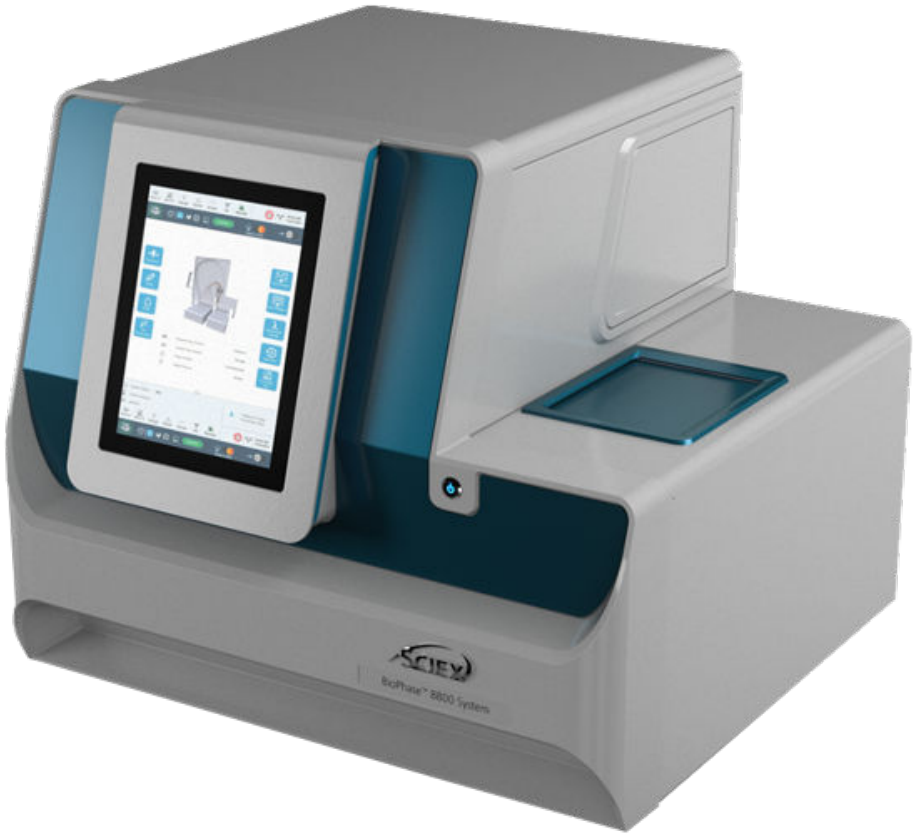
SCIEX
The Power of Precision

BioPhase 8800 System

For BioPhase Software Users

Operator Guide



RUO-IDV-05-8643-E

February 2024

EC Authorized Person

AB Sciex Netherlands B.V.
1e Tochtweg 11,
2913LN Nieuwerkerk aan den Ijssel
Netherlands

AB Sciex Pte. Ltd.
Blk33, #04-06 Marsiling Industrial Estate Road 3
Woodlands Central Industrial Estate, Singapore 739256

Contents

Operational Precautions and Limitations 1

Note: Before operating the system, carefully read all of the sections of this guide.

This section contains information about general safety and regulatory compliance. This section gives descriptions of possible hazards and the related warnings for the system, and the precautions that should be obeyed to minimize the hazards.

In addition to this section, for information about the symbols that are used in the laboratory environment, on the system, and in this documentation, refer to the section: Glossary of Symbols. For site requirements, refer to the document: *Site Planning Guide*.

General Safety Information

To prevent personal injury or system damage, read, understand, and obey all of the safety precautions and warnings in this document, the manufacturer chemical safety data sheets (SDSs), and product label information. Labels are shown with internationally recognized symbols. Failure to heed these warnings could result in serious injury.

This safety information is intended to supplement federal, state, provincial, and local environmental health and safety (EHS) regulations. It does not include every safety procedure that should be practiced. Ultimately, the user and the organization are responsible for compliance with federal, state, provincial, and local EHS regulations and for maintaining a safe laboratory environment.

Refer to the correct laboratory reference material and standard operating procedures.

Documentation Symbols and Conventions

The following symbols and conventions are used throughout the guide.

DANGER! Danger identifies an action that can cause severe injury or death.

WARNING! Warning identifies an action that can cause personal injury if precautions are not obeyed.

CAUTION: Caution identifies an operation that can cause damage to the system or corruption or loss of data if precautions are not obeyed.

Note: Notes supply important information in a procedure or description.

Tip! Tips supply information that helps to apply the techniques in a procedure or gives a shortcut, but that is not essential to the completion of a procedure.

Regulatory Compliance

This system complies with the regulations and standards listed in this section. For dated references, refer to the declaration of conformity included with the system and the individual system components. Applicable labels have been affixed to the system.

Australia and New Zealand

- **Electromagnetic Compatibility (EMC):** Radio Communications Act 1992 as implemented in these standards:
  - Electromagnetic Interference—AS/NZS CISPR 11/ EN 55011/ CISPR 11 (Class A). Refer to the section: Electromagnetic Interference.

Canada

- **Electromagnetic Interference (EMI):** CAN/CSA CISPR11. This ISM device complies with Canadian ICES-001. Refer to the section: Electromagnetic Interference.
- **Safety:**
  - CAN/CSA C22.2 No. 61010-1

Europe

- **Electromagnetic Compatibility (EMC):** Electromagnetic Compatibility Directive 2014/30/EU as implemented in these standards:
  - EN 61326-1
  - EN 55011 (Class A)

  Refer to the section: Electromagnetic Compatibility.
- **Safety:** Machinery Directive 2006/42/EC as implemented in these standards:
  - EN 61010-1
- **Waste Electrical and Electronic Equipment (WEEE):** Waste Electrical and Electronic Equipment Directive 2012/19/EU, as implemented in EN 40519. Refer to the section: Waste Electrical and Electronic Equipment.
- **Packaging and Packaging Waste (PPW):** Packaging and Packaging Waste Directive 94/62/EC

- **RoHS Restriction of Hazardous Substances:** RoHS Directive 2011/65/EU and 2015/863/EU

United States

- **Radio Emissions Interference Regulations:** 47 CFR 15, as implemented in FCC Part 15 (Class A)
- **Safety:** Occupational Safety and Health Regulations, 29 CFR 1910, as implemented in these standards:
  - UL 61010-1

International

- **Electromagnetic Compatibility (EMC):**
  - IEC 61326-1
  - IEC CISPR 11 (Class A)

  Refer to the section: Electromagnetic Compatibility.
- **Safety:**
  - IEC 61010-1

Electrical Precautions

WARNING! Electrical Shock Hazard. Do not remove the covers. If the covers are removed, then injury or incorrect system operation can occur. Removal of the covers is not required for routine maintenance, inspection, or adjustment. For repairs that require removal of the covers, contact a SCIEX field service employee (FSE).

- Obey the required electrical safe work practices.
- Use cable management practices to control electrical cables and decrease the risk of a tripping hazard.

For information about system electrical specifications, refer to the document: *Site Planning Guide*.

Mains Supply

Connect the system to a compatible mains supply as instructed in this guide.

WARNING! Electrical Shock Hazard. Use only qualified personnel for the installation of all of the electrical supplies and fixtures, and make sure that all of the installations adhere to local regulations and safety standards.

WARNING! Electrical Shock Hazard. Use only the mains supply cables that are supplied with the system. Do not use mains supply cables that are not correctly rated for the operation of this system.

WARNING! Electrical Shock Hazard. Make sure that the system can be disconnected from the mains supply in an emergency by disconnecting the mains supply cable from the mains supply inlet at the back of the system. Do not block the back of the system.

Protective Earth Conductor

The mains supply must include a correctly installed protective earth conductor. The protective earth conductor must be installed or examined by a qualified electrician before the system is connected.

WARNING! Electrical Shock Hazard. Do not intentionally interrupt the protective earth conductor. Any interruption of the protective earth conductor causes an electrical shock hazard.

Chemical Precautions

WARNING! Ionizing Radiation Hazard, Biohazard, or Toxic Chemical Hazard. Before cleaning or maintenance, identify whether decontamination is required. If radioactive materials, biological agents, or toxic chemicals have been used with the system, then the customer must decontaminate the system before cleaning or maintenance.

WARNING! Environmental Hazard. Do not discard system components in municipal waste. To discard components correctly, obey local regulations.

- Before servicing and regular maintenance, identify the chemicals that have been used in the system. For the health and safety precautions that must be obeyed for a chemical, refer to the safety data sheet (SDS). For storage information, refer to the certificate of analysis. To find a SCIEX SDS or certificate of analysis, go to sciex.com/tech-regulatory.
- Always wear assigned personal protective equipment, including powder-free gloves, protective eyewear, and a laboratory coat.

  Note: Nitrile or neoprene gloves are recommended.

- Do work in a well-ventilated area or fume hood.
- When flammable materials such as isopropanol, methanol, and other flammable solvents are in use, do not go near ignition sources.
- Be careful with the use and disposal of any chemicals. If the correct procedures for chemical handling and disposal are not obeyed, then personal injury can occur.
- During cleaning, do not let chemicals touch the skin. Wash hands after use.
- Collect all spent liquids and discard them as hazardous waste.
- Obey all of the local regulations for the storage, handling, and disposal of biohazardous, toxic, and radioactive materials.

System Safe Fluids

CAUTION: Potential System Damage. Do not use any other fluid until confirmation is received from SCIEX that it does not cause a hazard. This is not an exhaustive list.

CAUTION: Potential System Damage. Do not use organic solvents, such as methanol or acetone, to clean the capillary window. Organic solvents can dissolve the adhesives and make a residue on the capillary window that might interfere with the detector.

Any substance in a BioPhase 8800 reagent kit, or referenced in an application guide, can safely be used with the system. In addition, the following fluids can also be used with the system. To determine compatibility with other chemicals, contact sciex.com/request-support.

- **Acids and Bases**

  The pH range is from 2 to 12.

  - Acetic acid, maximum 10%
  - Sodium hydroxide, maximum 1 M
  - Hydrochloric acid, maximum 1 M
- **Reagents**
  - CE Grade Water

Physical Precautions

WARNING! Lifting Hazard. Use a mechanical lifting device to lift and move the system. If the system must be moved manually, then at least four people are required to move the system safely. Follow established safe lifting procedures. We recommend the use of a professional moving service.

Environmental Precautions

Use qualified personnel for the installation of electrical mains, heating, ventilation, and plumbing supplies and fixtures. Make sure that all of the installations comply with local bylaws and biohazard regulations. For information about the required environmental conditions for the system, refer to the document: *Site Planning Guide*.

When the system is set up, make sure that there is sufficient access space around the equipment.

WARNING! Biohazard. If biohazardous materials have been used with the system, always obey local regulations for hazard assessment, control, and handling. Neither this system nor any part is intended to be used as a biological containment.

WARNING! Environmental Hazard. Obey established procedures for disposal of biohazardous, toxic, radioactive, and electronic waste. The customer is responsible for the disposal of hazardous substances, including chemicals, waste oils, and electrical components, in accordance with local laws and regulations.

Electromagnetic Environment

Electromagnetic Compatibility

Basic Electromagnetic Environment: Environment existing at locations characterized by being supplied directly at low voltage from the public mains network.

The equipment is intended for use in a basic electromagnetic environment.

Make sure that a compatible electromagnetic environment for the equipment can be maintained so that the device will operate as intended. If the power supply line is subject to high electrical noise, then install a surge protector.

Electromagnetic Interference

Group 1 Equipment: This equipment is classified as industrial, scientific, and medical (ISM) equipment that might use RF energy for internal operation.

Class A Equipment: Equipment which is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes. [Derived from CISPR 11:2009, 5.3] Class A equipment shall meet Class A limits.

CAUTION: Potential Radio Interference. This equipment is not intended for use in residential environments and may not supply adequate protection to radio reception in such environments.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC (Federal Communications Commission) Compliance Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operator's manual, can cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case you will be required to correct the interference, at your own expense. Changes or modifications not expressly approved by the manufacturer could void your authority to operate the equipment.

Decommissioning and Disposal

WARNING! Environmental Hazard. Obey established procedures for disposal of biohazardous, toxic, radioactive, and electronic waste. The customer is responsible for the disposal of hazardous substances, including chemicals, waste oils, and electrical components, in accordance with local laws and regulations.

Before decommissioning, obey local regulations to decontaminate the entire system.

When the system is removed from service, obey national and local environmental regulations to divide and recycle different materials.

Note: SCIEX will not accept any system returns without a completed *Decontamination Form*. Contact an FSE to get a copy of the form.

Do not discard system components or subassemblies, including computer parts, as unsorted municipal waste.

Waste Electrical and Electronic Equipment

Obey local municipal waste ordinances for the correct disposal provisions to decrease the environmental impact of waste, electrical, and electronic equipment (WEEE). To discard this equipment safely, contact a local Customer Service office for complimentary equipment pick-up and recycling.

UV Radiation Precautions

WARNING! Ultraviolet Radiation Hazard. Prevent exposure to direct or reflected UV radiation. Ultraviolet radiation is harmful to the eyes and skin. Do not operate the UV source without the required system safety interlocks.

Laser Precautions

This section is applicable for systems that have a laser-induced fluorescence (LIF) detection system.

WARNING! Laser Hazard. Obey all local codes, regulations, and standards, and internal requirements that are applicable to laser safety.

WARNING! Laser Hazard. To prevent exposure to hazardous laser radiation, do not use different equipment and controls or do procedures differently than what is documented in this guide.

WARNING! Personal Injury Hazard. Do not look directly into the anticipated path of the laser beam or at any specular reflections of the laser beam. Invisible ultraviolet radiation from the laser can cause injury to the eyes.

WARNING! Personal Injury Hazard. Do not remove the outer cover of the laser assembly. If the cover is not present, then exposure to potentially harmful laser radiation is possible.

The LIF detection system contains a Class I laser system in a sealed module. The module contains an embedded Class 3B laser component. The 3B classification means that direct intrabeam viewing of this type of laser is always hazardous to personnel.

The laser assembly contains the laser and several other components in a sealed housing, and has no user-serviceable parts. Service of the laser assembly is restricted to qualified SCIEX field service employees (FSEs). Therefore, the overall laser classification of the system is Class 1, defined as lasers that are safe under reasonably foreseeable conditions of operation.

Qualified Personnel

Only qualified SCIEX personnel are permitted to install, examine, and supply servicing for the equipment. After the system has been installed, the field service employee (FSE) uses the document: *Installation Qualification* to help the customer become familiar with system operation, cleaning, and basic maintenance. If a system under warranty is serviced by personnel who are not authorized by SCIEX, then SCIEX is not responsible to repair any damage caused by the servicing.

Laboratory Conditions

Safe Environmental Conditions

The system is designed to operate safely in these conditions:

- Indoors

- Altitude: Up to 2,000 m (6,560 ft) above sea level
- Ambient temperature: 15 °C (59 °F) to 40 °C (104 °F)
- Relative humidity: 20% to 80%, noncondensing
- Mains supply voltage fluctuations: ±10% of the nominal voltage
- Transient overvoltages: Up to the levels of Overvoltage Category II
- Temporary overvoltages on the mains supply
- Pollution Degree 2

Performance Specifications

The system is designed to meet specifications in these conditions:

- An ambient temperature of 15 °C to 30 °C (59 °F to 86 °F).

  Over time, the temperature must stay approximately 4 °C (7.2 °F), with the rate of the change in temperature not more than 2 °C (3.6 °F) per hour. Ambient temperature fluctuations that are more than the limit might cause shifts in migration time.
- Relative humidity from 30% to 70%, noncondensing.

Equipment Use and Modification

WARNING! Electrical Shock Hazard. Do not remove the covers. If the covers are removed, then injury or incorrect system operation can occur. Removal of the covers is not required for routine maintenance, inspection, or adjustment. For repairs that require removal of the covers, contact a SCIEX field service employee (FSE).

WARNING! Personal Injury Hazard. Use only parts that are recommended by SCIEX. The use of parts that are not recommended by SCIEX or the use of parts for any purpose other than their intended purpose can put the user at risk of harm or have a negative effect on system performance.

WARNING! Lifting Hazard. Use a mechanical lifting device to lift and move the system. If the system must be moved manually, then at least four people are required to move the system safely. Follow established safe lifting procedures. We recommend the use of a professional moving service.

Use the system indoors in a laboratory that has the environmental conditions recommended in the document: *Site Planning Guide*, or contact an FSE.

If the system is used in conditions or in an environment that are not approved by the manufacturer, then the performance and protection that is supplied by the equipment might be decreased or lost.

Contact an FSE for information about servicing the system. Unauthorized modification or operation of the system might cause personal injury and equipment damage, and might void the warranty. If the system is operated outside the recommended environmental conditions or with unauthorized modifications, then the acquired data might be inaccurate.

Introduction 2

This guide describes the basic operation, troubleshooting, and maintenance of the BioPhase 8800 system. Read this guide thoroughly before the product is used, and operate the product in accordance with the instructions in this guide.

This guide supplies safety instructions and precautions to make sure that the user operates the system safely. Obey all Warning and Caution instructions in this guide.

Description

The BioPhase 8800 system is an eight-channel capillary electrophoresis system that can do separations for up to 96 samples without user intervention.

The BioPhase 8800 system includes the following components:

- A touchscreen on the front panel of the system
- A UV source and detector
- (Optional) A 488 nm laser and an LIF detection system
- The BioPhase software to create methods and sequences for data acquisition. An application for data analysis, the BioPhase Analysis software, is included with the BioPhase software.
- (Optional) BioPhase 8800 driver for Empower™. Data collected with the BioPhase 8800 driver for Empower™ cannot be analyzed with the BioPhase Analysis software.

For BioPhase software users, a computer and monitor are required for method and sequence development and data analysis. Customers can purchase a computer and monitor from SCIEX or supply their own. For computer specifications and requirements, refer to the documents: *Site Planning Guide* or *Software Release Notes*.

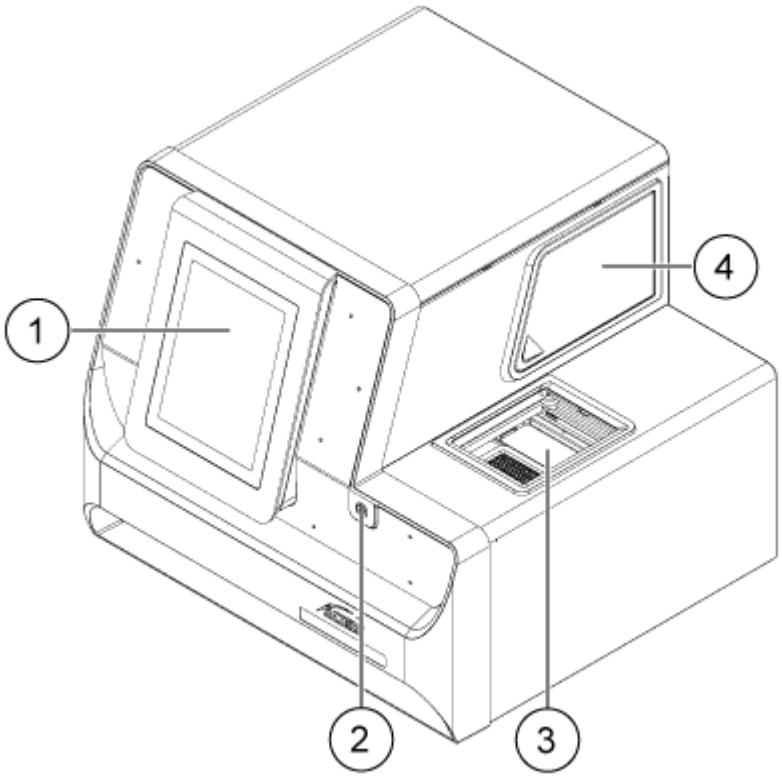
For BioPhase 8800 driver for Empower™ software users, the driver is installed on the computer with the Waters Empower™ software. For computer specifications and requirements, refer to the documents: *Site Planning Guide* or *Software Release Notes*.

The system uses pre-assembled cartridges, with either eight bare fused-silica or eight neutral capillaries.

SCIEX offers analysis kits designed to operate with the BioPhase 8800 system. The kits include reagents and sample and reagent plates.

