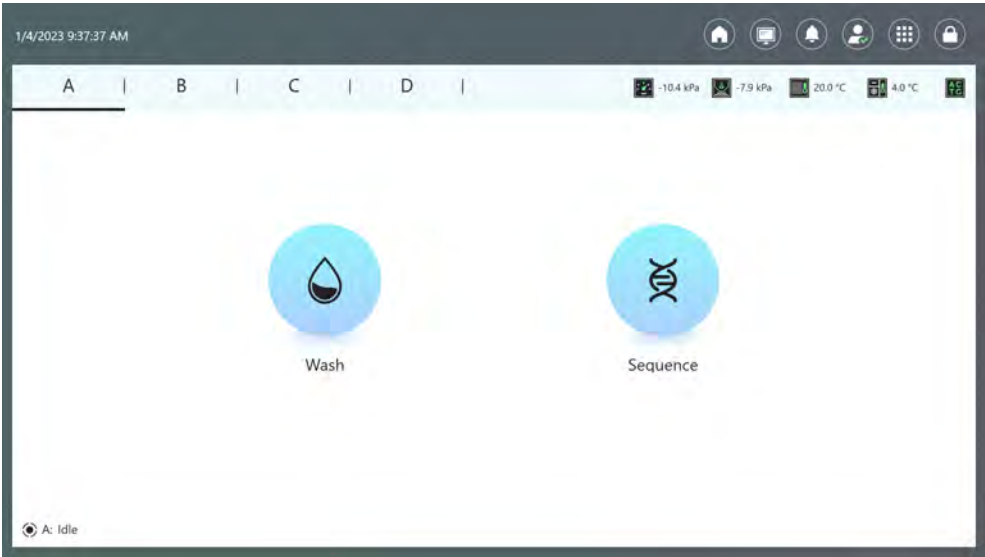


Figure 10 Main interface A

The following table describes the function of the sensor status indicators on the main interface of the selected flow cell stage.

Item	Description
	Basecalling is connected.

Item	Description
	Errors occur in the Basecalling connection.
	The Basecall software is processing image data. This icon is dynamic.
	The fluidics chuck vacuum is normal. The real-time value is displayed to the side.
	The fluidics chuck vacuum is outside the normal range. The real-time value is displayed to the side.
	The fluidics chuck vacuum is almost outside the normal range. The real-time value is displayed to the side.
	The imager vacuum is normal. The real-time value is displayed to the side.
	The imager vacuum is outside the normal range. The real-time value is displayed to the side.
	The fluidics chuck temperature is normal. The real-time value is displayed to the side.
	The fluidics chuck temperature is outside the normal range. The real-time value is displayed to the side.
	The sequencing cartridge compartment temperature is normal. The real-time value is displayed to the side.
	The sequencing cartridge compartment temperature is outside the normal range. The real-time value is displayed to the side.

Menu area

The following table describes control functions in the menu area:

Item	Description
	Select to return to the main interface when the flow cell stage is not preparing for sequencing or washing.
	Sensor status indicator Select to check the status of sensors for all flow cell stages. A red dot appears on the icon when an error occurs.

Item	Description
	Select to view notification details. The notification icon indicates: - Yellow: a warning notification appears. - Red: an error occurs.
	Select to log in to the system.
	Menu button When the device is idle or paused, the system information and logs can be viewed by selecting the menu button.
	After logging into the system, you can select this button to lock the screen.

The following table describes the function of the sensor status indicators in the menu area.

Item	Description
	Error occurs in connection with the server on which the ZLIMS software is installed.
	The device is not connected to the server on which the ZLIMS software is installed and is running independently.
	The device is connected normally to the server on which the ZLIMS software is installed.
	Sufficient storage drive space
	Insufficient storage drive space
	Inner temperature of the device is normal. The real-time value is displayed to the side.
	Inner temperature of the device is outside the normal range. The real-time value is displayed to the side.
	The device humidity is normal. The real-time value is displayed to the side.
	The device humidity is outside the normal range. The real-time value is displayed to the side.
	Sufficient space remaining in the built-in waste container.

Item	Description
	Insufficient space remaining in the built-in waste container. If this occurs, contact CG Technical Support.

Log interface

You can view log information in this interface.

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

The following table describes control functions in the log interface:

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

Settings interface

You can manage recipes and change system settings in this interface.

To open the settings interface, log in to your account, select  , and select **Settings**.

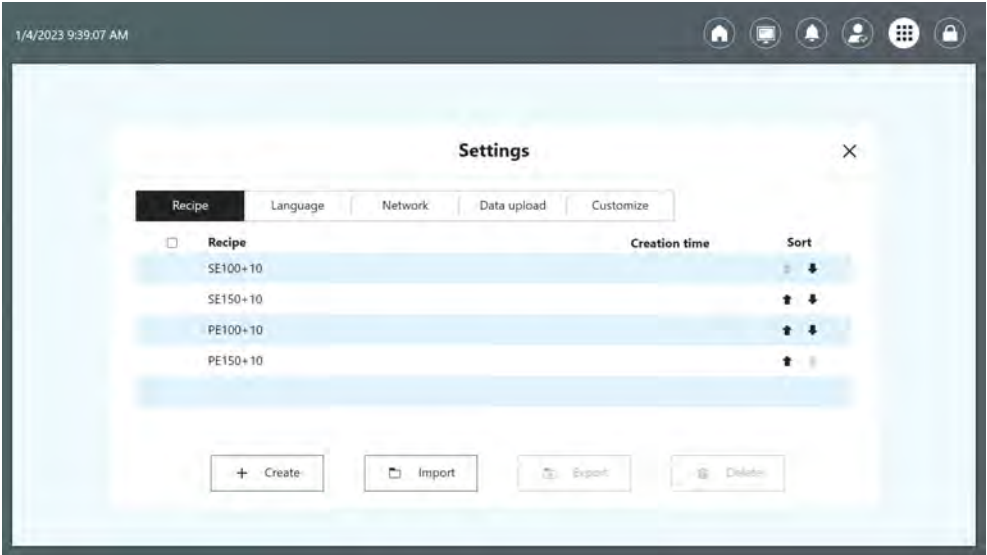


Figure 11 Settings interface

The following table describes control functions in the settings interface:

Item	Description
Recipe	Select to perform the following settings: - Select Sort to change the display order of the recipes. - Select Create to customize a recipe. - Select Import to import recipes. - Select Export to export customized recipes. - Select Delete to delete the customized or imported recipes.
Language	Select to change the language of the software. Restart the computer to apply the change.
Network	Select to input the IP address and port number of the ZLIMS server. Restart the computer to apply the changes.
Data upload	Select to set data processing methods.
Customize	Select to change the wait time before the screen locks automatically and change the buzzer volume.

Maintenance interface

You can empty the fluidics lines and perform self-tests in the maintenance interface.

To open the maintenance interface, log in to your account, select , and select **Maintenance**.

The following table describes control functions in the maintenance interface:

Item		Description
Device maintenance	Cleaning tool replacement	Select to replace the cleaning tool.
	Empty fluidics line	Select this button and select a flow cell stage to discharge the residual liquid in its fluidics line to the waste container.
	Self-test	Select to perform a self-test for the hardware of the device. When the test is finished, you will get a notification and the results will be displayed on the screen.
Door control	Unlock optics maintenance door	Select to unlock the optics maintenance door. Only CG Technical Support or trained personnel can maintain the optical system.
	Unlock fluidics maintenance door	Select to unlock the fluidics maintenance door. Only CG Technical Support or trained personnel can maintain the fluidics system.
User management		Select to reset the password of the current user account.

Shutdown or restart interface

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

To open the shutdown or restart interface, select  and select **Shut down or Restart**.

About interface

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

To open the About interface, select  > **About**.

Sequencing interface

The sequencing interface displays real-time sequencing progress.

The following table describes the function of each item in the sequencing interface:

Item	Description
Estimated completion time	Shows the sequencing completion time.
QC type	You can select a QC value graph from the QC type list to assess the sequencing quality.
	Select to pause sequencing. Select Yes when prompted.
	Select to resume sequencing.
	Select to stop sequencing. Select Yes when prompted.
	Select to view the First Base Report.
	Select to view the summary after a sequencing run completes.
	Select to view sequencing information or change auto wash settings after a sequencing run starts.

DNB loader overview

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 information and performs on-screen operations.
PCR board assembly	Controls the system, drives the components, collects status, and sends feed back to the system.
Y-Z motion stage	Switches among different reagents.
Flow cell stage	Connects the fluidics line to the flow cells, and controls the flow cell stage temperature.
Syringe pump	Aspirates flow cell reagents and discharges the waste to the DNB 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.