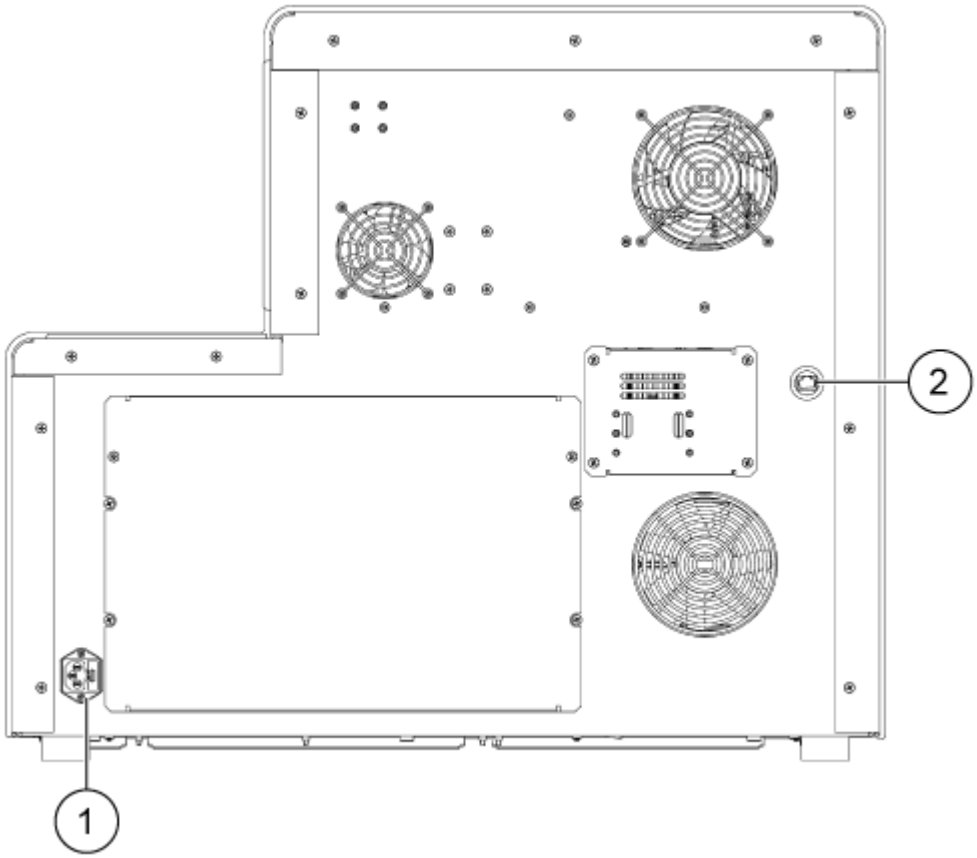
Hardware Overview

Figure 2-1 Front and Side Panel, with Plate Compartment Open



Item	Description
1	Front panel
2	Power button
3	Plate compartment with door open
4	Optics door

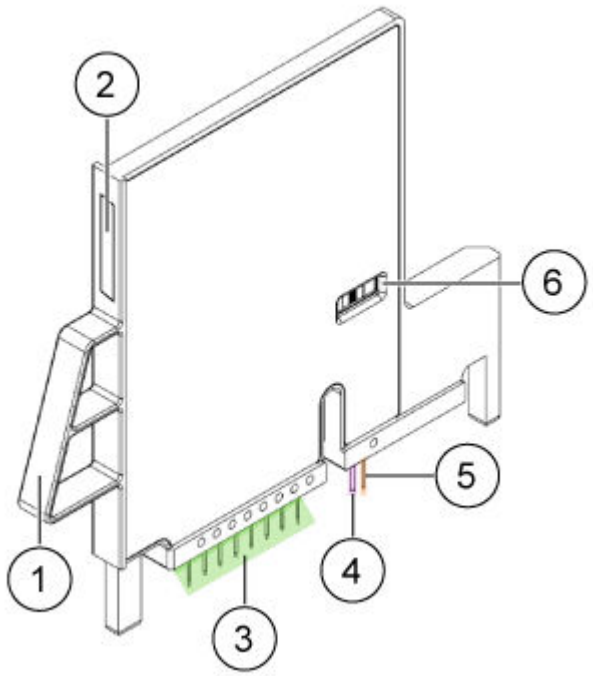
Figure 2-2 Back Panel



Item	Description
1	Mains supply connection and fuse holder
2	RJ-45 network connector

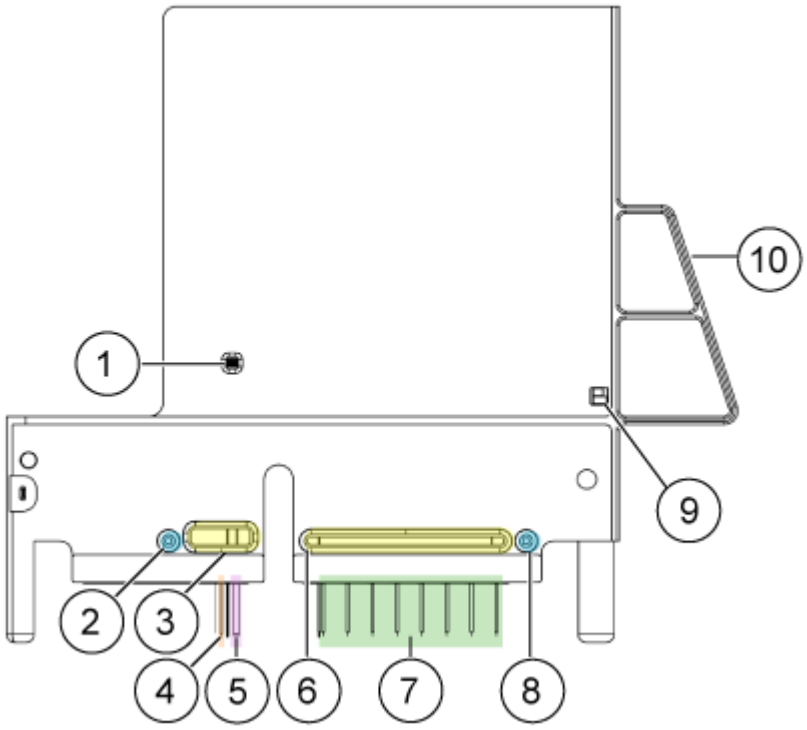
Cartridge

Figure 2-3 Cartridge Front



Item	Description
1	Handle
2	Serial number label
3	Capillary inlets and electrodes
4	Capillary outlet
5	Electrode
6	Capillary window

Figure 2-4 Cartridge Back



Item	Description
1	Capillary window
2	Pressure outlet port
3	Coolant outlet port
4	Electrode
5	Capillary outlet
6	Coolant inlet port
7	Capillary inlets (from left to right, capillaries A to H) and electrodes
8	Pressure inlet port
9	ID chip
10	Handle

Available Cartridges

The BioPhase 8800 cartridge is available with eight capillaries in the following configurations:

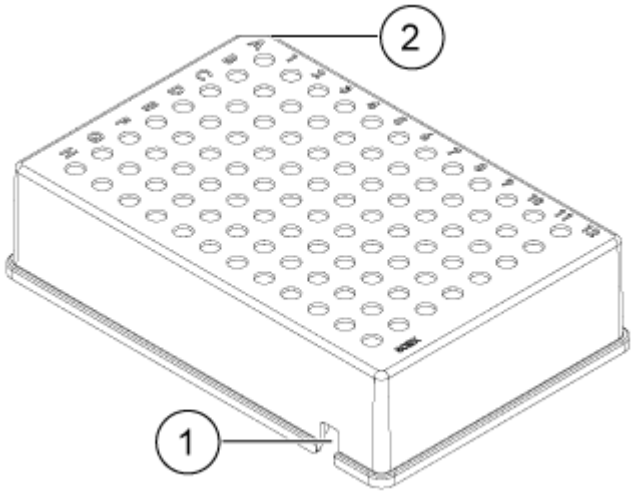
- 50 µm i.d. × 30 cm bare fused-silica capillaries
- 50 µm i.d. × 30 cm neutral capillaries

The Sample Plate

The BioPhase 8800 system uses a 96-well sample plate.

To configure the plate for use in an automated liquid-handling system, refer to the section: Plate Specifications.

Figure 2-5 Sample Plate

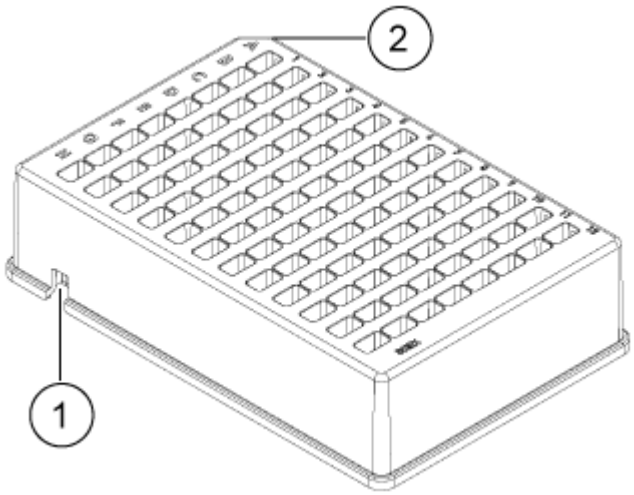


Item	Description
1	Alignment notch
2	Chamfered corner

The Reagent Plate

To configure the plate for use in an automated liquid-handling system, refer to the section: Plate Specifications.

Figure 2-6 Reagent Plate

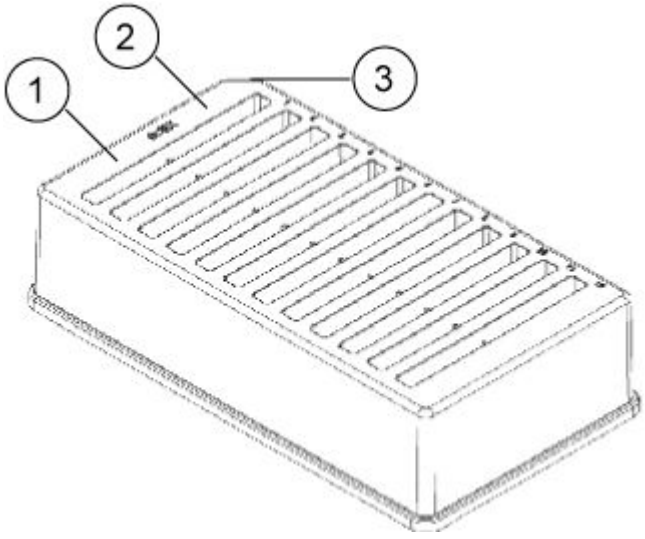


Item	Description
1	Alignment notch
2	Chamfered corner

The Outlet Plate

To configure the plate for use in an automated liquid-handling system, refer to the section: Plate Specifications.

Figure 2-7 Outlet Plate



Item	Description
1	Reagent wells
2	Overflow wells, leave empty
3	Chamfered corner

Theory of Operation

Capillary electrophoresis (CE) is a technology to separate and quantify sample components. In CE methods, analytes migrate through electrolyte solutions under the influence of an electric field. Analytes can be separated according to mobility or partitioning into an alternate phase by noncovalent interactions. Analytes can also be concentrated or *focused* by means of conductivity or pH gradients.

Data acquisition on the BioPhase 8800 system is started from a touchscreen on the front panel of the instrument. The BioPhase software is used to develop methods and sequences and to analyze the acquired data. The software can be installed on a local computer that is directly connected to the instrument or on a computer that is connected to the system over a network.

The UV Detection System

The UV detection system includes an ultraviolet light source, wavelength filters, and a photodiode detector.

The UV source is a deuterium lamp with a wavelength range from 190 nm to 400 nm. Two lenses focus and direct the output of the lamp through one of the wavelength-selecting filters. The beam continues through the aperture in the cartridge and then through the detection window, which is a section of the capillary that has been treated to remove the polyimide coating. The transmitted beam continues to the photodiode. The light signal is converted to an electrical signal, digitized, and then sent to the software for processing.

The filter holder has space for two filters. The BioPhase 8800 system is shipped with two 25 nm bandwidth filters: 220 nm and 280 nm. More filters are available from SCIEX. Refer to the table: Table 9-1.

The Laser-Induced Fluorescence (LIF) Detection System

The LIF detection system is an optional component.

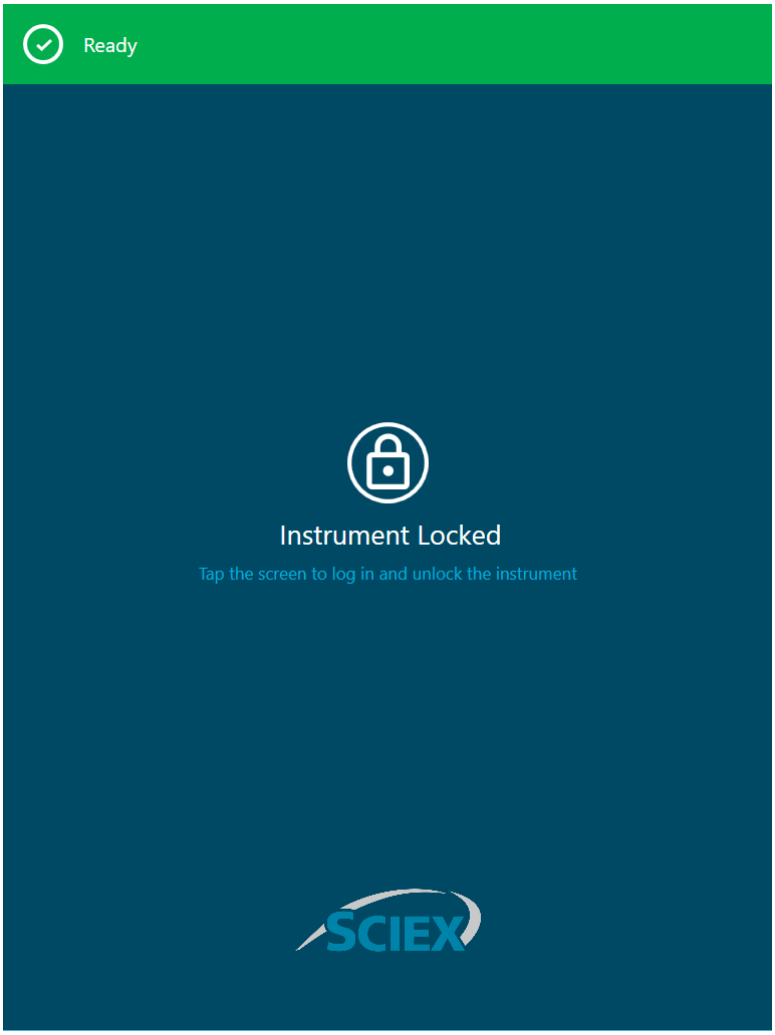
The LIF detection system uses a solid-state 488 nm laser light source. The excitation light is transmitted from the laser to the capillaries in the cartridge. Substances in the capillary that fluoresce at the laser wavelength are detected. The LIF detector measures and records this fluorescence, which is shown as a peak on the electropherogram. A 520 nm emission filter is supplied with the instrument. More filters are available from SCIEX. Refer to the table: Table 9-1.

Turn on the System and Log On

For the log in access, the customer will receive the instructions about the domain isolator and the Project Management software. The customer is required to add their name in the Project Name in the Project Management software to log onto the front panel.

1. Press the power button on the front of the system.

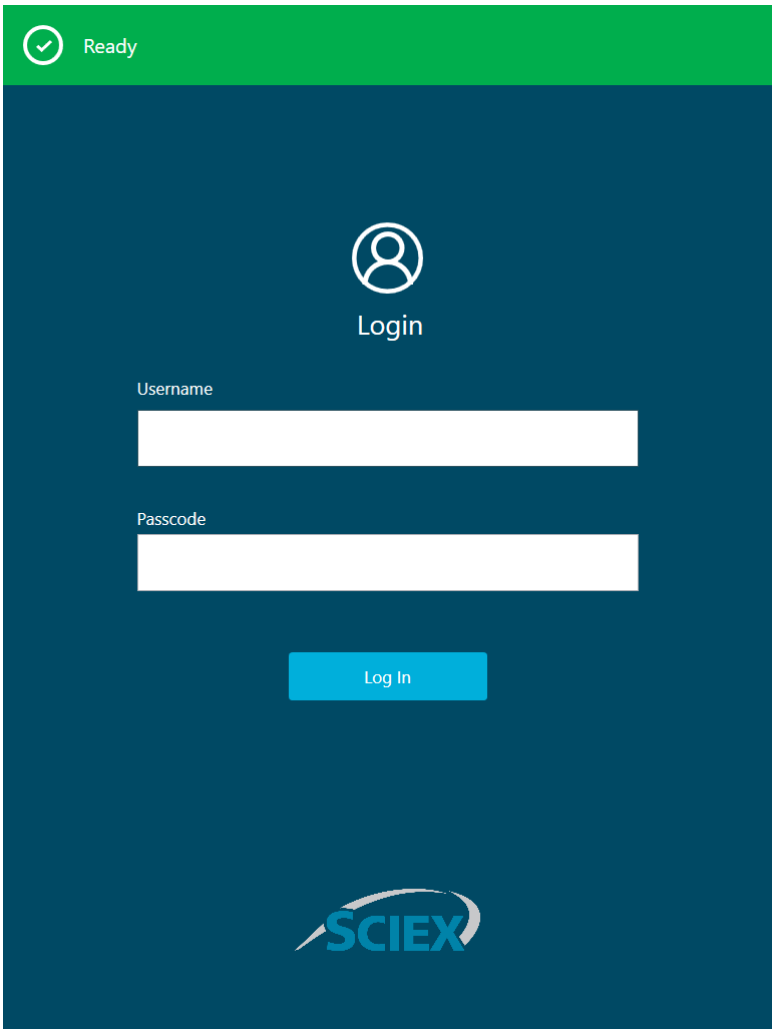
Figure 2-8 Instrument Locked Window



2. On the front panel, touch the screen to unlock the system and see the front panel log-in screen.
3. Log in to the BioPhase 8800 system front panel.
   - For a local configuration, use the local PC username and passcode.

- For a network configuration, use the network domain username and passcode.

Figure 2-9 Front Panel Login



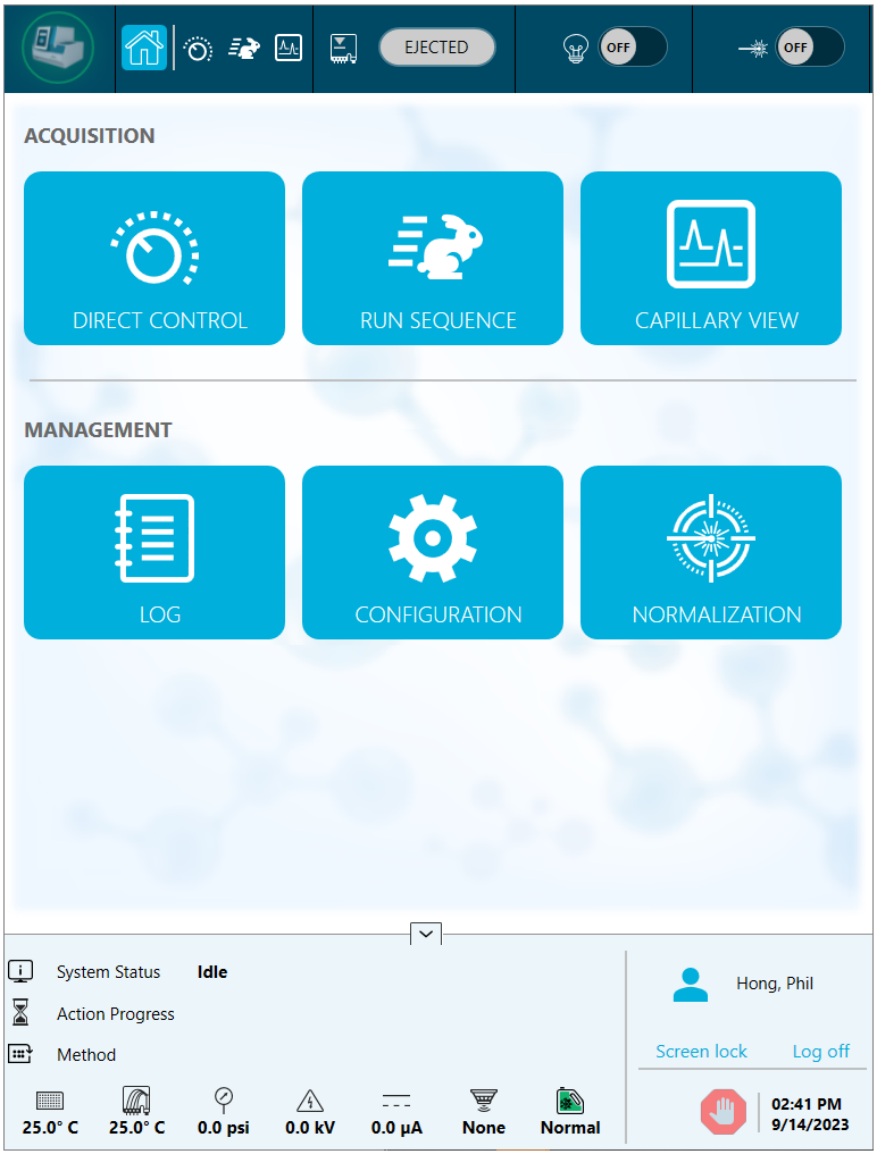
4. Touch **Log In**.

BioPhase 8800 System Front Panel 3

This section describes the ribbon, status panel, and functions available in the Acquisition and Management groups on the front panel home page of BioPhase 8800 system.

Note: If the current user is not an administrator, then the **CONFIGURATION** button is not shown.

Figure 3-1 Front Panel Home Page



Front Panel: Ribbon

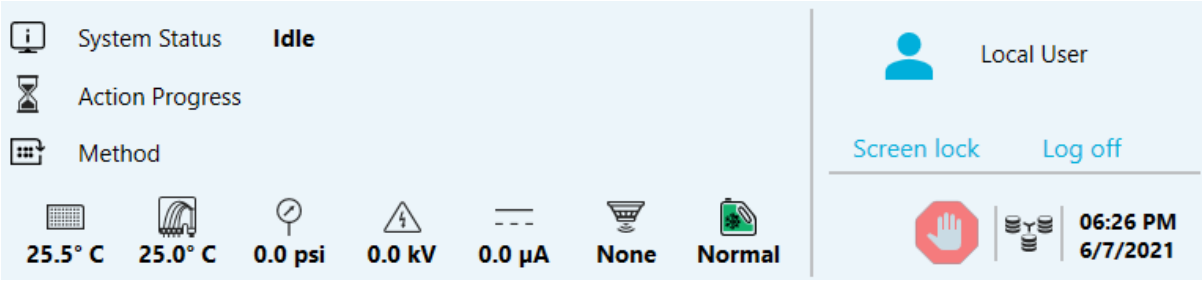
Figure 3-2 Ribbon Functions

Item	Description
1	Touch to see light sources usage, firmware and software versions, and to turn power to the instrument off.
2	Touch to see the home page.
3	Touch to see the Direct Control functions.
4	Touch to see the Run Sequence functions.
5	Touch to see the most recently collected data acquired by the system.
6	Shows the cartridge status. **Note:** The icon changes to green when the cartridge is loaded.
7	Touch to change the cartridge status to `LOADED` or `EJECTED`.
8	Touch to turn the UV lamp **ON** or **OFF**. **Note:** After the lamp is turned on, a timer counts down from 30 minutes and shows the time remaining before the lamp is ready.
9	Touch to turn the LIF laser **ON** or **OFF**. **Note:** After the laser is turned on, a timer counts down from 15 minutes and shows the time remaining before the lamp is ready. The LIF laser button is unavailable if the LIF detection system is not installed on the instrument.

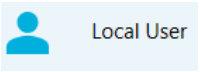
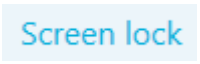
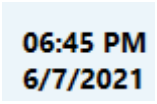
Front Panel: Status

The status panel at the bottom of the front panel shows the system information and status.

Figure 3-3 Front Panel Status

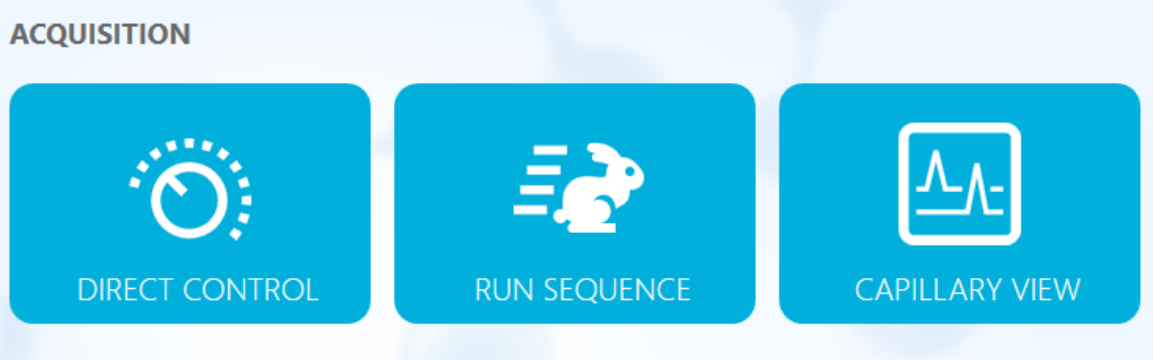


Item	Description
System Status	Shows the system status.
Action Progress	Shows the progress status of the current method.
Method	Shows the method name.
24.8° C	Shows the sample storage temperature.
25.0° C	Shows the cartridge temperature.
0.0 psi	Shows the pressure.
0.0 kV	Shows the voltage of the capillaries.
0.0 µA	Shows the current of the capillary.

Item	Description
	Shows the detector type.
	Shows the coolant level. • Blue: Too full. If the icon is blue, then do not add more coolant. • Green: Acceptable. • Yellow: Low. • Orange: Almost empty. If the icon is orange, then system operation might stop while a run is in progress. • Red: Empty. If the icon is red, then the system will not operate.
	Shows system warnings or errors. This information is also recorded in the log.
	Shows the name of the current user.
	Touch to lock the front panel touchscreen.
	Touch to log off.
	Touch to stop the sequence.
	Shows the current time and date.

Front Panel: Acquisition Functions

Figure 3-4 Acquisition Functions



Item	Description
Direct Control	Touch to see the options for manual control of the instrument. Refer to the section: Direct Control.
Run Sequence	Touch to see the Run Sequence functions. Refer to the section: Start the Sequence from the Front Panel.
Capillary View	Touch to see the electropherograms and auxillary channels in tile or overlay view for the detector, current, pressure, and voltage. Refer to the section: Capillary View.

Direct Control

This section describes the Direct Control functions on the front panel of the BioPhase 8800 system.

Figure 3-5 Direct Control Window

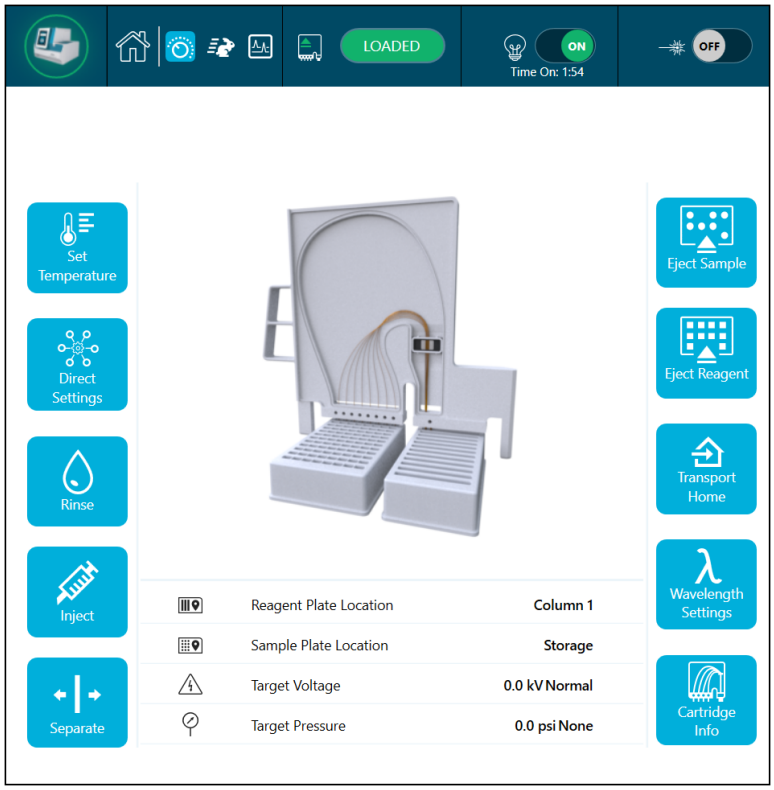
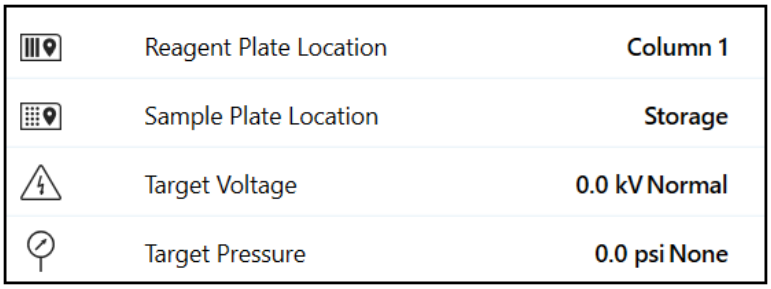


Figure 3-6 Information



Label	Description
Reagent Plate Location	Shows the location of the reagent plate. **Note:** When the cartridge is located at the reagent plate, the plate column position is identified.

Label	Description
Sample Plate Location	Shows the location of the sample plate. **Note:** When the cartridge is located at the sample plate, the plate column position is identified.
Target Voltage	Shows the target voltage in kV.
Target Pressure	Shows the target pressure in psi.

Table 3-1 Direct Control Functions

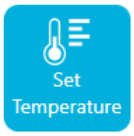
Item	Description
	Touch to see or edit the temperature parameters. Refer to the section: Set Temperature.
	Touch to see or edit the direct settings parameters. Refer to the section: Direct Settings
	Touch to see or edit the pressure rinse parameters. Refer to the section: Rinse.
	Touch to see or edit the voltage inject and pressure inject parameters. Refer to the section: Inject.
	Touch to see or edit the voltage separation parameters. Refer to the section: Separate.
	Touch to eject the sample plates. Refer to the section: Load or Eject Plates.

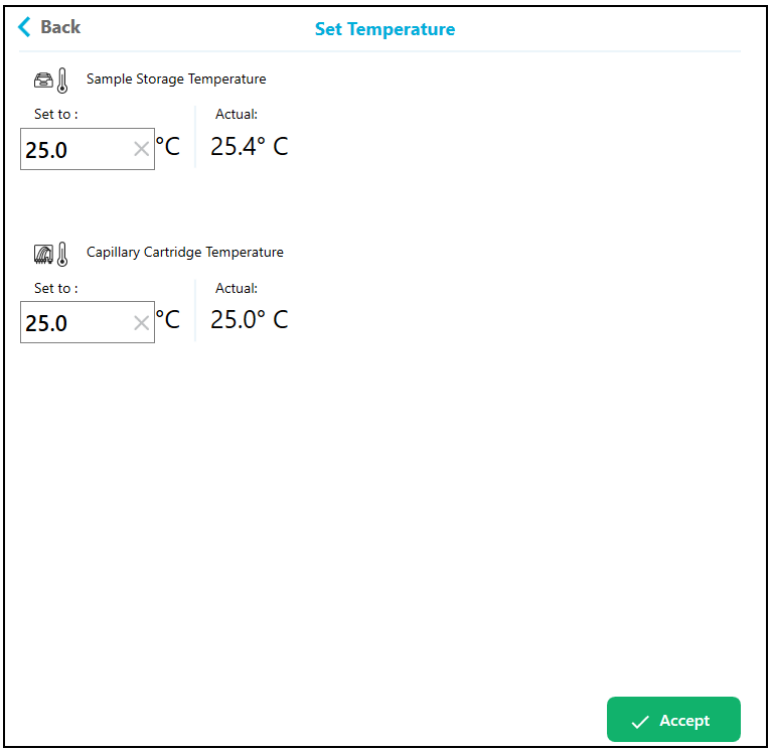
Table 3-1 Direct Control Functions (continued)

Item	Description
	Touch to eject the reagent plates. Refer to the section: Load or Eject Plates.
	Touch to move the reagent and sample plates to the home position. When the reagent plate is at the home position, the capillaries are in column 1 of the reagent plate. Refer to the section: Transport Home.
	Touch to see or edit the wavelength settings parameters or replace the UV lamp, UV filter, or LIF filter. Refer to the section: Wavelength Settings.
	Touch to see or edit the cartridge information parameters. Refer to the section: Cartridge Info.

Set Temperature

Use the Set Temperature section to adjust the temperature for the sample storage compartment and the capillary cartridge.

Figure 3-7 Set Temperature

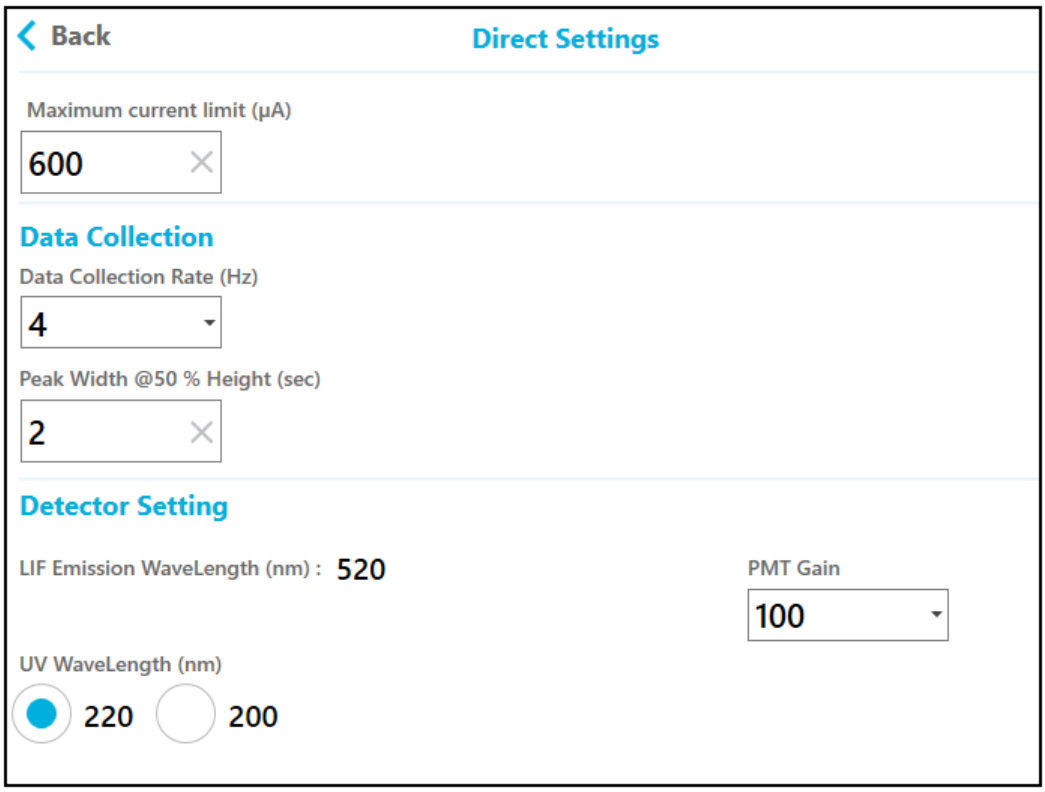


Label	Description
< Back	Touch to go back to the Direct Control window.
Sample Storage Temperature	Touch to set the temperature of the sample storage compartment, from 4 °C to 37 °C. The actual temperature is shown in °C on the right. If the system is idle for 24 hours, then to prevent condensation, the sample cooler turns off. The temperature of the sample storage compartment will increase to the ambient temperature.
Capillary Cartridge Temperature	Touch to set the temperature of the capillary cartridge, from 15 °C to 40 °C. The actual temperature is shown in °C on the right.
Accept	Touch to accept all the changes.

Direct Settings

Use the Direct Settings section to adjust the maximum current limit, data collection rate, and peak width.

Figure 3-8 Direct Settings



Label	Description
< Back	Touch to go back to the Direct Control window.
Maximum current limit (µA)	Touch to set the maximum current limit value in the 10 µA to 600 µA range.
Data Collection	
Data Collection Rate (Hz)	Select a value to set the data collection rate from the list. The values shown in the list are 1 Hz, 2 Hz, 4 Hz, and 8 Hz for the UV light source and 2 Hz, 4 Hz, 8 Hz, and 10 Hz for the LIF light source.
Peak Width (sec)	Touch to set the peak width value in the 1 to 20 second range.
Detector Setting	
LIF Emission Wavelength (nm)	Shows the LIF emission filter wavelength value in nm. To set the wavelength, refer to the topic: Wavelength Settings.

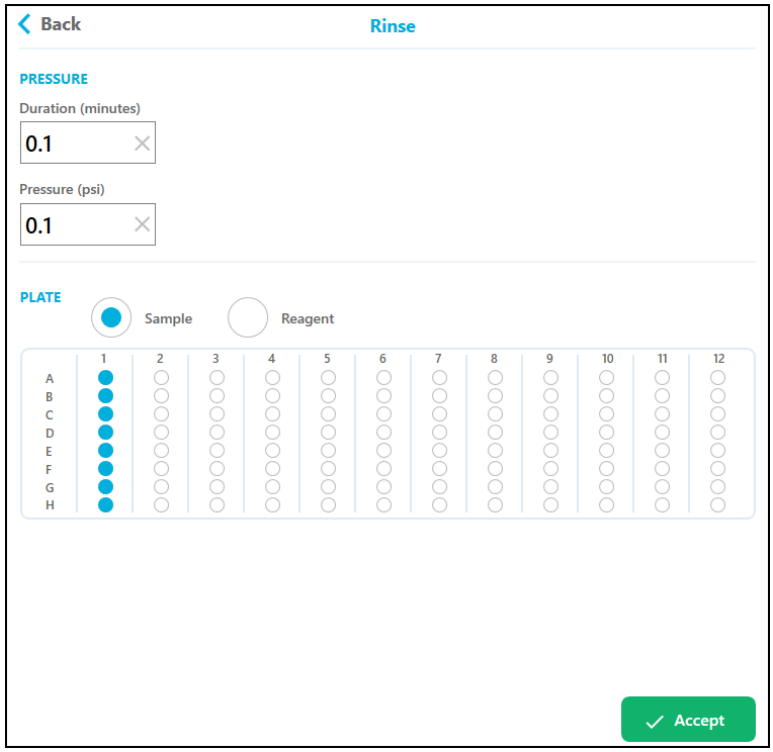
Label	Description
UV Wavelength (nm)	Touch to set the UV wavelength value in nm.
PMT Gain	Touch to set the PMT Gain value from the list.

Rinse

Use the Rinse window to set the pressure and other parameters to rinse the capillaries.

Note: Before starting the rinse, make sure that the volume in the inlet plates is sufficient.

Figure 3-9 Rinse



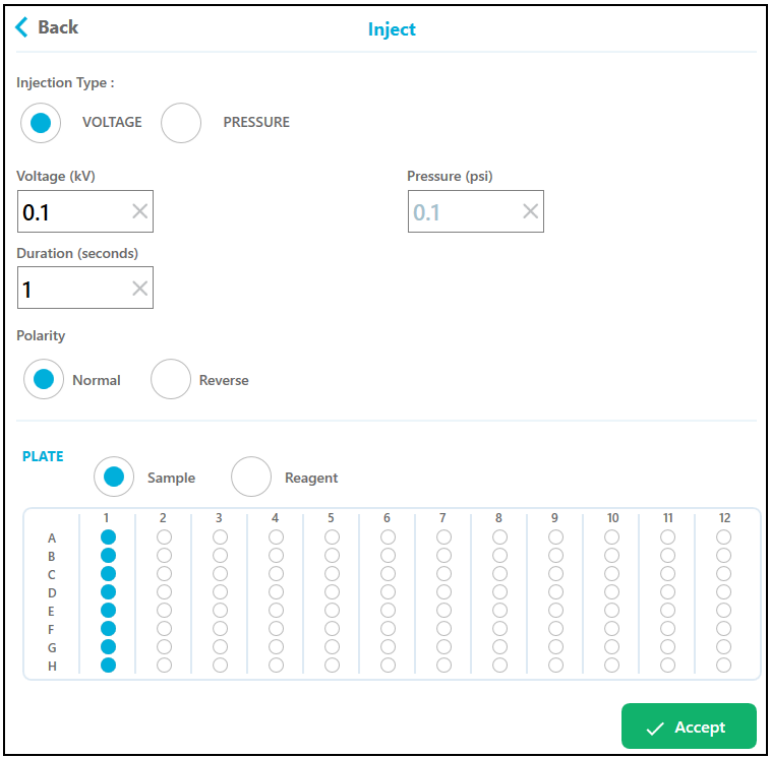
Label	Description
< Back	Touch to go back to the Direct Control window.
Pressure	
Duration (minutes)	Touch to type the length of the rinse, in minutes.
Pressure (psi)	Touch to type the pressure, in psi.

Label	Description
Plate	Touch to select the plate that contains the rinse solution. Options are **Sample** and **Reagent**.
Plate Columns	Touch to select the column that contains the rinse solution.
Accept	Touch to accept all of the changes and start the rinse.

Inject

Use the Inject section to set the voltage, pressure, and other parameters for a sample injection.

Figure 3-10 Inject



Label	Description
< Back	Touch to go back to the Direct Control window.
Injection Type: VOLTAGE	
Voltage (kV)	Touch to set the voltage, in kV.

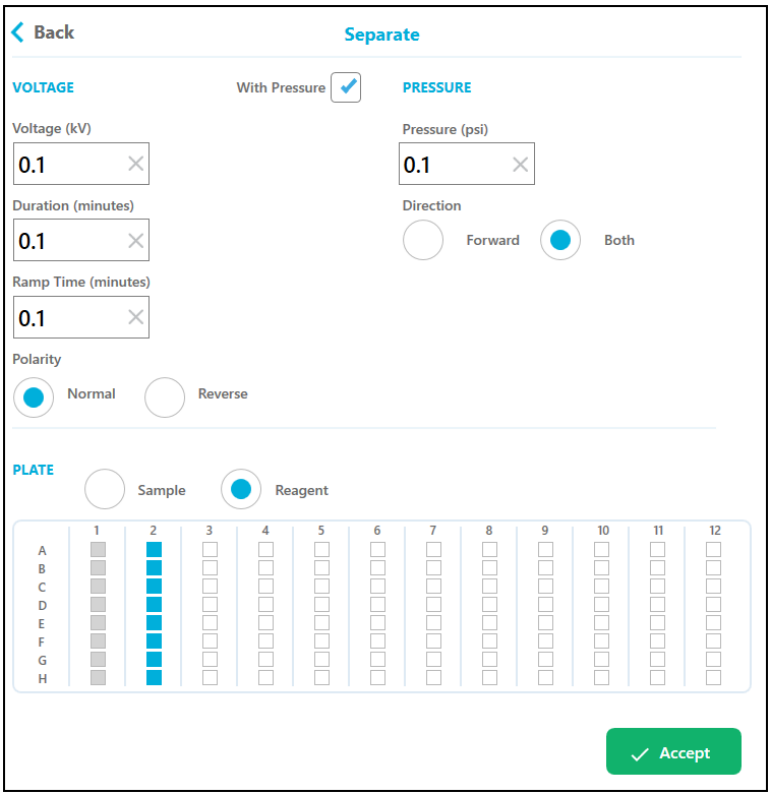
Label	Description
Duration (seconds)	Touch to set the length of the injection, in seconds.
Polarity	Touch to set the polarity. Options are **Normal** and **Reverse**.
Injection Type: PRESSURE	
Pressure (psi)	Touch to set the pressure, in psi.
Duration (seconds)	Touch to set the length of the injection, in seconds.
Plate	Touch to select the plate type. Options are **Sample** and **Reagent**.
(Plate Columns)	Select the plate column.
Accept	Touch to accept all of the changes and start the injection.

Separate

Use the Separate section to set the voltage, pressure, and other parameters for a separation.

Note: This data is only for review and cannot be stored or retrieved after the action.

Figure 3-11 Separate



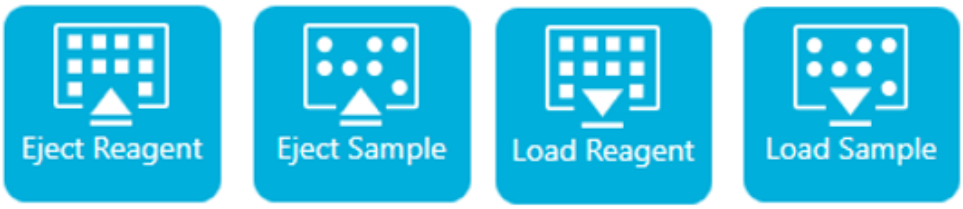
Label	Description
< Back	Touch to go back to the Direct Control window.
Voltage	
Voltage (kV)	Touch to set the voltage value, in kV.
Duration (minutes)	Touch to set the length of the separation, in minutes.
Ramp Time (minutes)	Touch to set the ramp time value, in minutes.
Polarity	Touch to set the polarity. Options are **Normal** and **Reverse**.
With Pressure	Touch to apply pressure to the capillary while high voltage is applied.
Pressure (psi)	Touch to set the pressure value, in psi.
Direction	Touch to select the direction. Options are **Forward** and **Both**.

Label	Description
Plate	Touch to select the plate type used for the voltage separation. Options are **Sample** and **Reagent**.
Plate Columns	Select the plate column.
Accept	Touch to accept all of the changes and start the separation.

Load or Eject Plates

From the Direct Control window, the user can load or eject the sample and reagent plates.

Figure 3-12 Load or Eject the Plates



Label	Description
Eject/Load Reagent	Touch to load or eject the reagent plate.
Eject/Load Sample	Touch to load or eject the sample plate.

Note: The icon shows a down arrow when no plate is installed, and changes automatically to an up arrow when a plate is installed.

Transport Home

Use the Transport Home button to move the reagent and sample plates to the home position.

Figure 3-13 Transport Home Button

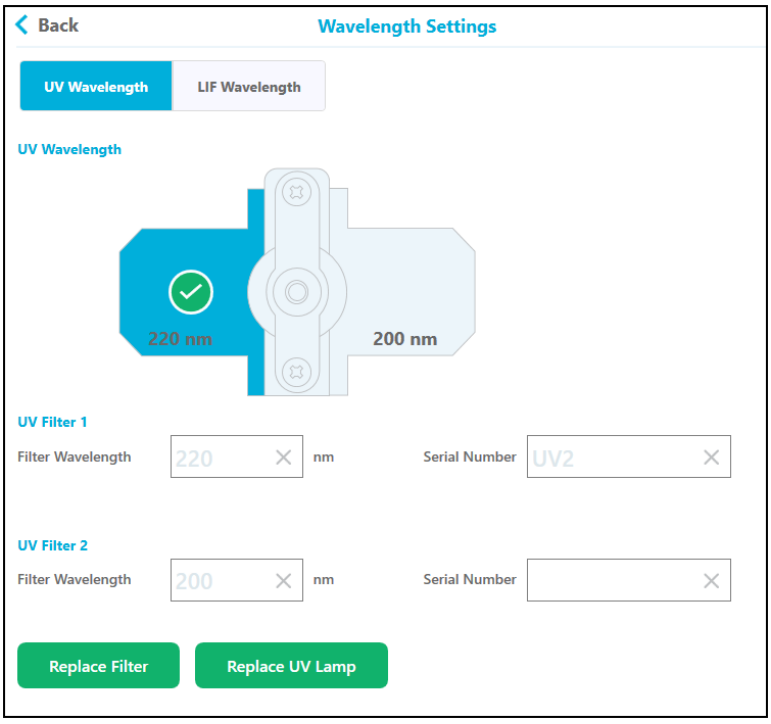
Touch **Transport Home** to move the reagent plate to the home position and the sample plate to the storage position. When the reagent plate is at the home position, the capillaries are in column 1 of the reagent plate.

Figure 3-14 System Information After Transport Home

Wavelength Settings

Use the Wavelength Settings section to set the UV and LIF filter wavelength. The user can also replace the UV lamp, UV filter, and LIF filter.

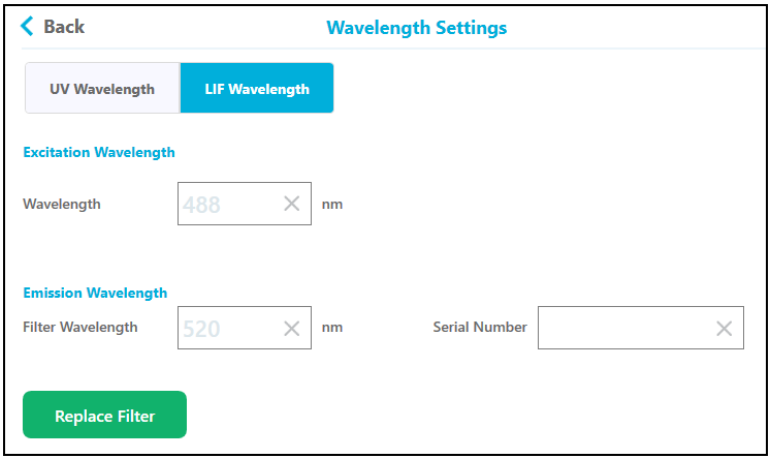
Figure 3-15 UV Wavelength



Label	Description
< Back	Touch to go back to the Direct Control window.

Label	Description
UV Filter 1	
Filter Wavelength	Touch to set the filter wavelength value, from 200 nm to 400 nm.
Serial Number	Touch to set the serial number.
UV Filter 2	
Filter Wavelength	Touch to set the wavelength value, from 200 nm to 400 nm.
Serial Number	Touch to set the serial number.
Done	After completing the operation, touch **Done** to go back to to the Direct Control window.
Replace Filter	Refer to the section: Install a UV Filter.
Replace UV Lamp	Refer to the section: Install a UV Lamp.

Figure 3-16 LIF Wavelength



Label	Description
< Back	Touch to go back to the Direct Control window.
Excitation Wavelength	
Wavelength	The wavelength is obtained from the laser on the system.

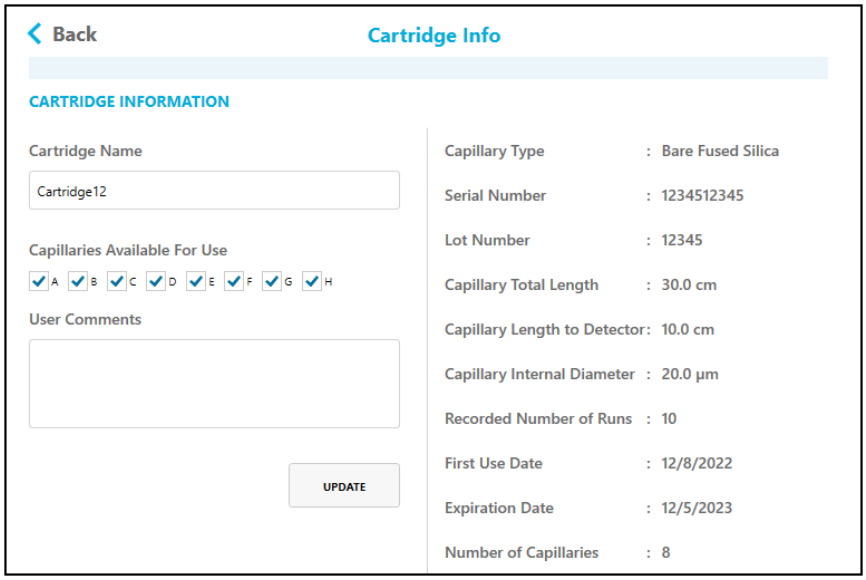
Label	Description
Emission Wavelength	
Filter Wavelength	Touch to set the wavelength from 300 nm to 700 nm.
Serial Number	Touch to set the serial number.
Done	After completing the operation, touch **Done** to go back to the Direct Control window.
Replace Filter	Refer to the section: Install the Filters for the LIF Detector.

Cartridge Info

Use the Cartridge Info window to view or edit the capillary cartridge information.

Note: For some cartridges, the user comments cannot be saved and the **Update** button is not available.

Figure 3-17 Cartridge Info



Label	Description
< Back	Touch to go back to the Direct Control window.
Cartridge Name	Touch to type or edit the cartridge name.

Label	Description
Capillaries Available For Use	Touch the check boxes to select the capillaries that are available for use.
User Comments	Touch to type or edit a comment.
Update	Touch to update all the changes.
Capillary Type	Shows the capillary type.
Serial Number	Shows the serial number.
Lot Number	Shows the lot number.
Capillary Total Length	Shows the total length of the capillary, in cm.
Capillary Length to Detector	Shows the length of the capillary to the detector, in cm.
Capillary Internal Diameter	Shows the diameter of the capillary to the detector, in µm.
Recorded Number of Runs	Shows the recorded number of runs.
First Use Date	Shows the first date that the cartridge was used.
Expiration Date	Shows the date that the cartridge expires.
Number of Capillaries	Shows the number of capillaries in the cartridge.

Run Sequence

Use the Run Sequence window to start a sequence. Refer to the section: Start the Sequence from the Front Panel.

Figure 3-18 Run Sequence

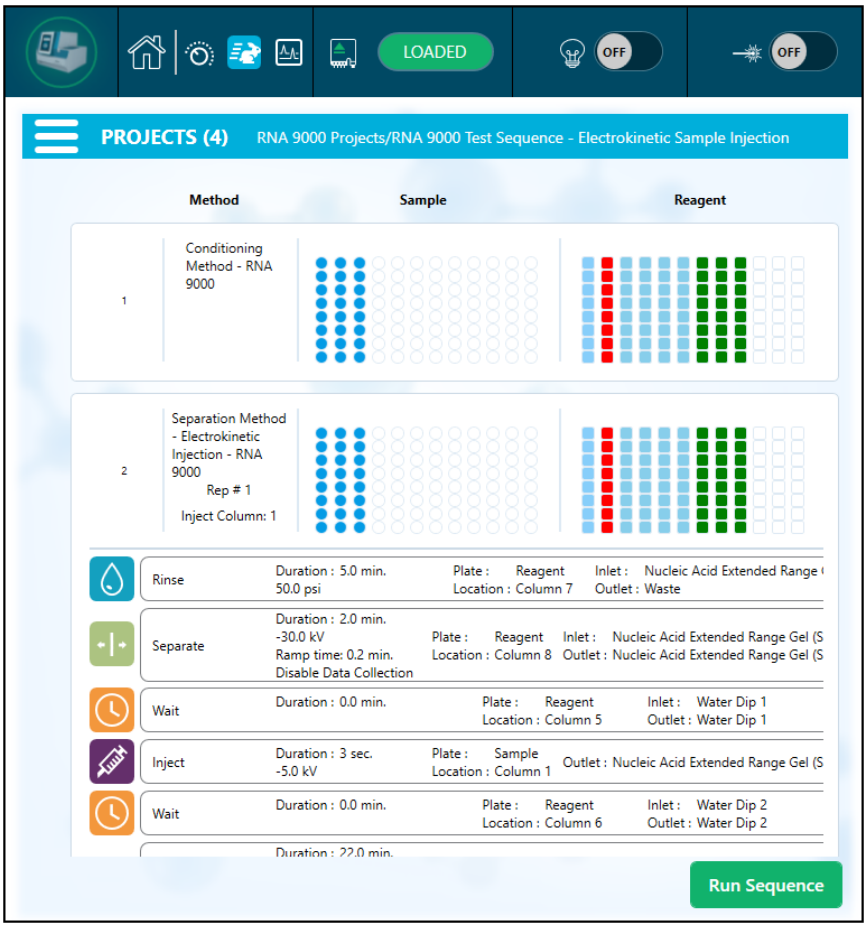


Table 3-2 Actions in a Method

Item	Description
	Shows the method settings.
	Shows the rinse action parameters.
	Shows the inject action parameters.
	Shows the sequence wait action parameter.

Table 3-2 Actions in a Method (continued)

Item	Description
	Shows the separate action parameters.

Capillary View

Use this section to see the electropherograms and auxillary channels in tile or overlay view for the detector, current, pressure, and voltage.

Figure 3-19 Capillary Tile View

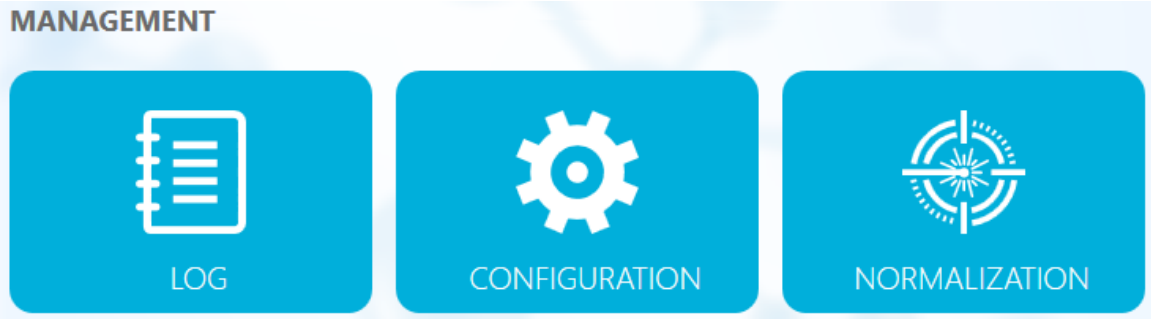
Figure 3-20 Capillary Overlay View

Label	Description
	Touch to set to the detector signal to zero.
View All	Touch to see all graphs from A through H.
A through H	Touch to see a specific graph.
Tile	Touch **Tile** to see the selected graphs.
Overlay	Touch **Overlay** to see all of the graphs overlaid on a single graph. Use two fingers to zoom in or out.
Detector	Touch to see the absorbance, in AU, for the UV detector or fluorescence, in RFU, for the LIF detector, over time in mm:ss.
Current	Touch to see the current, in µA, over time, in mm:ss.

Label	Description
Mixed	Touch to see the Detector and Current windows side by side.

Front Panel: Management Functions

Figure 3-21 Management Functions



Item	Description
Log	Touch to see the front panel log. Refer to the section: Log.
Configuration	Touch to see the front panel configuration features. The configuration button is only available to users with administrative access. Refer to the section: Configuration.
Normalization	Touch to see the front panel LIF normalization features. Refer to the section: Normalization.

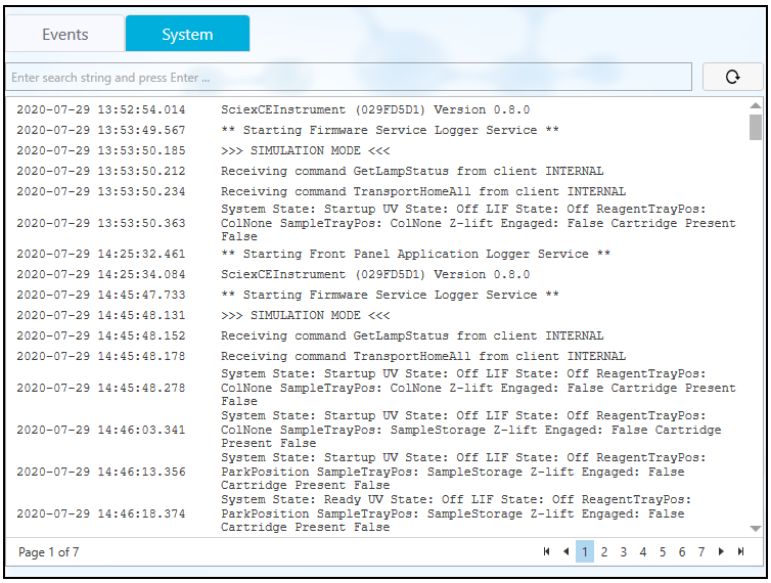
Log

This section describes the front panel log functions.

Figure 3-22 Front Panel Events Tab

Label	Description
Initialize System	Touch to initialize the system. **Note:** The front panel status area shows a red exclamation icon if an error occurs during the run. To re-initialize the system, touch **Initialize System**.
	Touch to remove the log message. If the button is not shown, then the message cannot be removed.

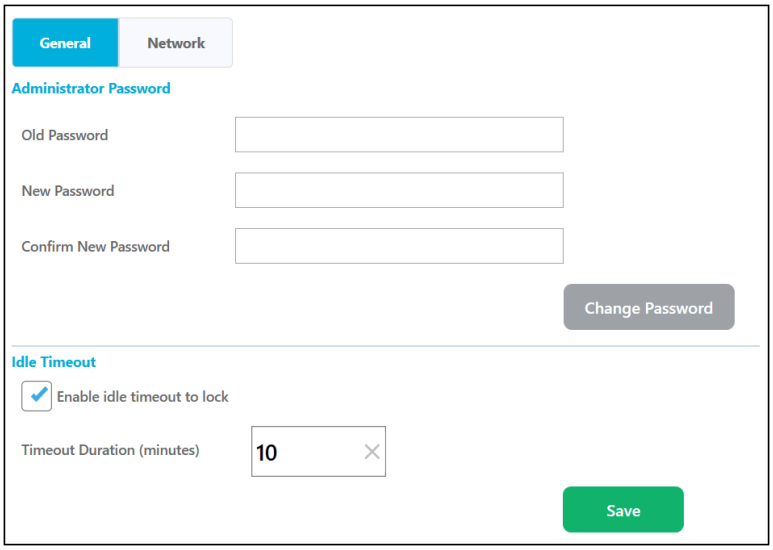
Figure 3-23 Front Panel System Tab



Configuration

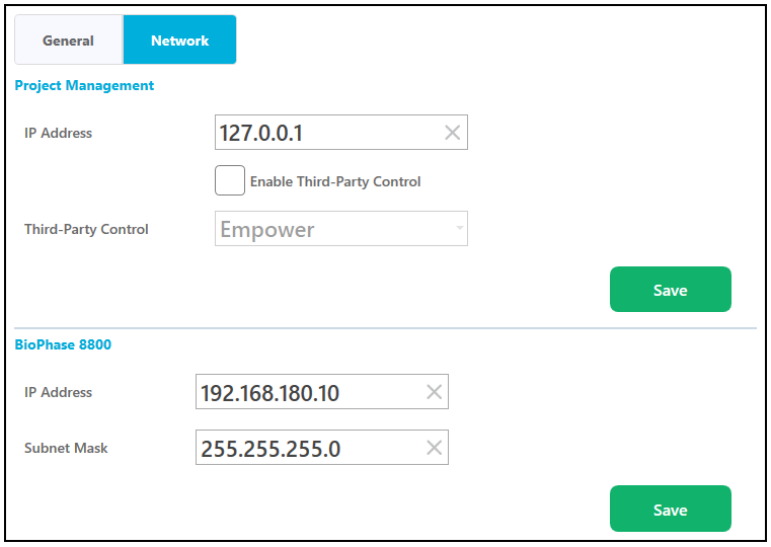
A user with administrative privileges can use this section to change the administrator password, configure the idle timeout to lock, and configure the length of the timeout on the General tab. On the Network tab, the Domain Isolator and BioPhase 8800 information can be configured.

Figure 3-24 General Configuration



Label	Description
Administrator Password	
Old Password	Touch to type the current password.
New Password	Touch to type the new password.
Confirm New Password	Touch to type the new password for confirmation.
Change Password	Touch to confirm the request to change the password.
Idle Timeout	
Enable idle timeout to lock	Touch the check box so that the system will lock the front panel when the system has been idle for a specified period.
Timeout Duration	Touch to type the timeout period, in minutes, for the front panel lock.
Save	Touch to save changes.

Figure 3-25 Network Configuration



Note: Incorrect network configuration information will cause front panel login failure.

Label	Description
Domain Isolator	
IP Address	Touch to type the IP address of the computer where the Project Management software is installed.
Enable Third Party Control	Do not select this check box.
Third Party Control	Do not select anything from this list.
Save	Touch to save changes.
BioPhase 8800	
IP Address	Touch to type the IP address of the BioPhase 8800 system.
Subnet Mask	Touch to type the subnet mask for the BioPhase 8800 system.
Save	Touch to save changes.

Configure Project and User Access

To make projects available to users on the BioPhase 8800 system, change the system configuration settings.

Note: The username and passcode given below are the defaults. They might have been changed.

1. On the BioPhase 8800 system front panel, in the Login dialog:
   a. In the **Username** field, type `admin`.
      The field is case sensitive.
   b. In the **Passcode** field, type `password`.
      The field is case sensitive.
   c. Touch **Log In**.
2. Touch **Configuration**.
3. On the Network tab, in the Project Management section, type the required information in the **IP Address** field.
4. Touch **Save**.
5. Touch **Log off**.

Configure the IP Adress for the System

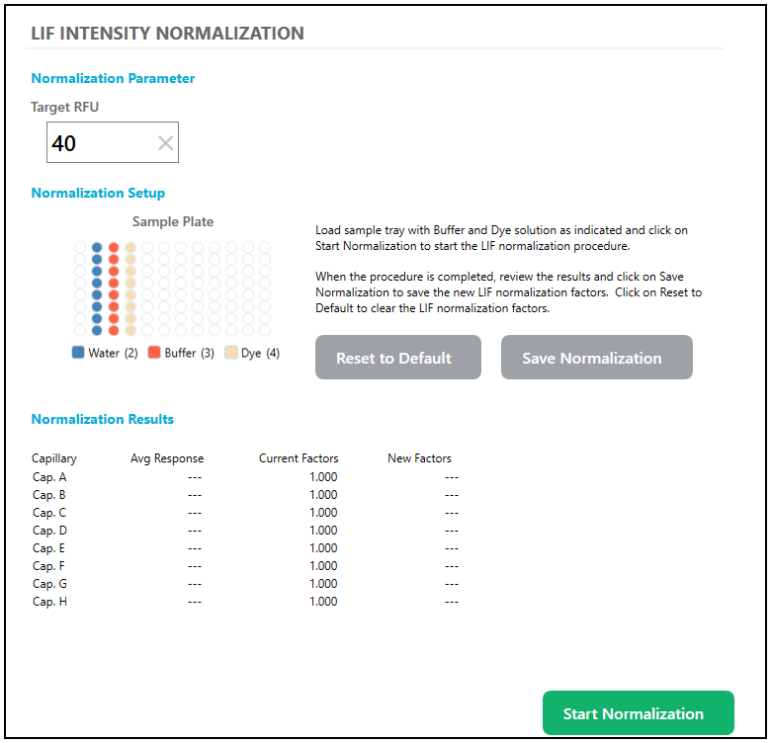
Note: The username and passcode given below are the defaults. They might have been changed.

1. On the BioPhase 8800 system front panel, in the Login dialog:
   a. In the **Username** field, type `admin`.
      The field is case sensitive.
   b. In the **Passcode** field, type `password`.
      The field is case sensitive.
   c. Touch **Log In**.
2. Touch **Configuration**.
3. On the Network tab, in the BioPhase 8000 section, type the required information in the **IP Address** field.
4. In the **Subnet Mask** field, type the required information.
5. Touch **Save**.
6. Touch **Log off**.
7. Turn off the system.
8. Turn on the system.

Normalization

Use this section to start the LIF intensity normalization procedure. The user can save new LIF intensity normalization factors or reset existing normalizations to clear the saved LIF intensity normalization factors.

Figure 3-26 LIF Intensity Normalization



Label	Description
Normalization Parameter	
Target RFU	Touch to set the target RFU value.
Normalization Setup	
Reset to Default	Touch to reset the normalization factors to the default value.
Save Normalization	Touch to save the new normalization factors.
Normalization Results	• **Average Response**: Shows the actual relative fluorescence units of each capillary in the cartridge for the LIF test mix. • **Current Factors**: Shows the current normalization factors. The default value for current normalization factors is 1.000. • **New Factors**: Shows the new normalization factors.
Start Normalization	Touch to start the normalization.

Acquire Data 4

Data acquisition is started from the front panel on the system. A sequence is required to acquire data. A sequence contains a list of samples, their positions in the sample plate, and the associated methods, which contain instructions for the BioPhase 8800 system. Plate layouts, which show the positions of samples and reagents in the plates, are also part of a sequence.

Sequences and methods are created with the BioPhase software. Example methods are installed with the software or can be created as necessary.

Create a New Method

Note: This procedure assumes familiarity with the BioPhase software. For detailed instructions, refer to the document: *Software Help System*.

Methods are installed with the BioPhase software. If the methods are not applicable, then new ones can be created.

Methods require reagents. If other reagents are required, then they can be added. Refer to the document: *BioPhase Software Help System*.

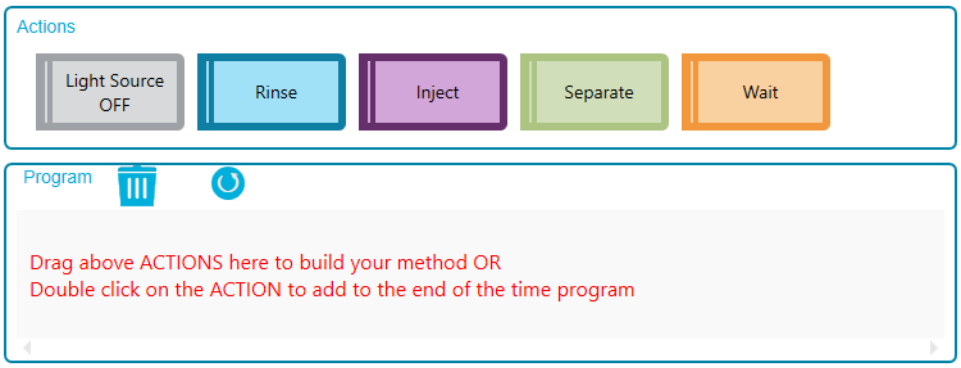
1. On the Home page of the BioPhase software, click **Method Editor**.
2. Click **New Method**.
   The Method Settings tab opens.
3. Type or select information in the Method Settings fields.
4. (Optional) To edit the reagent set:
   a. Click **Edit Reagents**.
      The Reagent Set Configuration tab opens.
   b. Make the required changes.
   c. Click **Close**.
5. To build the method, open the Method Program tab, and then drag actions to the Program pane.

   Three types of methods can be created:

   - Separation method: A method with an inject action, which is used to acquire the data for the sample.
   - Conditioning method: A method without an inject action, which is used to condition the capillary before running a separation method to acquire data.

- Shutdown method: A method without an inject action, which is used to clean the capillary to preserve the life span of the cartridge and turn off the light source.

Figure 4-1 Action and Program Panes



6. Click the actions in the Program pane to edit the action parameters in the Parameters pane.
7. If the Validation pane is shown, then click the pane to see the errors. Click an error to highlight the location where it occurs, and then make the required change.
   If there are no errors, then the Validation pane is not shown.
8. Save the method:
   a. Click **SAVE AS**.

      Note: The **SAVE AS** button is not available if there are errors. Resolve all of the errors in the Validation pane, and then click **SAVE AS**.

      The Save Method dialog opens.
   b. (Optional) Click **New Folder**, type a name for the new folder, and then click **OK**.
   c. Select a project folder.
   d. Type a name in the **Method Name** field.

      Note: To make the **Save** button available, the method name must be unique.
   e. (Optional) Type a description for the method in the **Description** field.
   f. Click **Save**, and then, to acknowledge the saved method, click **OK**.
9. (Optional) To see, save, or print the Method Report, click **PRINT**.

Create a New Sequence

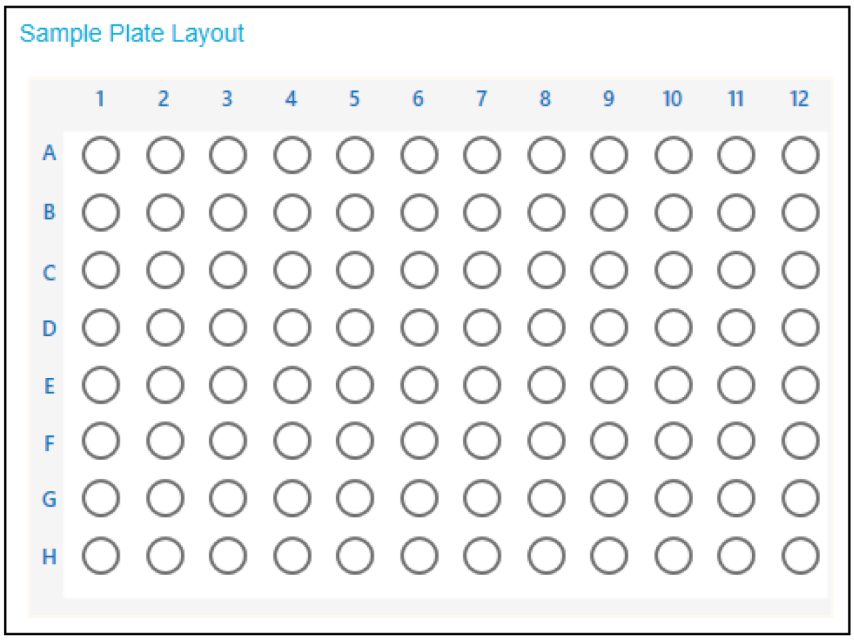
Note: This procedure assumes familiarity with the BioPhase software. For detailed instructions, refer to the document: *Software Help System*.

1. On the Home page of the BioPhase software, click **Sequence Editor**.
2. Click **New Sequence**.
   The Sample Plate Setup tab opens.
3. In the Projects pane, click a project folder.
   The methods in the folder are shown in the Methods pane.
4. To assign a separation method to a well, click a method in the Methods pane list, and then drag the method to a selected well in the Sample Plate Layout.

   The software makes sure that the method is compatible with the other methods in the sequence and the reagent assignments on the reagent plate. If the method is compatible, then it is shown in the Sequence Summary table.
5. To assign a conditioning or shutdown method to a well, click a method in the Methods pane list, and then drag the method anywhere in the Sample Plate Layout.

   The software makes sure that the method is compatible with the other methods in the sequence and the reagent assignments on the reagent plate. If the method is compatible, then it is shown in the Sequence Summary table.
6. In the Sample Plate Layout pane, select the wells where the sample will be added.
   - Click an individual well.
   - To select all of the wells in a column, click the column number.
   - To select wells in different columns, click in the sample plate, and then drag the cursor over multiple wells.

Figure 4-2 Sample Plate Layout Pane



The Sample Plate Layout updates to show the selected wells.

7. If required, to clear one or more wells, right-click a selected well, and then click one of the options from the warning message that is shown:
   - **Delete Well**: To clear the single well.
   - **Delete Column**: To clear all of the wells in a column.
   - **Delete All**: To clear all of the wells in the sample plate layout.
8. If required, edit the information in the Sequence Summary table.
   Click **+** to open a row, and then edit the **Sample ID**, **Run Type**, or **Data File** cells.
9. If required, do step 4 or 5 to add more methods to the sequence.
10. If required, click a row, and then drag the row to a different position in the Sample Plate Summary table to rearrange the methods in the sequence.
11. (Optional) To assign a method as the error recovery method, select the **Error Recovery** check box.
12. Open the Plates Layout tab to see the sample plate and reagent plate layouts. If required, edit the reagent positions in the Reagent Plate.
13. If the Validation pane is shown, then click the pane to see the errors. Click an error to highlight the location where it occurs, and then make the required change.
    If there are no errors, then the Validation pane is not shown.

14. Save the sequence:
    a. Click **SAVE AS**.

    Note: The **SAVE AS** button is not available if there are errors. Resolve all of the errors in the Validation pane, and then click **SAVE AS**.

    The Save Sequence dialog opens.
    b. Select a project folder.
    c. Type a name in the **Sequence Name** field.

    Note: To make the **Save** button available, the sequence name must be unique and different than the project name.

    d. (Optional) Type a description in the **Description** field.
    e. Click **Save**.
    f. Click **OK** in the warning dialog, and then, to acknowledge the saved sequence, click **OK**.
15. (Optional) To save the sequence for later use in Excel, click **Export**.
16. To print the sample plate and reagent plate layouts, click **PRINT**.

A sequence can also be created by importing a sequence template. Refer to the section: "Import Information to Create a New Sequence" in the document: *Software Help System*.

Prepare the BioPhase 8800 System

Use the procedures in this section to prepare the BioPhase 8800 system to acquire data.

Tip! To save time, turn on the light source 30 minutes before the start of the run to let it become warm.

Load the Reagent Inlet and Outlet Plates

Note: To prevent air bubbles, do not shake or vigorously mix the buffer. Air bubbles might cause issues with the separation.

1. Add the reagents to the reagent inlet and outlet plates according to the reagent plate layout.

   Use the volumes in the following table.

   Note: For the outlet plate, make sure that the chamfered corner is on the upper right, and then fill only the wells on the left side of the plate. The wells on the right side are for overflow and must be empty.

Table 4-1 Reagents for the Reagent Inlet and Outlet Plates

Plate	Reagent
Inlet plate	800 µL per well
Outlet plate	• 2.8 mL per well of reagent for separation or wait actions • 1.5 mL per well of CE Grade Water for waste positions

2. Put a film cover on the plates.

CAUTION: Potential System Damage. Do not use a heated plate sealer to apply the seal. The heat might damage the surface of the plates, which might cause issues with the pressure system.

Note: Only X-Pierce film from USA Scientific is validated. If a different film is used, then test it before use.

3. Put the plates in a swinging-bucket rotor, and then spin them for 4 minutes at 30 *g*. Make sure that the buckets are balanced.

CAUTION: Potential Wrong Result. Do not load the plates in the system without spinning them to remove air bubbles. The presence of air bubbles might cause the separation to fail.

4. Make sure that there are no air bubbles present in the plates. If air bubbles are present, then spin the plates again at a higher relative centrifugal force (RCF).

   For the reagent plate, the maximum RCF is 1,000 *g*. For the sample plate, the maximum RCF is 375 *g*.

5. On the front panel, touch **Eject Reagent**.

Figure 4-3 Eject Reagent Button

The plate compartment opens.

6. Remove the film cover from the plates.

CAUTION: Potential System Damage. Do not load plates in the system before removing the film cover. The presence of the film cover during a run might damage the capillary tips.

7. If the plate compartment already contains reagent plates, then remove the reagent plates.
8. Align the notch in the reagent inlet plate with the tab, and then put the plate in the plate carrier. Refer to the figure: Figure 2-6.
9. Make sure that the chamfered corner of the reagent outlet plate is in the top left, and then put the plate in the back of the plate carrier. Refer to the figure: Figure 2-7.
10. Touch **Load Reagent**.

Figure 4-4 Load Reagent Button

The plate compartment closes.

Load the Sample Inlet and Outlet Plates

1. Add the samples to the sample inlet plate according to the sample plate layout.

   The minimum sample volume is 50 µL. The maximum sample volume is 200 µL.

   The recommended sample volume varies by application. Refer to the specific *Application Guide*.
2. To prevent damage to the capillary, if there are columns where not every well has sample, then add between 100 µL and 200 µL of sample buffer to each empty well.

   In the sample plate layout, wells that should have sample buffer are shown in grey. If a column has no samples, then the wells can be left empty.
3. Add the reagents to the sample outlet plate according to the sample plate layout.

   The maximum volume is 2.0 mL.

   Note: For the outlet plate, make sure that the chamfered corner is on the upper right, and then fill only the wells on the left side of the plate. The wells on the right side are for overflow and must be empty.

   The recommended volume varies by application. Refer to the specific *Application Guide*.
4. Put a film cover on the plates.

   CAUTION: Potential System Damage. Do not use a heated plate sealer to apply the seal. The heat might damage the surface of the plates, which might cause issues with the pressure system.

Note: Only X-Pierce film from USA Scientific is validated. If a different film is used, then test it before use.

5. Put the plates in a swinging-bucket rotor, and then spin them for 4 minutes at 30 *g*. Make sure that the buckets are balanced.

CAUTION: Potential Wrong Result. Do not load the plates in the system without spinning them to remove air bubbles. The presence of air bubbles might cause the separation to fail.

6. Make sure that there are no air bubbles present in the plates. If air bubbles are present, then spin the plates again at a higher relative centrifugal force (RCF).

   For the reagent plate, the maximum RCF is 1,000 *g*. For the sample plate, the maximum RCF is 375 *g*.

7. On the front panel, touch **Eject Sample**.

Figure 4-5 Eject Sample Button

The plate compartment opens.

8. Remove the film cover from the plates.

CAUTION: Potential System Damage. Do not load plates in the system before removing the film cover. The presence of the film cover during a run might damage the capillary tips.

9. If the plate compartment already contains sample plates, then remove the sample plates.
10. Orient the sample plate so that the alignment notch in the plate aligns with the tab, and then put the plate in the plate carrier. Refer to the figure: Figure 2-5.
11. Orient the sample outlet plate so that the chamfered corner is in the upper left, and then put the plate in the back of the plate carrier. Refer to the figure: Figure 2-7.
12. Touch **Load Sample**.

Figure 4-6 Load Sample Button

The plate compartment closes.

Examine the Capillary Cartridge

WARNING! Puncture Hazard. Be careful when handling the cartridge. The tips of the capillaries are extremely sharp.

CAUTION: Potential System Damage. Do not let the separation gel or other reagents crystallize on the electrodes, capillary ends, cartridge seals, or cartridge body. Electrolyte salt crystals or precipitate can cause blocked capillaries, improper pressure sealing, errors when injecting samples, arcing, or current leakage.

1. Examine the electrodes, capillary tips, cartridge seals, and cartridge body interface before use.
2. If there is liquid on the outside of the cartridge, then clean the cartridge with a damp laboratory wipe. After cleaning, make sure to dry the cartridge.

   Note: Do not use soap or detergent to clean the cartridge.

3. If the capillary tips are blocked, then do this:
   a. Use CE Grade Water to clean the capillary inlets.
   b. Use a lint-free laboratory wipe to wipe the capillary inlets carefully in an outward direction.
4. Use a magnifying glass to examine both sides of the capillary window. If lint or other particles are present, then use short bursts of electronics-grade compressed air to remove them. Do not use water or other liquids to clean the capillary window.

   CAUTION: Potential System Damage. Do not use organic solvents, such as methanol or acetone, to clean the capillary window. Organic solvents can dissolve the adhesives and make a residue on the capillary window that might interfere with the detector.

5. Moisten a laboratory wipe or cotton swab with ethanol or isopropanol, and then wipe the surface of the chip. Let the chip air dry before installing the cartridge.

Install the Cartridge

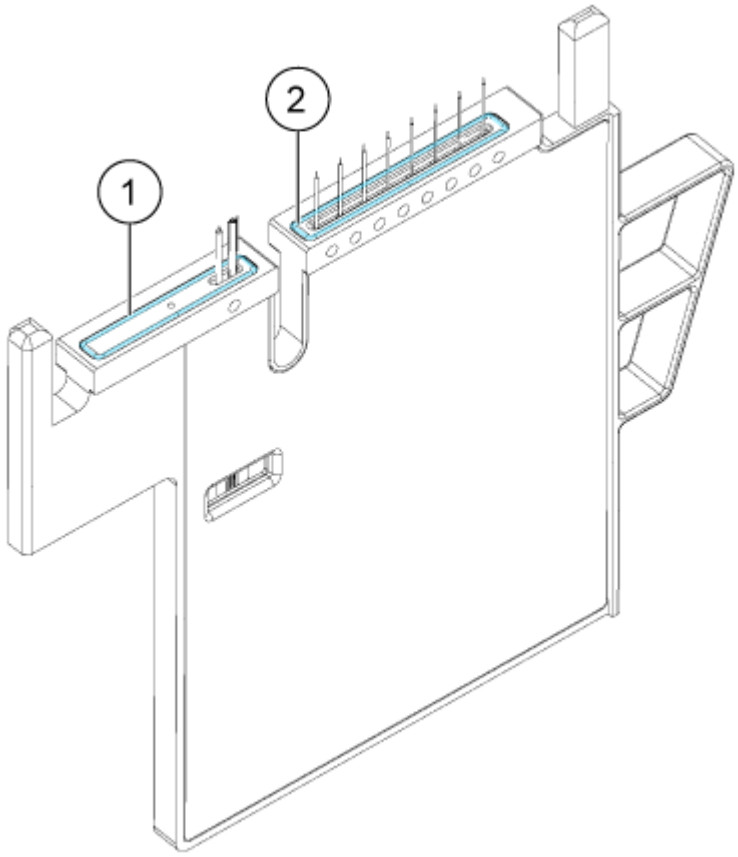
WARNING! Puncture Hazard. Be careful when handling the cartridge. The tips of the capillaries are extremely sharp.

WARNING! Pinching Hazard. When opening the front panel, be careful not to put fingers to the left of the front panel.

CAUTION: Potential System Damage. Make sure that the reagent plates are installed in the system before installing the cartridge. Failure to do so might damage the cartridge.

1. If the cartridge was stored in the refrigerator, then let the cartridge equilibrate to ambient temperature for approximately 30 minutes to prevent condensation in the system.
2. Remove the cartridge from the wetting tray.
3. Use a disposable laboratory wipe to dry the cartridge body to prevent arcing.
4. Turn the bottom of the cartridge up.
5. Use a disposable laboratory wipe to very gently dry the area where the capillaries and electrodes emerge from the cartridge. Do not disturb the seals.

Figure 4-7 Bottom of the Cartridge



Item	Description
1	Outlet plate seal

Item	Description
2	Inlet plate seal

6. If the reagent plates are not installed in the system, then install them. Refer to the section: Load the Reagent Inlet and Outlet Plates.
7. Open the front panel, and then put the cartridge in the system.
8. Close the front panel, and then touch **EJECTED** to lock the cartridge.

Figure 4-8 EJECTED Button

The system moves the reagent plate until the capillaries are in position over column 1, and then lifts the plate until the capillary ends are immersed in CE Grade Water.

9. Examine the coolant level on the front panel. If required, add coolant to the system. Refer to the section: Add Capillary Cartridge Coolant.

Start the Sequence from the Front Panel

1. If required, load the cartridge, reagent plates, and sample plates.
2. On the front panel, touch **RUN SEQUENCE**.

Figure 4-9 RUN SEQUENCE Button

3. In the Projects pane, touch the name of the project where the sequence is located, and then touch the name of the sequence. The sequence can be sorted by the **Name** or **Date/Time**.

Tip! If a new sequence is not shown, touch to refresh the sequence list.

Figure 4-10 Sorting the Sequence List

The Projects pane is hidden and the sequence opens. The name of the project and the sequence are shown above the sequence.

4. (Optional) To see the details of the method, sample plates, or reagent plates, touch anywhere in the **Method** column.
   To hide the details, touch the column or box again.
5. Touch **Run Sequence**.

Figure 4-11 Run Sequence Button

Run Sequence is not available if the sequence contains a method that is incompatible with the system configuration.

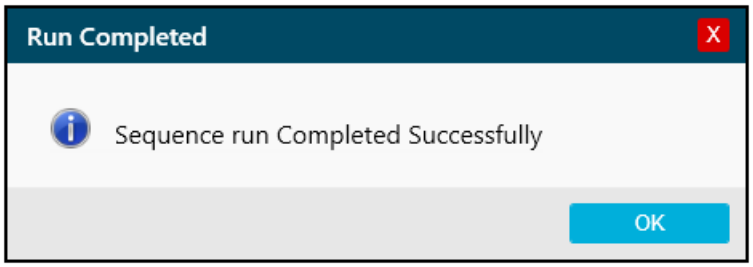
The data files are saved at the location specified in the sequence. If this location has a data file with the same name, then, to prevent the older data file from being overwritten, a date stamp is automatically appended to the file name.

If an error occurs during a run and an error recovery method is present in the sequence, then the BioPhase 8800 system starts the error recovery method.

During the run, various actions are available. Refer to the section: Monitor the Run on the BioPhase 8800 Front Panel.

When the run is complete, the Run Completed dialog opens.

Figure 4-12 Run Completed Dialog



6. To close the Run Completed dialog, touch **OK**.
7. As required, store the cartridge. Refer to the section: Store the Cartridge After the Run.

Monitor the Run on the BioPhase 8800 Front Panel

Use this procedure to monitor the sequence progress, and then, if required, pause or stop the sequence.

Note: The sequence shown in the following figures is for the purpose of illustration.

1. Monitor the traces for the detector and the current to make sure that the sequence is running.

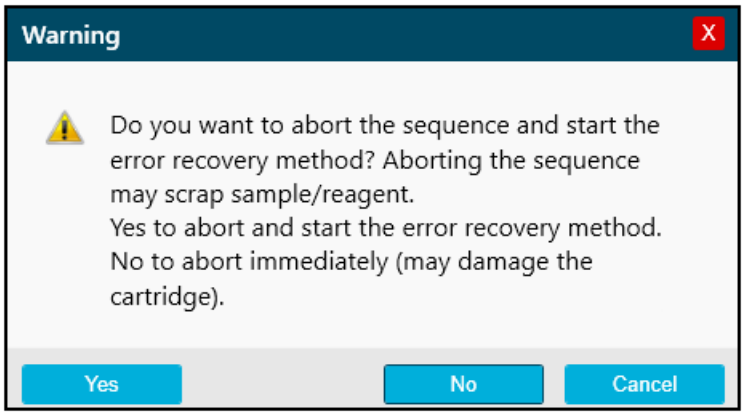
2. If a problem is detected, then touch  to stop the run, and then, in the Warning dialog, touch one of the following:

   - **Yes**: Touch to start the error recovery method, if one is assigned.
   - **No**: Touch if an error recovery method is not assigned.

     Note: Stopping the run might result in loss of sample or reagent and damage to the cartridge.

   - **Cancel**: Touch to continue the run.

Figure 4-13 Warning Dialog



CAUTION: Potential System Damage. If the run is stopped and will not be resumed, then use the shutdown method to rinse the capillaries before storage of the cartridge. If the capillaries are not rinsed, then electrolyte salt crystals or precipitate can collect and might cause blocked capillaries, improper pressure sealing, errors when injecting samples, arcing, or current leakage.

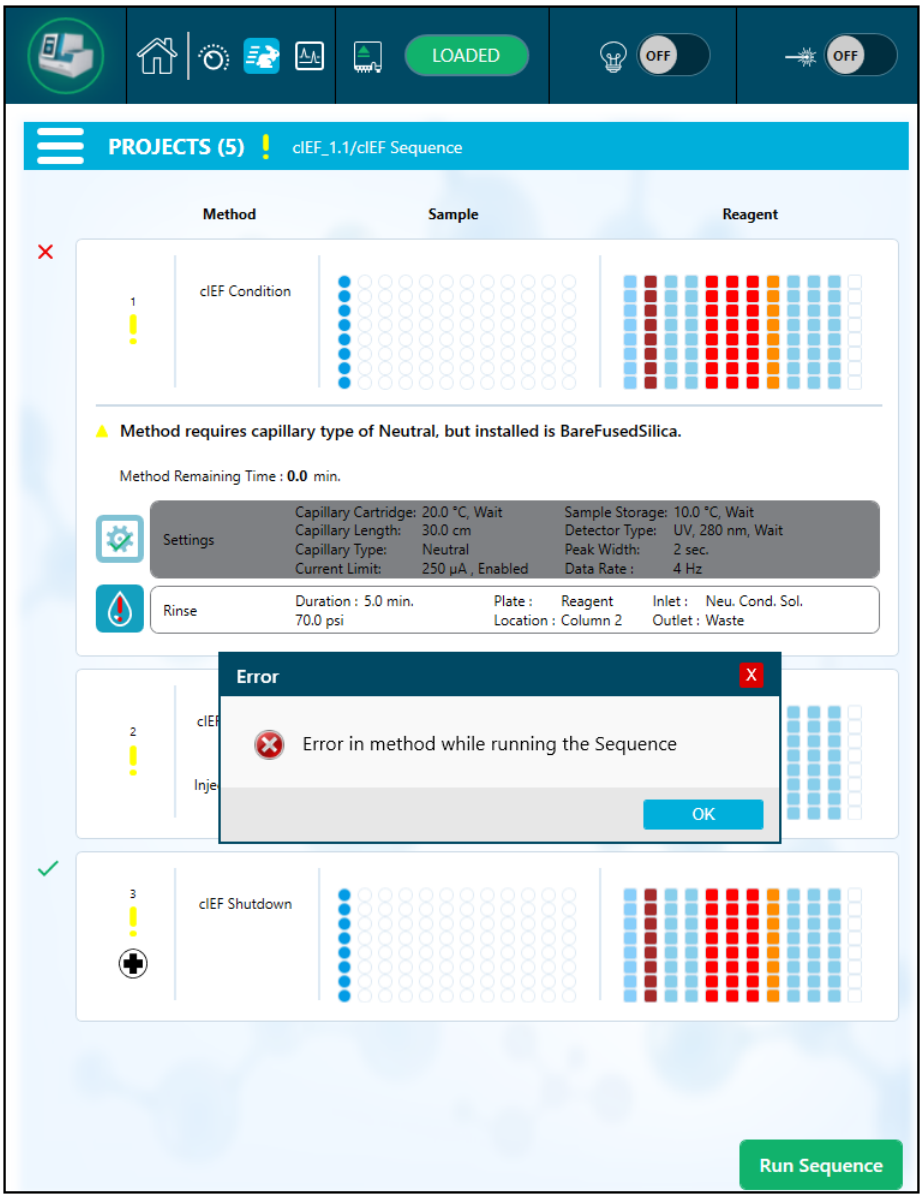
CAUTION: Potential System Damage. Before starting the run again, make sure to empty or replace the outlet plate to prevent overflow of reagent and possible damage to the instrument.

CAUTION: Potential Wrong Result. Before starting the run again, prepare new reagent plates. If the run has been stopped, then there might not be enough reagents available to complete the run.

CAUTION: Potential Wrong Result. If the samples have been inside of the system for more than 24 hours, then before starting the run again, discard them. The samples might have degraded.

3. If an error occurs, then touch **OK** in the error dialog that is shown.

Figure 4-14 Run Sequence Error



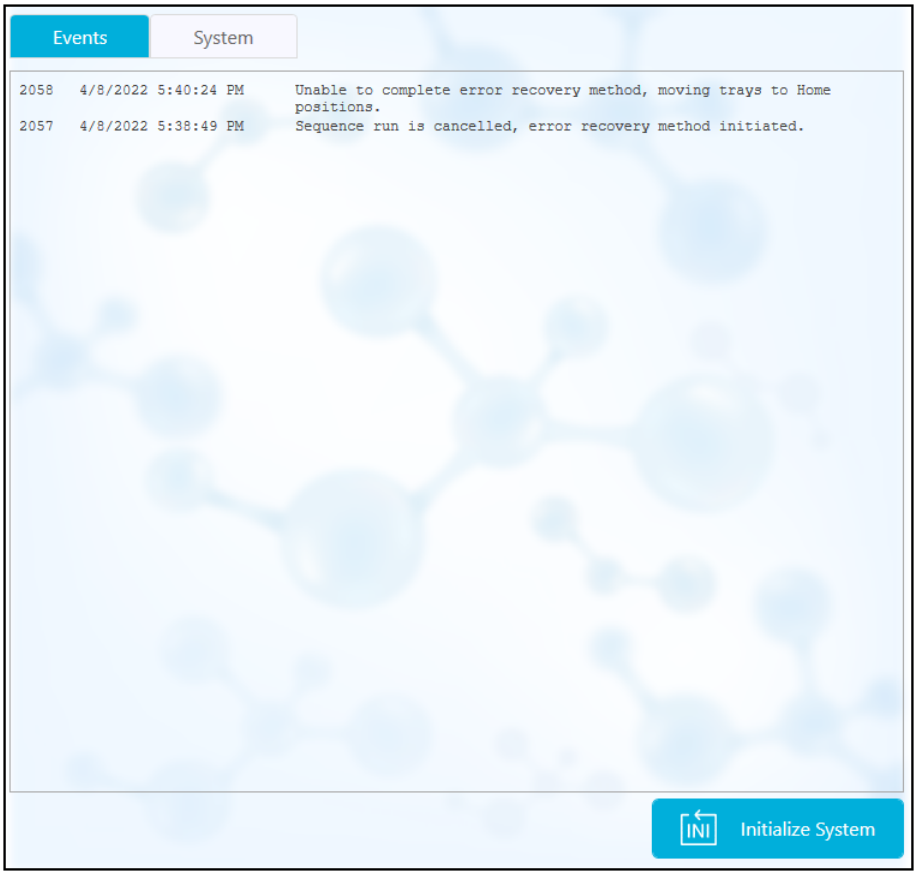
Note: The  shows an error at the **Rinse** action. The grey shading in the row above the **Rinse** action shows that the action is in progress or completed.

4. Review the error:

   a. Touch  in the **Events** tab of the front panel log.

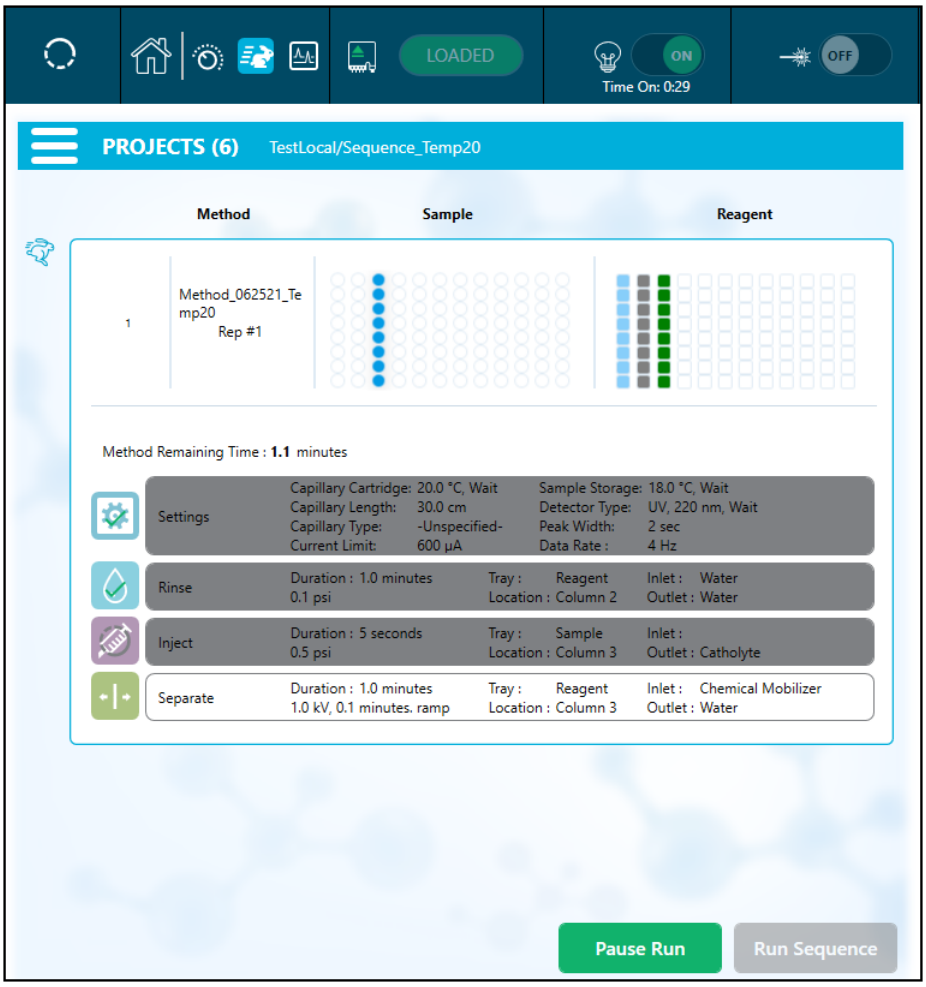
b. Touch **Initialize System** to reinitialize the system, and then change the system status to idle.

Figure 4-15 Sequence Error Events Log



5. If required, pause the run by touching **Pause Run**.

Figure 4-16 Run Sequence in Progress



To continue the run, touch **Cancel Pause**.

Figure 4-17 Run Sequence Paused

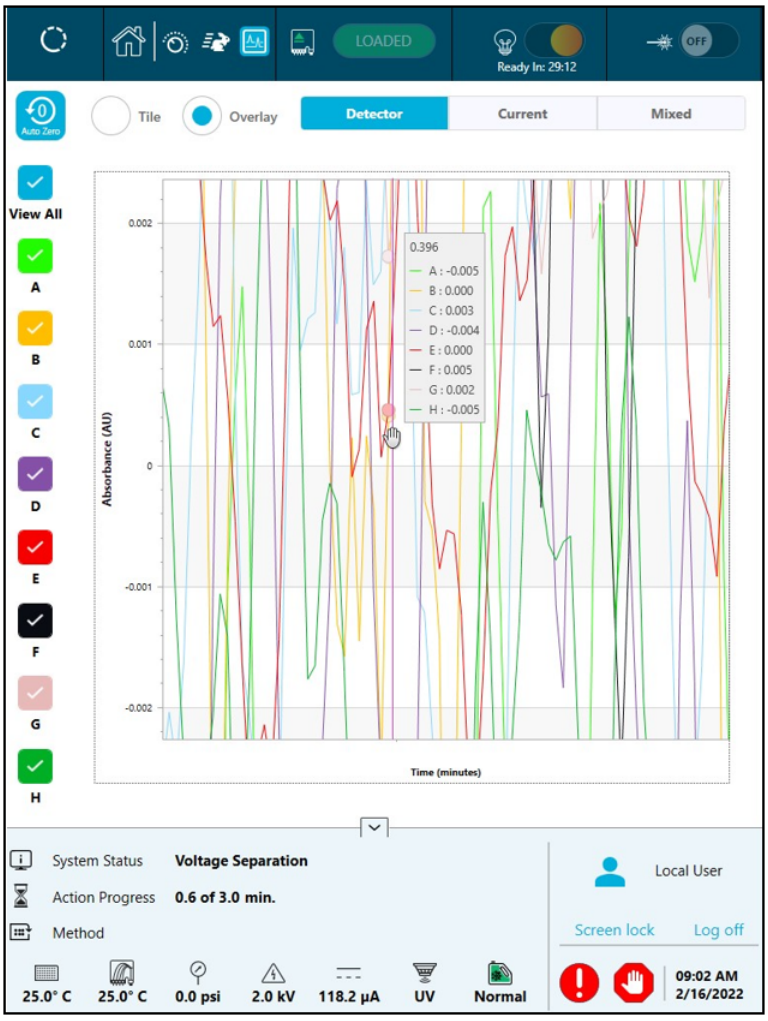
6. To see the data while it is being acquired, touch  in the ribbon. For further actions, refer to the section: Capillary View.

Figure 4-18 Capillary View

7. (Optional) To zoom in on the data, do the following:
   a. Touch **Overlay**.
   b. Use two fingers to zoom in or out to see the electropherogram.
   c. Use the hand icon to move the electropherogram.

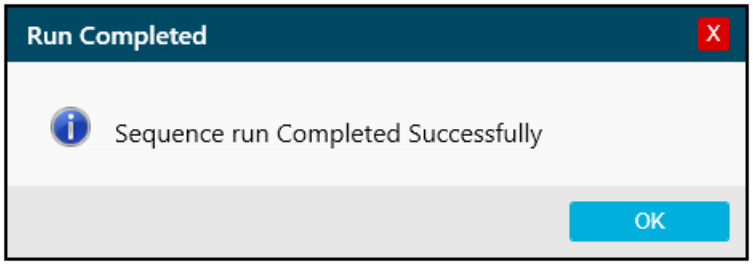
Note: The zoom feature only works with the overlay view for detector and current.

Figure 4-19 Zoom In or Out



8. Make sure that the message `Sequence run Completed Successfully` is shown when the run completes. In the dialog, touch **OK**.

Figure 4-20 Run Completed



After the system has been idle for 24 hours, then the cooler for the sample storage compartment turns off.

Store the Cartridge After the Run

WARNING! Puncture Hazard. Be careful when handling the cartridge. The tips of the capillaries are extremely sharp.

The recommended storage conditions vary by application. Refer to the applicable document: *Application Guide*.

Analyze the Data 5

Analysis Options

Use the BioPhase Analysis software to analyze the data. To open the BioPhase Analysis software, on the Home page of the BioPhase software, click **Data Processing**.

There are two ways to analyze the data:

- With an analysis parameters file
- Manually

For either method, after the preliminary analysis is complete, other functions are available to work with the results. Refer to the section: Work with the Results.

Data Analysis with an Analysis Parameters File

An analysis parameters file contains all of the information required to integrate the peaks and identify peaks in the data. Analysis parameters files for each analysis kit are supplied with the BioPhase Analysis software. These files can be a starting point for data analysis. Refer to the appropriate *Application Guide*.

Manual Data Analysis

If the supplied analysis parameters file is not appropriate, then the data can be analyzed manually. The suggested workflow is:

1. Integrate the peaks. Refer to the section: Integrate the Peaks.
2. If required, add integration events from the graph. Refer to the section: Integration Events Added from the Graph.
3. Create library tables to identify the peaks. Refer to the section: Identify the Peaks.
4. Do post-analysis functions. Refer to the section: Post-Analysis Procedures.

Integrate the Peaks

Note: A data file can be analyzed by only one user at a time. If the data file is already opened by another user, then a message is shown and the file is not opened.

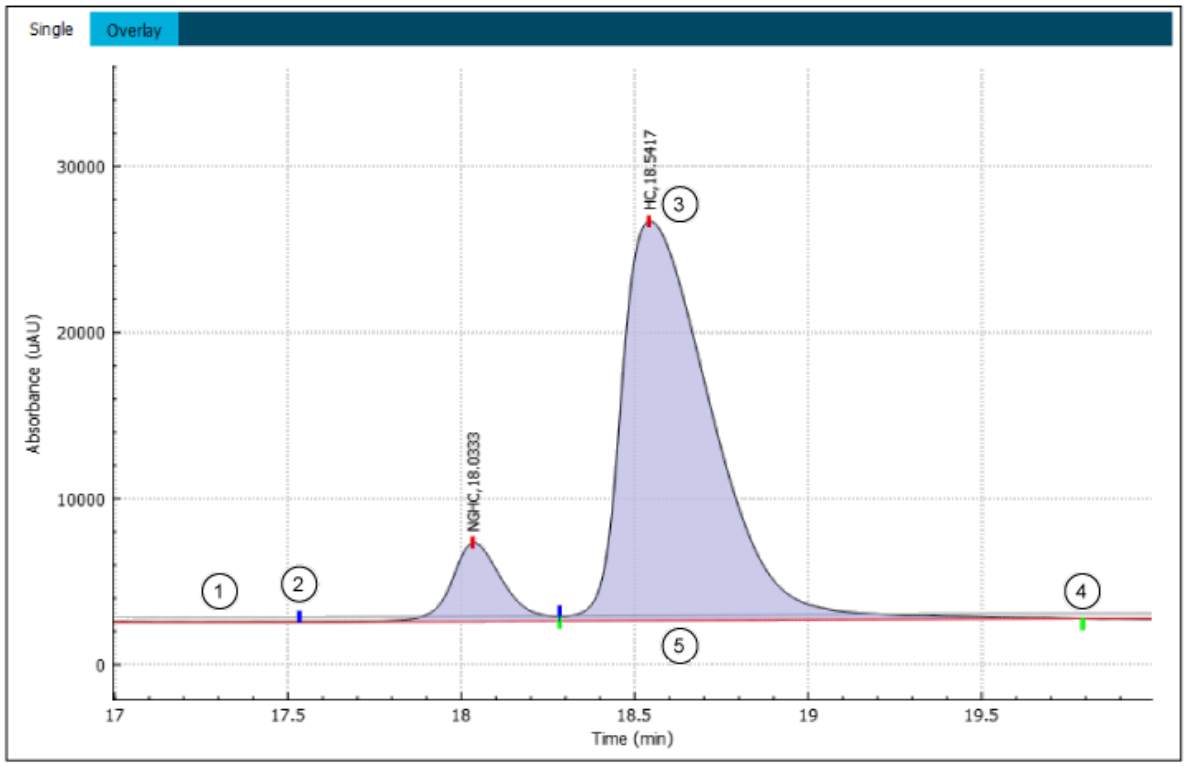
Note: For definitions of the integration parameters, refer to the section: "Integration Parameters" in the document: *BioPhase Software Help System*.

Note: For information about how the results are calculated, refer to the section: "Results Table Calculations" in the document: *BioPhase Software Help System*.

1. On the Home page of the BioPhase software, click **Data Analysis**.
   The BioPhase Analysis software main window opens.
2. Click **File** > **Open**, select the data files to analyze, and then click **Open**.
3. On the Integration tab, click **Settings** next to **Optimizer**.
4. In the Optimizer Settings dialog, click **Enable**, and then click **OK**.
5. In the Analysis Parameters pane, on the Integration tab, edit the parameters.
6. Click  .
   The analysis applies the parameters on the Integration tab. Parameters set on the Library or Post Analysis tabs are applied after the integration.

   In the Data pane, the analysis results are shown in a table below the graph. At the top of the table, **RMS Noise**, **P-P Noise**, and **Drift** are shown. These values reflect the baseline of the data.

Figure 5-1 Graph in the Data Pane After Integration



Item	Description
1	Grey threshold line
2	Blue marker for the peak start
3	Red marker for the peak apex
4	Green marker for the peak end
5	Red baseline

In the Files pane, the file name is shown in red text to show that the data has been analyzed. The **Peaks** column shows the number of peaks identified.

7. If required, to show or hide columns in the Results Table, right-click **Settings**.
   Other functions are available in the Results Table. Refer to the section: Results Table Functions.

8. If required, add integration events from the graph, and then click  .
   Refer to the section: Integration Events Added from the Graph.

9. If required, adjust the parameters in the upper or lower tables on the Integration tab, and then click  .

   To analyze more than one data data file, right-click  , and then select one of these options:

   - **Analyze (checked)**: For the data files that are selected in the Files pane, use the parameters in each file to analyze the data.
   - **Analyze (all)**: For all of the data files in the Files pane, use the parameters in each file to analyze the data.
   - **Apply & Analyze (checked)**: For the data files that are selected in the Files pane, use the parameters set on the Integration, Library, and Post Analysis tabs to analyze the data.
   - **Apply & Analyze (all)**: For the data files that are selected in the Files pane, use the parameters set on the Integration, Library, and Post Analysis tabs to analyze the data.
   - **Apply Suitability & Analyze**: For the data files that are selected in the Files pane, use the parameters in the System Suitability dialog to do the system suitability test.
   - **Apply Suitability & Analyze (all)**: For all of the data files in the Files pane, use the parameters in the System Suitability dialog to do the system suitability test.

10. If required, click  .
    The last analysis is undone.

11. (Optional) Click  .
    The analysis stops. If some of the files were already analyzed before the button was clicked, then the results are not removed when the analysis is stopped.

12. (Optional) Click  .

    The analysis parameters are saved to a BioPhase Analysis parameters file for later use. The file has the `dana` extension.

    The file can be saved as read-only so that it cannot be changed.

13. (Optional) Click  .

    To save more than one data file, right-click  , and then select one of the following options:

    - **Save (checked)**: Save changes to the data files that are selected in the Files pane.
    - **Save (all)**: Save changes to all of the data files in the Files pane.

    The analysis parameters and results are saved.

14. Click  .

    To close more than one data file, right-click  , and then select one of the following options:

    - **Close (checked)**: Close the data files that are selected in the Files pane.
    - **Close (all)**: Close all of the data files in the Files pane.

    The data file closes.

Integration Events Added from the Graph

Some types of integration events can be added from the graph.

Depending on the event, it can be classified as a manual event or an automatic event. For manual events:

- The parameters cannot be saved as part of an analysis parameters file.
- The events are shown in the Manual Events dialog.
- The events are not deleted when the data file is analyzed by clicking  . Instead, after the automatic analysis, the manual events are applied again.

The following events can be added from the graph:

- Adjust a Peak Marker.
- Split a Peak.

- Add Integration Events for a Range.
- See or Delete Manual Integration Events.

Split a Peak

1. Press **Ctrl**, and then click the graph where the peak should be split.

   Note: Pins cannot be put on a peak start, peak apex, or peak end marker. Pressing **Ctrl** and then clicking directly on a peak marker moves the marker instead of adding a pin.

   A pin () is added to the graph.
2. Right-click the pin and then select **Split Peak**.

   In the Results Table, a row is added for the new peak and it is shaded in yellow.

   In the Data pane graph, peak markers for the new peak are shown, and the peak shading updates as appropriate.
3. (Optional) To move a pin when two pins are present on the graph, press **Ctrl**, and then click the new position.
   The pin closest to the new position is moved to it.
4. (Optional) To delete a pin before applying an event, press **Ctrl**, and then click the pin.

Adjust a Peak Marker

In the graph, peak markers indicate peak start, peak apex, and peak end.

1. In the Data pane graph, press **Ctrl** and then move the cursor over the peak marker for a peak start, peak apex, or peak end.

   Note: When the cursor is directly over the peak marker, it changes to a circle.
2. Click the peak marker, and then drag it right or left to change the marker position.

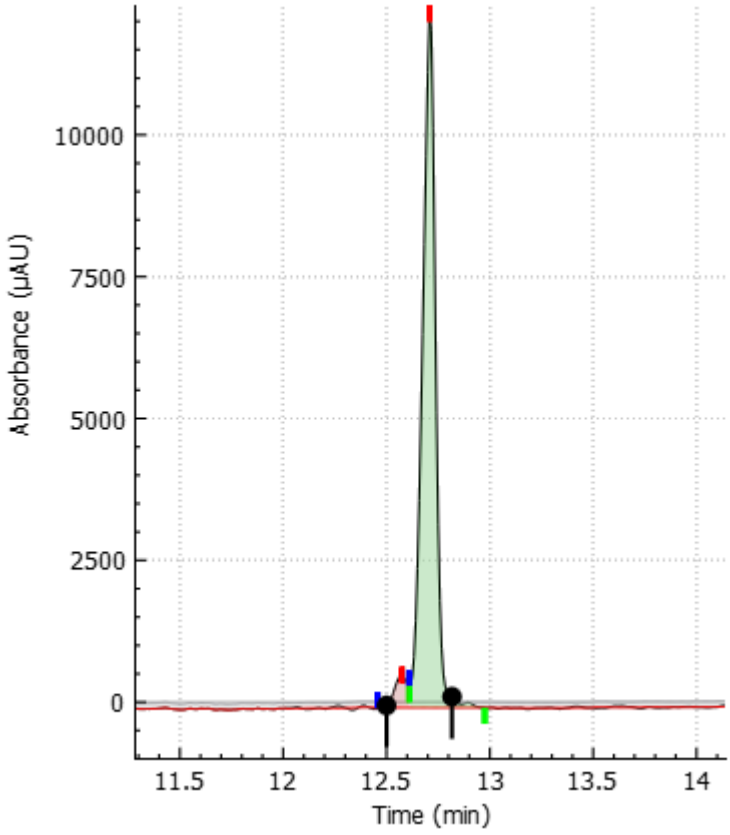
   In the Results Table, the information related to the position of the peak marker and values calculated using the position are updated, and the row is shaded in yellow.

   In the Data pane graph, the peak shading and the position of the peak marker changes.

Add Integration Events for a Range

1. To specify a range in the data, press **Ctrl**, and then click the graph in two locations.
   Two pins are added to the graph.

Figure 5-2 Pins on the Graph



Note: Pins cannot be put on a peak start, peak apex, or peak end marker. Pressing **Ctrl** and then clicking directly on a peak marker moves the marker instead of adding a pin.

2. Right-click the graph, and then select the event.

Note: Some integration events occur immediately and others require the user to click **Analyze**. Refer to the table: Table 5-1.

Table 5-1 Integration Events Requiring Two Points

Label	Description
Delete peak(s)	Delete the peaks with a peak apex in the selected range. The peak is deleted from the Results Table. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again. In the graph, the shading and the peak markers for the peak start, peak apex, and peak end are removed.

Table 5-1 Integration Events Requiring Two Points (continued)

Label	Description
Add peak	Add a new peak in the selected range. The peak is added to the Results Table and the row is shaded in yellow. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again. In the graph, the peak is shaded, and if annotations are shown, an asterisk (*) is added at the peak apex.
Merge peaks	Merge all peaks with a peak apex in the selected range. In the Results Table, one row shows the information for the merged peaks, and the row is shaded in yellow. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again. In the graph, if annotations are shown, an asterisk (*) is added at the peak apex. **Note:** Peaks merged with this function are not saved as an analysis parameter in the data file.
Suspend integration	Suspend integration in the selected range. This is not a manual event. The peaks in the range are deleted from the Results Table. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again. In the graph, the shading and the peak markers for the peak start, peak apex, and peak end are removed. This event is added to the table on the Integration tab. **Note:** Click  to apply the event.

Table 5-1 Integration Events Requiring Two Points (continued)

Label	Description
Width at 0.0 min	Change the width to the distance between the two pins and apply it from the beginning of the data. This is not a manual event. On the Integration tab, the **Value** cell in the **Width** row changes to the width between the pins, in seconds. **Note:** Click  to apply the event. The integration uses the **Width** for the whole file, unless another **Width at 0.0 min** or **Width at pin** is present.
Width at pin	Change the width to the distance between the two pins and apply it from the location of the first pin. This is not a manual event. On the Integration tab, a new row for **Width** is added. The **Start** cell contains the location of the first pin and the **Value** cell contains the width between the pins, in seconds. **Note:** Click  to apply the event.
Baseline (B-B)	Replace the baseline in the selected range with a straight baseline. The first and the last points in the line are the locations of the pins on the calculated baseline. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.
Data-to-data baseline	Replace the baseline in the selected range with a straight baseline. The first and the last points in the line are the locations of the pins on the data. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.
Match baseline to data	Update the baseline in the selected range to match the data. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.

After the integration event is applied, the pins are deleted from the graph.

3. (Optional) To move a pin when two pins are present on the graph, press **Ctrl**, and then click the new position.

The pin closest to the new position is moved to it.

4. (Optional) To delete a pin before applying an event, press **Ctrl**, and then click the pin.

See or Delete Manual Integration Events

1. In the Manual Events section on the Integration tab, click **View**.
   The Manual Events dialog opens to show all of the manual integration events, except Suspend Integration.
2. In the Manual Events section on the Integration tab, click **Clear**.

   The integration events are deleted from the Results Table.

   In the graph, the changes that result from manual integration are removed.

   In the Results Table, the changes that result from manual integration are removed.

Results Table Functions

The following functions apply to the Results Table in the Data pane. Different functions are available for each tab.

Table 5-2 Single Tab Results Table Functions

To Do This	Do This
Adjust the width of one column	Click the border of a column in the Results Table header, and then drag to change the width of the column.
Change the number of digits after the decimal point for a value in the table	Right-click the Results Table, and then select **Settings**. In the Information Setup dialog, type a value in the **Decimals** cell, and then click **OK**.
Copy the contents of the table to the clipboard	Right-click the Results Table, and then select **Copy results**. The contents of the table are copied to the clipboard as comma-separated values. **Note:** Only the visible columns are copied.
Minimize the width of every column in the table	Right-click the Results Table, and then select **Adjust column widths**. The column widths are adjusted to show only the contents of the cells.
Minimize the width of one column in the table	Double-click the border of a column in the Results Table header. The width of the column to the left of the cursor is adjusted to show only the contents of the cell.

Table 5-2 Single Tab Results Table Functions (continued)

To Do This	Do This
Show or hide columns	Right-click the Results Table, and then select **Settings**. In the Information Setup dialog, select or clear the check boxes in the **Single** column as required, and then click **OK**.
See the row for a peak in the graph	Hover the cursor over a shaded area in the graph identified by a peak. The related row in the Results Table is highlighted.

Table 5-3 Overlay Tab Results Table Functions

To Do This	Do This
Select a different file to be used as the reference file	Click the list on the right side of the header, and then select the file to be used as the reference. Only the **Reference - All** and **Reference - Peak Table** analyses use a reference file.
See a different type of analysis	Click the list on the right side of the header and then select the type of analysis.
Change the number of digits after the decimal point for a value in the table	Right-click the Results Table, and then select **Settings**. In the Information Setup dialog, type a value in the **Decimals** cell and then click **OK**.
Adjust the width of one column	Click the border of a column in the Results Table header, and then drag to change the width of the column.
Copy the contents of the table to the clipboard	Right-click the Results Table, and then select **Copy results**. The contents of the table are copied to the clipboard as comma-separated values. Only the visible columns are copied.
Minimize the width of one column in the table	Double-click the border of a column in the Results Table header. The column to the left of the cursor is minimized to show only the contents of the cell.
Minimize the width of every column in the table	Right-click the Results Table, and then select **Adjust column widths**. The width of every column in the table is minimized to show only the contents of the cells.

Table 5-3 Overlay Tab Results Table Functions (continued)

To Do This	Do This
Show or hide columns	Right-click the Results Table, and then select **Settings**. In the Information Setup dialog, select or clear the check boxes in the **Overlay** column as required, and then click **OK**.

Identify the Peaks

On the Library tab, set the parameters to identify peaks in the data automatically. Peaks can be identified if they are in the Marker Table or the Peak Table.

- Peaks in the Marker Table are identified by migration time and are used to calibrate the X-axis.
- Peaks in the Peak Table are identified by either migration time or calibrated migration time, depending on the selection made in the **Peak Table - Identify by** list.

Note: Do not use the options available in the Library tab to analyze Fast Glycan data. Use the Fast Glycan Analysis dialog box, available on the Post Analysis tab.

1. After the peaks have been integrated, open the Library tab.
2. Add the peaks to be used as markers to the Markers Table. To add a marker, use one of these methods:
   - Right-click a peak in the graph, select **Add as marker**, type the marker name in the **Name** field, edit the **Cal MT** and **Tol** cells, and then click **OK**.
   - Edit the cells in the Marker Table directly.

   Note: Tol is the tolerance for matching a marker to a peak in the data. It can be an absolute value or a percentage. To set it as a percentage of the migration time (**MT**), type **%** after the numbers.
3. Click the **Fit Type** list and select the type of equation used to generate the calibration curve.

   Make sure that there are sufficient markers for the selected equation.
   - **Linear**: Two markers are required. If only one marker is present, then the origin (0,0) is used as the other marker.
   - **Quadratic**: Three markers are required.
   - **Cubic**: Four markers are required.
   - **Quartic**: Five markers are required.

- **Log**: Two markers are required.
- **Point to Point**: Two markers are required.

External markers can be used to generate the calibration curve. Refer to the document: *BioPhase Help System*.

4. If required, select **Cal MT** in the **Identify by** list.

Note: This selection determines if the Peak Table uses migration time or calibrated migration time to identify peaks.

5. Click  .

The data is analyzed to identify the markers and create the calibration curve.

In the graph, peaks for the markers are shaded in green. If annotations are shown, then the marker names are shown in brackets above the peaks.

In the Results Table, the row for a marker is green and the marker names are shown in brackets.

6. (Optional) If **Cal MT** will be used, then change the title and units on the X-axis for the graph.

Note: If this information is not added, then the X-axis title is `Undefined` if the X-axis is changed to **Cal MT**.

a. Type a title for the X-axis in the **X-axis Name** field.

b. Type the units for the X-axis in the **Units** field.

c. Click  .

d. Click  .

The graph is shown with calibrated migration time on the X-axis.

7. (Optional) Click  .
The graph is redrawn with the X-axis in reverse order. This option is useful, for example, in a cIEF analysis, because the pI markers migrate from high pH to low pH. With this option, the peaks for the pI markers are shown from high pH to low pH.

8. Add the peaks to be identified in the analysis to the Peak Table. To add a named peak, do one of the following:

- Right-click a peak in the graph, select **Add to library**, type the peak name in the **Name** field, edit the **Tol** cell, and then click **OK**.
- Edit the **Name**, **Cal MT**, and **Tol** cells in the Peak Table.

Note: If the analysis does not use calibrated migration time, then edit the values for **MT** when creating named peaks.

Note: Tol is the tolerance for matching a marker to a peak in the data. It can be an absolute value or a percentage. To set it as a percentage of the calibrated migration time (**Cal MT**), type **%** after the numbers. To use it as a percentage, make sure that % is present in the cell.

9. For each marker and named peak:
   - Select the criteria for matching a marker or a named peak to a peak in the data: **Ctr** (center), **Ht** (highest), or **Area** (largest).
   - To exclude the peak from the calculation of **Area%** and **Corr. Area%**, select **Excl**.
   - To use the peak as the reference for calculating **Rel. Area** and **Rel. Corr. Area**, select **Ref**. Only one peak can be selected as the reference.
10. Click  .

    The data is analyzed to identify the named peaks.

    In the graph, peaks for the named peaks are shaded in blue. If annotations are shown, then the peak names are shown above the peaks.

    In the Results Table, the row for a named peak is blue. The peak names are shown in the table.
11. If the results are satisfactory and the same analysis parameters need to be applied to other data files, then right-click  and select **Apply & Analyze (all)** or **Apply & Analyze (checked)**.

Post-Analysis Procedures

Merge Peaks After Analysis

After the data has been integrated and analyzed for named peaks, additional peaks can be merged.

1. Integrate the data, and then identify peaks.
2. Open the Post Analysis tab.
3. In the **Event** cell in the lower table, select **Merge Peaks**.
4. Click the **Cal MT (L)** cell and then type the starting point of the peaks to be merged.
   If calibrated migration time is not being used, then type the migration time in the **Cal MT** cell.
5. Click the **Cal MT (R)** cell and then type the end of the range for the peaks to be merged.

6. (Optional) Click the **Value** cell and then type a name for the merged peak.
7. Click  .

   The peaks in the specified range are merged. The graph updates to show the start and end peak markers for the merged peak. The highest point in the range is assigned as the peak apex.

   If annotations are shown on the graph, then an asterisk (*) is added before the first annotation.

   In the Results Table, one row shows the information for the merged peaks and that row is shaded in yellow. The rows for peaks that were merged are deleted from the table. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.

Groups Peaks After Analysis

After the data has been integrated and analyzed for named peaks, peaks can be grouped together.

Note: If there are other post-analysis events, the **Group Peaks** event is always applied after all of the other events.

1. Integrate the data, and then identify peaks.
2. Open the Post Analysis tab.
3. In the **Event** cell in the lower table, select **Group Peaks**.
4. Click the **Cal MT (L)** cell and then type the starting point of the peaks to be grouped.
   If calibrated migration time is not being used, then type the migration time in the **Cal MT** cell.
5. Click the **Cal MT (R)** cell and then type the end of the range for the peaks to be summed.
6. (Optional) Click the **Value** cell and then type a name for the summed peak.
7. Click  .

   No changes are made to the graph or the annotations.

   In the Results Table, a new row is added with information for the grouped peaks (**Area**, **Area%**, **Corr. Area**, and **Corr. Area%**) and that row is shaded in yellow. The area for the new peak is the sum of the peak areas of the peaks in the specified range. No changes are made to the rows for the peaks that were grouped.

Name Peaks After Analysis

After the data has been integrated and analyzed for named peaks, additional peaks can be labeled in the graph and the Results Table.

1. Integrate the data, and then identify peaks.
2. Open the Post Analysis tab.
3. In the **Event** cell in the lower table, select **Name Peak**.
4. Click the **Cal MT (L)** cell and then type a value inside the peak to be named.
5. Click the **Value** cell and then type the name.
6. Click  .

   The peak in the graph is labeled with the peak name. The Results Table updates with the peak name.

   If the peak was already named, then the name is replaced with the new name.

   The peak name is saved as an analysis parameter and can be applied to other data files to name the peak automatically.

Filter Peaks by Area After Analysis

After the data has been integrated and analyzed for named peaks, filter out peaks below an area threshold. Peaks can be filtered by **Area**, **Area%**, **Corr. Area**, and **Corr. Area%**.

1. Integrate the data, and then identify peaks.
2. Open the Post Analysis tab.
3. In the **Event** cell in the lower table, select one of the following:
   - **Filter (Area)**
   - **Filter (Area%)**
   - **Filter (Corr Area)**
   - **Filter (Corr Area%)**
4. Click the **Value** cell, and then type the threshold for filtering peaks.
   Do not type a % for **Filter (Area %)** or **Filter (Corr Area %)**. Only numbers are required.

   Note: Because filtering is applied across the whole file, a value cannot be typed in the columns for **Cal MT (L)** and **Cal MT (R)**.
5. Click  .

   The graph updates to remove the start and end peak markers for the filtered peaks. Annotations and peak shading in the filtered peaks are also removed.

   In the Results table, the rows for peaks below the threshold are deleted. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.

Note: If filtering removes a peak that is listed in the Marker Table, then the calibration curve and the **Cal MT** values do not change.

Exclude Peaks After Analysis

After the data has been integrated and analyzed for named peaks, exclude peaks from a range of the data.

1. Integrate the data, and then identify peaks.
2. Open the Post Analysis tab.
3. In the **Event** cell in the lower table, select **Exclude (Cal MT)**.

   Tip! Click  to show the calibrated migration time on the X-axis.
4. Click the **Cal MT (L)** cell, and then type the starting point of the range for the peaks to be excluded.

   If calibrated migration time is not being used, then type the migration time in the **Cal MT** cell.
5. Click the **Cal MT (R)** cell, and then type the end of the range for the peaks to be excluded.
6. Click  .

   The peaks in the specified range are excluded. The graph updates to remove the start and end peak markers for the excluded peaks. Annotations and peak shading in the excluded peaks are also removed.

   In the Results Table, the rows for the peaks that were excluded are deleted. Values for **Area%**, **Corr. Area%**, **Rel. Area**, and **Rel. Corr. Area** are calculated again.

   Note: If the **Exclude (Cal MT)** event removes a peak listed in the Marker Table, then the calibration curve and the **Cal MT** values do not change.

Work with the Results 6

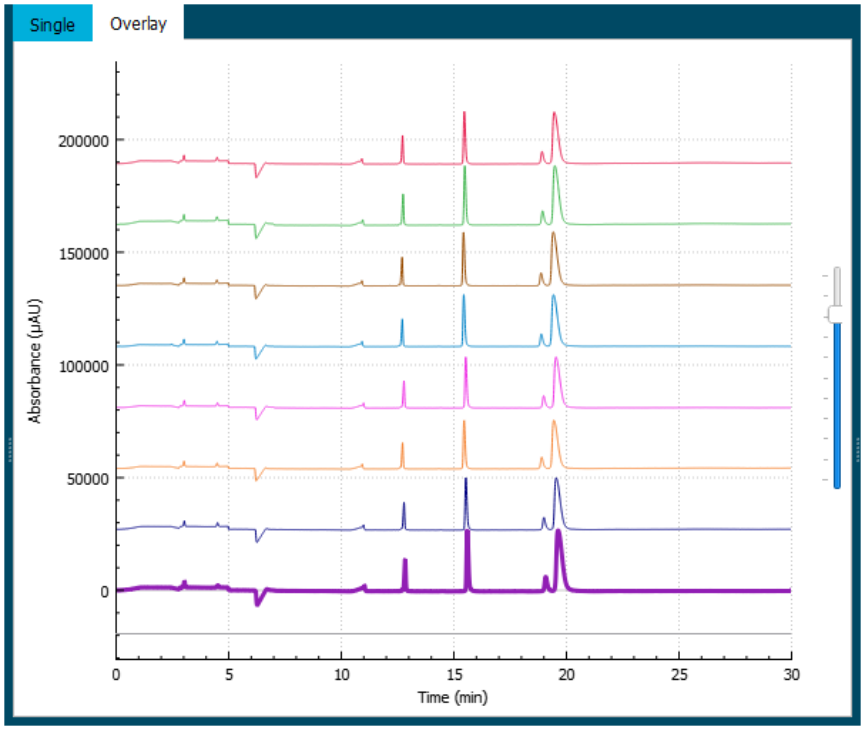
Review the Results on the Overlay Tab

The Overlay tab shows the graphs for the selected data files. This tab has statistics for the selected data files, as well as the system suitability report.

Note: This section does not describe the system suitability function. For information about system suitability, refer to the section: System Suitability Testing.

1. Open a set of data files, integrate the peaks, and then set up automatic peak identification.
2. In the Files pane, click , and then open the Overlay tab.

Figure 6-1 Overlay Tab



The color of the trace in the graph corresponds to the color in the circle next to the file name in the Files pane.

The thicker line is the trace for the file selected in the Files pane.

3. To change the order of the files in the overlay, in the Files pane, click the file to be moved, and then drag it up or down the list of files.

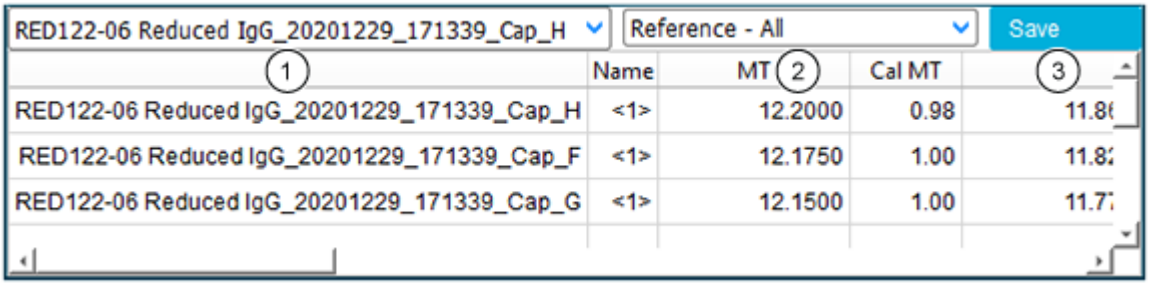
   Note: The order of the colors assigned to the files does not change after a file is moved.

4. To adjust the distance between the traces, move the slider on the right side of the graph up or down.

   Note: To see the traces as a series of tiled graphs, move the slider all of the way to the top.

5. Calculate the results for all of the files on the Overlay tab.

Figure 6-2 Results Table



Item	Description
1	Reference file
2	Type of analysis
3	Save the results to a comma-separated file

a. To select the type of analysis, click the list on the right side of the Results Table header.

   These options are available:

   - **Reference - All**: In the Results Table, show statistics for every peak in the reference file that is present in all of the other data files.
   - **Reference - Peak Table**: In the Results Table, show statistics for every named peak in the reference file that is present in all of the other data files.
   - **Named Peaks**: In the Results Table, show statistics for all of the named peaks in the data files.
   - **All Data (not displayed)**: Calculate but do not show statistics for all of the peaks in all of the data files.
   - **System Suitability**: Suitability testing operates differently than the other reports. For more information, refer to the section: System Suitability Testing.

A peak in a data file is considered to be matched to a peak in the reference file if the migration times of the peak apexes match within 5%.

b. Click the list on the left, and then select the reference file.

The reference file is the file against which all of the other files are compared.

Only the **Reference - All** and **Reference - Peak Table** analyses use a reference file.

The Results Table updates to show the selected analysis or the system suitability report.

If **All Data (not displayed)** is selected, then the Results Table is empty. To see the results, click **Save** to save the results to a comma-separated file, and then open the file in another program.

6. (Optional) To use a different reference file or see a different type of analysis, do step 5 again.
7. (Optional) Click **Save**.
   The Results Table is saved to a comma-separated text file. Only the columns that are shown in the table are saved.

Note: To save the system suitability results, click **File** > **Save Report**. The results are saved as a PDF.

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8. (Optional) Click **File** > **Print**.
   The contents of the Overlay tab are printed in the current report template.
9. (Optional) In the **File** toolbar, right-click  , and then select **Save (all)**.
   All changes to the results and the analysis parameters are saved to the data files.
10. In the **File** toolbar, right-click  , and then select **Close (all)**.
    All of the data files close.

Analyze Fast Glycan Data

Use this procedure to analyze samples prepared with the Fast Glycan Labeling and Analysis kit to identify glycans isolated from glycoproteins. The analysis requires that the BST-Bracketing Standard be present in the sample. If the BST-Bracketing Standard is not present, then the analysis will fail.

Note: Do not use the options available in the Library tab to analyze Fast Glycan data. Use the Fast Glycan Analysis dialog box, available on the Post Analysis tab.

Tip! To analyze a subset of the data, select the check box in the Files pane for each file to be included, and then right-click  and select **Apply & Analyze (checked)**.

---

1. On the Home page of the BioPhase software, click **Data Analysis**.

The BioPhase Analysis software main window opens.

2. Click **File** > **Open**, select the data files to analyze, and then click **Open**.
3. Integrate the data, and then review the results.
   If the results are not satisfactory, then edit parameters on the Integration tab, and then analyze the data again until the results are satisfactory.
4. On the Post Analysis tab, click **Settings** next to **Fast Glycan Analysis**.
   The BioPhase Analysis dialog opens with the Fast Glycan Analysis dialog behind it.
5. In the BioPhase Analysis dialog, click the button to select the parameters for the analysis.
   - To use the default settings, click **Use Default**.
   - To use a previously saved glycan parameters file, click **Open File**, browse to a `glycan` file and then click **Open**.
   - To enter settings manually, click **Cancel**.

   If **Use Default** or **Open File** was clicked, then the Fast Glycan Analysis dialog is populated with the parameters required to create a calibration curve from data from the GU-Glucose Ladder Standard, and to identify the glycans in the GU Table.

   If **Cancel** was clicked, then the Fast Glycan Analysis dialog is empty.

   Note: For a list of the glycans in the GU Table, refer to the document: *Fast Glycan Labeling Analysis Kit Application Guide*.
6. If required, in the Fast Glycan Analysis dialog box, set the parameters for the analysis.
7. Review the parameters in the dialog and, if required, make changes to the settings for automatic identification of the DP2 and DP15 peaks, the Glucose Ladder table, or the GU Table table.
8. Make sure that **Enable** is selected, and then click **OK**.
   The Fast Glycan Analysis dialog closes.
9. Click  .

   The data is analyzed to identify the glycans.

   In the graph, peaks identified as glycans are shaded in blue and the peaks identified as DP2 and DP15 are shaded in green. If annotations are shown, then the peak names are shown above the peaks.

   In the Results Table, the peak names are shown.
10. Click  .
    The X-axis updates to show glucose units instead of migration time.
11. Show the peak names on the graph.

a. Right-click  .
The Information Setup dialog opens.

b. Select **Name**, **RMT GU**, **GU**, and other information to see on the graph, and then click **OK**.

c. Click  .

The peak names, the relative migration time calculated by the Fast Glycan analysis, and the GU values for the identified glycans are shown on the graph.

If the windows for two or more glycans overlap, then for an unknown peak that is within the overlapping windows, all of the glycan names are shown on the plot and in the Results Table. A forward slash is shown between the glycan names.

12. If the analysis does not identify the DP2 and DP15 peaks, or the sample data does not have a peak for APTS, set the parameters for manual identification of the DP2 and DP15 peaks. Do the following:

    a. On the Post Analysis tab, click **Settings** next to **Fast Glycan Analysis**.

    b. In the **Manual** section of the dialog, type the apex for the DP2 peak in the **DP2 (minutes)** field.

    c. Type the apex for the DP15 peak in the **DP15 (minutes)** field.

    d. For either field, select the **Use Manual** check box to set the apex to the specified value even if a peak for DP2 or DP15 is present.

    e. Click **OK**, and then click  .

    The data is analyzed with the new parameters.

    In the graph, peaks identified as glycans are shaded in blue. Because DP2 and DP15 are set manually, no peaks are shaded in green in the graph. If annotations are shown, then the peak names are shown above the peaks.

13. If the results are satisfactory and the same analysis parameters should be applied to other data files, then right-click  and select **Apply & Analyze (all)** or **Apply & Analyze (checked)**.

14. To save the glycan parameters to a file so they can be used again, do the following.

    a. On the Post Analysis tab, click **Settings** next to **Fast Glycan Analysis**.

    b. Click **Save**.
    The Save As dialog opens.

    c. Browse to the location to save the file.

    d. Type a name in the **File name** field.

e. Click **Save**.

The glycan parameters are saved to a `glycan` file.

System Suitability Testing

System suitability testing can be used to determine if the results meet minimum expected performance criteria.

System suitability can evaluate properties of a specific peak, the baseline, or both. Run a well-characterized standard to serve as the reference analyte, and then evaluate it. The results can help examine various parameters that describe the suitability of the sample preparation procedure, instrumentation, chemistries, and environment for doing the analysis.

The correlation coefficient (R^2) for peaks in the Marker Table can also be calculated.

Note: To evaluate a specific peak with the system suitability test, make sure that it is present in the Marker Table or the Peak Table. If the analysis does not involve automatic peak identification, then add the peak to be evaluated to the Marker Table on the Library tab.

Develop the Parameters for a System Suitability Test

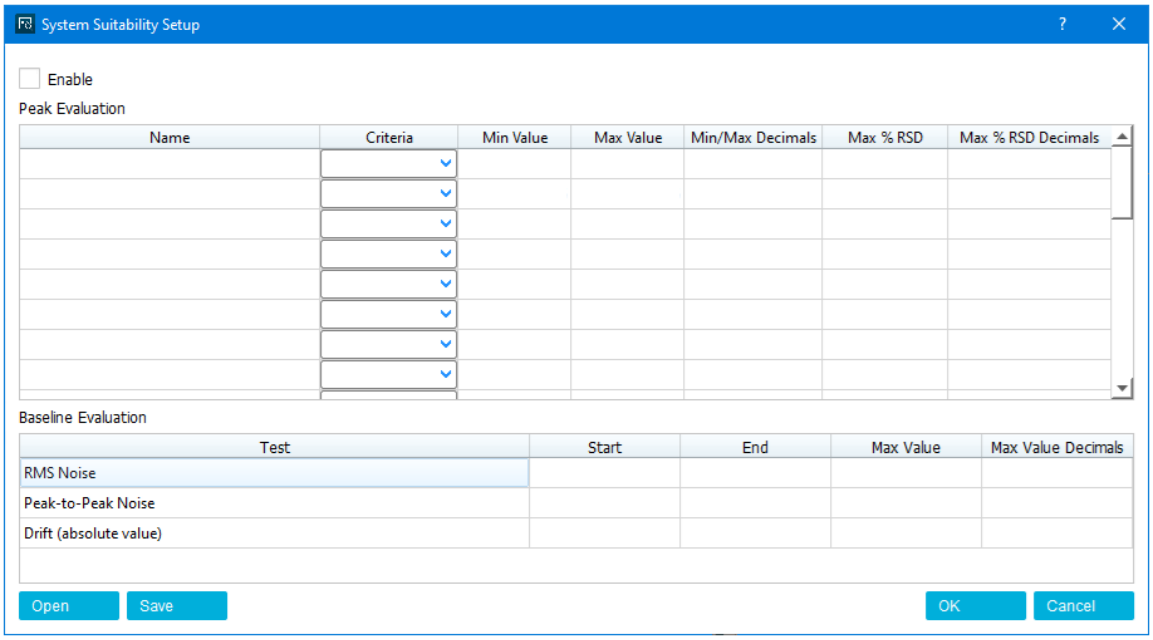
The data should already have been integrated and the named peaks assigned. Refer to the sections: Integrate the Peaks and Identify the Peaks.

Use this procedure to develop the parameters for a system suitability test. After determining the system suitability parameters, save them to a file. The file contains the parameters required to do the system suitability test.

1. Click **File** > **Open** and select a set of data files that contain the standards for the system suitability test.
2. On the Post Analysis tab next to **System Suitability**, click **Settings**.

   If the purpose of the system suitability test is to evaluate only the baseline, then go to step 4.

Figure 6-3 System Suitability Setup Dialog



3. If peaks are to be analyzed, then edit the parameters in the Peak Evaluation table. For each peak to be analyzed, do the following:

   a. In the **Name** field, type the name of the peak.

      Make sure that the peak name in the table matches the name on the Library tab exactly. If the names do not match, including case, then the test automatically fails.

   b. Click the **Criteria** list, and then select the peak characteristic to be evaluated.

   c. Set at least one of the following criteria to evaluate the peak:

      - If the peak characteristic must be greater than a minimum value to pass, then type a value in the **Min Value** field.
      - If the peak characteristic must be less than a maximum value to pass, then type a value in the **Max Value** field.
      - If the peak will be evaluated for **Min Value** or **Max Value**, then type a value for the number of digits after the decimal point in the **Min/Max Decimals** field.
      - If the relative standard deviation for a peak characteristic must be less than a specified value to pass, then type the value in the **Max % RSD** field and type a value for the number of digits after the decimal point for the **Max % RSD Decimals**.

4. If the baseline is to be analyzed, then edit the parameters in the Baseline Evaluation table. For each data characteristic to be evaluated, do the following:

   a. To evaluate a range of data, type the range in the **Start** and **End** fields.

If the fields are empty, then all of the data is evaluated.

b. In the **Max Value** field, type the cutoff for the parameter.
If the value in the data file is above the **Max Value**, then the test fails.

c. In the **Max Value Decimals** field, type a value for the number of digits after the decimal point for the **Max Value**.

5. To evaluate R^2 (the correlation coefficient) for the peaks in the Marker Table, do the following:
(R^2 is calculated using the fit selected in the **Fit Type** list on the Library tab.)

a. In the Peak Evaluation table, click the **Criteria** list, and then select **Linearity**.
Leave the **Name** field blank.

b. In the **Min Value** field, type the minimum value for R^2.

c. In the **Min/Max Decimals** field, type a value for the number of digits after the decimal point for the **Min Value**.

6. Save the parameters to a file so they can be used again.

a. Click **Save**.
The Save As dialog opens.

b. Browse to the location to save the file.

c. Type a name in the **File name** field.

d. Click **Save**.

The system suitability test parameters are saved to a `suitability` file.

7. In the System Suitability Setup dialog, do the following:

a. Click **Enable**.

b. Click **OK**.

The **System Suitability** row in the table on the Post Analysis tab is shown in green to show that the system suitability test is selected.

Note: Do not click on another data file in the **Files** pane before analyzing the data. If another data file is shown, then the parameters in the System Suitability Setup dialog are reset to the default values.

---

8. In the Files pane file, click ☐ next to the file for the system suitability test.

9. Right-click  and select **Apply Suitability & Analyze (checked)**.

The system suitability test is applied to the selected data file.

Before the data is analyzed, it is rounded to the value set in the **Min/Max Decimals**, the **Max % RSD Decimals**, and the **Max Value Decimals** fields. If the fields are empty, then the data is analyzed without rounding.

10. In the Files pane, next to the selected data file, click , and then open the Overlay tab.
11. In the Results Table header, click **System Suitability**.

    The system suitability report is shown. Refer to the figure: Figure 6-4.

    The banner across the top of the report is green if all of the tests pass. If one or more of the tests fail, then the banner is red. If data characteristics were evaluated, then the details are shown in the Peak Evaluation section. If the baseline was evaluated, then details are shown in the Baseline Evaluation section.

    If the correlation coefficient was evaluated, then R^2 is shown in the **Linearity** column. R^2 is calculated with the fit selected in the **Fit Type** list on the Library tab.

    If a file in the Overlay tab was not included in the system suitability analysis, then the system suitability report in the Results Table is empty and the software shows an error.

Figure 6-4 System Suitability Report on the Overlay Tab

System Suitability PASSED							
Peak Evaluation							
	Name	Criteria		Min Value	Max Value	Max % RSD	
	NGHC	Corr. Area%		7.4	7.6		
Sample ID	Name	Criteria	Average	Low	High	% RSD	Status
	NGHC	Corr. Area%	7.50	7.50	7.50	N/A	Pass
RED122-06 Reduced IgG		7.50					Pass
Baseline Evaluation							
Sample ID		Test	Start	End	Value	Max Value	Status
RED122-06 Reduced IgG		P-P Noise			22.4234	23.0000	Pass
Data files							
RED122-06 Reduced IgG	C:/RED122-06 ReducedIgG_20201229_171339_Cap_F.dino						

12. Test the parameters on the other data files.

    a. Right-click and select **Apply Suitability & Analyze (all)**.

The system suitability test is done.

Before the data is analyzed, it is rounded to the value set in the **Min/Max Decimals**, the **Max % RSD Decimals**, and the **Max Value Decimals** fields. If the fields are empty, then the data is analyzed without rounding.

b. Click ■ to load every file in the Overlay pane, and then examine the system suitability report.

13. If the results are not satisfactory, do the following:
    a. Edit the parameters in the System Suitability Setup dialog.
    b. Analyze the data again.
    c. Examine the results.
    d. When the results are satisfactory, make sure to save the parameters to the `suitability` file.

Note: The analysis requires that all of the files have the same system suitability parameters. If the parameters are different, then the software shows an error.

Do a System Suitability Test

The data should already have been integrated and the named peaks assigned. Refer to the sections: Integrate the Peaks and Identify the Peaks.

Use this procedure to do a system suitability test after the parameters have been defined. Refer to the section: Develop the Parameters for a System Suitability Test.

1. Click **File** > **Open**, select the data files to analyze, and then click **Open**.
2. Open the file with the system suitability parameters:
    a. On the Post Analysis tab next to **System Suitability**, click **Settings**.
    b. Click **Open**, and then select the file with the system suitability parameters.
    c. Click **Open**.
3. Right-click  , and then select **Apply Suitability & Analyze (all)**.
   The system suitability test is done.
4. To see all of the data files for the system suitability test in the **Overlay** tab, in the Files pane, click ■.

Note: At least one file must be selected for the overlay. If no files are selected for the overlay, then the system suitability report in the Results Table is empty. The system suitability report is calculated from all the files, even if not every file is shown in the **Overlay** tab.

5. In the Data pane, open the Overlay tab.
6. In the Results Table header, click **System Suitability**.

   The system suitability report is shown. Refer to the figure: Figure 6-5.

   The banner across the top of the report is green if all of the tests pass. If one or more of the tests fail, then the banner is red. If data characteristics were evaluated, then the details are shown in the Peak Evaluation section. If the baseline was evaluated, then details are shown in the Baseline Evaluation section.

   If the correlation coefficient was evaluated, then R^2 is shown in the **Linearity** column. R^2 is calculated with the fit selected in the **Fit Type** list on the Library tab.

   If a file in the Overlay tab was not included in the system suitability analysis, then the system suitability report in the Results Table is empty and the software shows an error.

Figure 6-5 System Suitability Report on the Overlay Tab

System Suitability PASSED							
Peak Evaluation							
	Name	Criteria		Min Value	Max Value	Max % RSD	
	NGHC	Corr. Area%		7.4	7.6		
Sample ID	Name	Criteria	Average	Low	High	% RSD	Status
	NGHC	Corr. Area%	7.50	7.50	7.50	N/A	Pass
RED122-06 Reduced IgG		7.50					Pass
Baseline Evaluation							
Sample ID		Test	Start	End	Value	Max Value	Status
RED122-06 Reduced IgG		P-P Noise			22.4234	23.0000	Pass
Data files							
RED122-06 Reduced IgG	C:/RED122-06 ReducedIgG_20201229_171339_Cap_F.dino						

7. (Optional) Click **File** > **Save Report**.
   The contents of the Overlay tab as specified in the current report template are saved to a PDF file.

   In the first section of the report, a colored bar is next to each file name. The colored bar is the same color as the trace in the Overlay graph.
8. (Optional) Click **File** > **Print** > **Print**.

The results as specified in the current report template are printed to the default printer.

In the first section of the report, a colored bar is next to each file name. The colored bar is the same color as the trace in the Overlay graph.

Audit and Sign the Results

Sign the Results

Note: For a report for the Single tab, if the data is not signed, then a watermark identifies the report as a draft. Reports for the Overlay tab do not include signature information or a watermark.

1. In the BioPhase software, open the data files to be signed.
2. In the Files pane, select the files to be signed.
   - To sign one file, click the name of the file.
   - To sign more than one file, click ☐ next to each file.
3. Click **File** > **Signature** > **Apply**.
   The Signature dialog opens.
4. In the **Enter comment** field, type the reason for the signature, and then click **Apply**.
   The comment can be up to 79 characters.

   To apply the signature to all of the selected files in the Files pane, select **Apply to all checked data files**.

   A new row with `Apply Signature` is added to the audit trail. After a data file has been signed, it is automatically saved and cannot be analyzed again.

Revoke a Signature

Note: For a report for the Single tab, if the data is not signed, then a watermark identifies the report as a draft. Reports for the Overlay tab do not include signature information or a watermark.

1. Open the data files with the signatures to be revoked.
2. In the Files pane, select the files with the signatures to be revoked.
   - To revoke a signature from one file, click the name of the file.
   - To revoke a signature from more than one file, click ☐ next to each file.
3. Click **File** > **Signature** > **Revoke**.
   The Signature dialog opens.

4. In the **Enter comment** field, type the reason that the signature is being revoked and then click **Revoke**.

   To revoke the signatures for all of the selected files in the Files pane, select **Apply to all checked data files**.

   A new row with `Revoke Signature` is added to the audit trail.

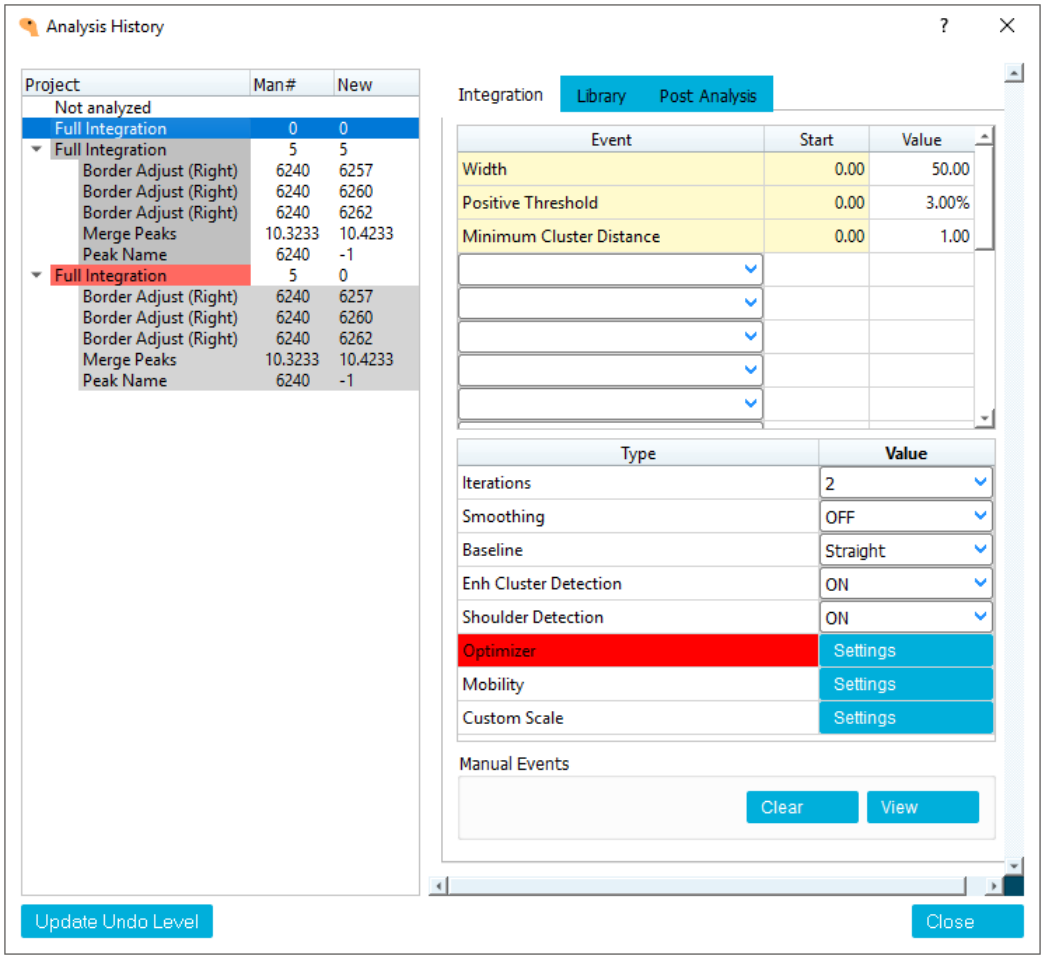
See the Audit Trail

1. Open a data file.

2. In the Project toolbar, right-click  or  .

   The Analysis History dialog opens.

Figure 6-6 Analysis History Dialog



On the left, a table shows the records in the audit trail, with the newest record at the bottom of the list. If the table is empty, then the data file has not been analyzed.

On the right, the analysis parameters for the row that is selected in the audit trail are shown. The following table gives the meaning of the colors used to identify rows in the audit trail.

Table 6-1 Colors in the Audit Trail

Color	Meaning
Blue	Currently selected row.
White	A top-level integration event. Indented gray rows below the event show the manual integration events that occurred after the automatic integration.
Red	The current state of the data file, usually the last row in the table. If either  or  has been clicked, then the red row can move up or down in the list of events.
Dark gray	Saved analysis events.
Light gray	Analysis events that have occurred since the file was last saved.

3. Click a row in the audit trail.
   For rows that identify an analysis action, the analysis parameters are updated to show the parameters related to the selected action. As required, open the Library tab or the Post Analysis tab to see the other parameters.
4. To see the name of the user who signed the data, hover over a row that contains `Apply Signature` or `Revoke Signature`.
   A tool tip with the name of the user who signed the data, the date of the signature, and the comments is shown.
5. (Optional) Click a row in the audit trail and then click **Update Undo Level**.
   The Analysis History dialog closes. The analysis goes back to the state associated with the row that is selected in the audit trail. The Results Table is updated and, as required, the annotations are also updated.
6. Click **Close**.
   The Analysis History dialog closes.

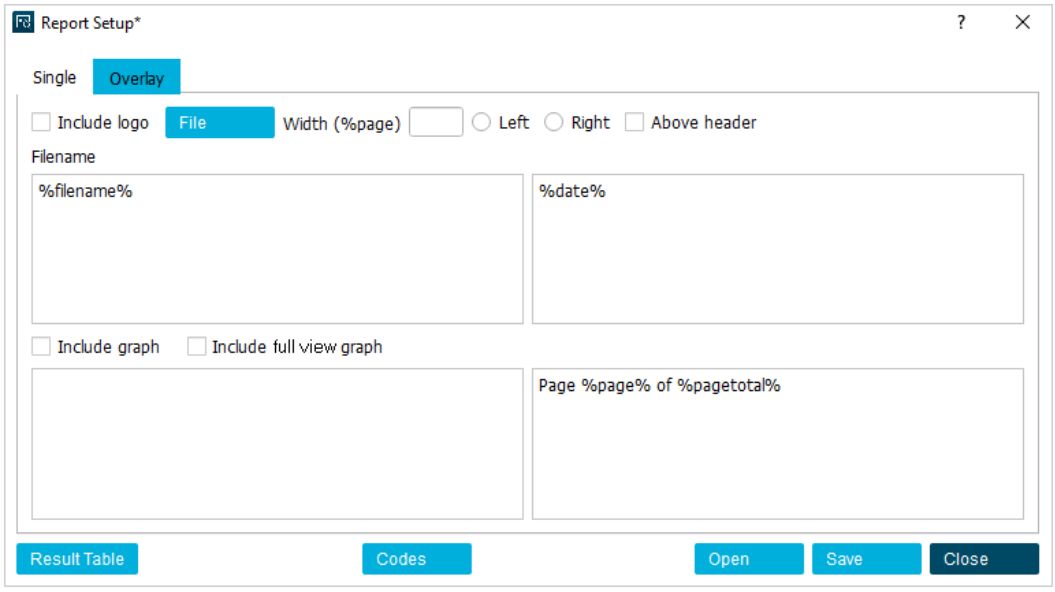
Print or Save a Report

Configure a Report

Use the following procedure to configure the layout of printed reports. A template can be created for repeated use.

1. Click **File** > **Report Setup**.

Figure 6-7 Report Setup Dialog



2. (Optional) To use a report template as starting point, click **Open**, browse to the template, and then click **Open**.

   The template contains the settings for both the single and overlay reports.

   The name of the report shows in the title bar of the dialog.

3. Edit the layout for the report. Do any of the following:

   - Select **Include logo**, click **File**, and then select the file with the logo.
   - If an image is selected, then type a value between 1 and 100 in the **Width (%page)** field. If **Width (%page)** is empty, then the image is not shown.
   - Configure the parameters for where the image is shown.
   - In the text fields, type text to be included in the header and footer of the report.

     Text in the fields on the left is left-justified in the report. Text in the fields on the right is right-justified.

   - Select **Include graph**.

     The graph will be included in the report. If the graph is zoomed, then only the portion that is visible in the Data pane is shown in the report. If annotations are visible in the Data pane, then they are shown in the report.

   - (Available if **Include graph** is selected) Select **Include full graph**.

The graph at the original scaling will be included in the report. If annotations are visible in the Data pane, then they are shown in the report.

- Click **Result Table**, select the columns to be included in the report, and then set the number of decimal points to be shown. To use the columns from the Results Table, select the **Use the Results Table settings in the Data pane for the Report** check box.
- Click **Codes**.

  The table in the dialog shows codes for dynamic fields that can be included in the report header and footer, such as date, file name, and detector. Type the required codes in the header and footer text fields.

  Tip! Right-click the code, select **Copy**, and then paste the code in the applicable field in the Report Setup dialog. If required, drag the Available Codes dialog to get access to the Report Setup dialog.

If a report template was selected and the contents changed, then an asterisk is shown next to the template name in the title bar of the dialog.

4. (Optional) Click **Overlay**, and then do step 3.
5. (Optional) To save the report so it can be used again, do the following:
   a. Click **Save**.
      The Save As dialog opens.
   b. Type a name in the **File name** field.
   c. (Optional) Select **Save as read only, preventing further editing**, if required.
   d. Click **Save**.

   The name of the report shows in the title bar of the dialog. The report template is saved as a `drt` file. The template contains the settings for both of the tabs.
6. Click **Close**.
   The dialog closes. All reports that are printed during this session of the BioPhase Analysis software use this layout.
7. (Optional) Click **File** > **Print Preview**.
   The Print Preview window opens to show the layout from the Report Setup dialog.

Print a Report

Note: For a report for the Single tab, if the data is not signed, then a watermark identifies the report as a draft. Reports for the Overlay tab do not include signature information or a watermark.

1. Configure the report. Refer to the section: Configure a Report.
2. (Optional) Click **File** > **Print Preview** to preview the report.

The Print Preview dialog opens. After reviewing the report, close the dialog.

Note: The Print Preview dialog only shows the report for the current file.

3. Print the report. Do any of the following:
   - To print the current file, click **File** > **Print** > **Print**.
   - To print the selected files in the Files pane, click **File** > **Print** > **Print (checked)**.
   - To print all of the open files, click **File** > **Print** > **Print (all)**.

   The Print dialog opens.
4. Select a printer and then click **Print**.
   The report is printed.

Note: If the report does not print, save the report as a PDF and then print it from a PDF viewer. Refer to the section: Save a Report as a PDF.

Save a Report as a PDF

Note: For a report for the Single tab, if the data is not signed, then a watermark identifies the report as a draft. Reports for the Overlay tab do not include signature information or a watermark.

1. Configure the layout for the report. Refer to the section: Configure a Report.
2. Click **File** > **Save Report**.

   If the Single tab is in front, then the report is saved as a PDF in the folder with the data file. The name of the report is the same as the name of the data file.

   If the Overlay tab is on top, then a dialog asking where to save the report opens. Browse to the location to save the report, type a name for it, and then click **Save**.

Maintenance 7

WARNING! Electrical Shock Hazard. Turn off the power to the system before any system disassembly. Failure to do so can cause electrical shock or other injury.

WARNING! Electrical Shock Hazard. To prevent the risk of electrical shock or injury, do not do maintenance or repair procedures that are not included in this manual. Contact a SCIEX field service employee (FSE) for maintenance service and support.

WARNING! Electrical Shock Hazard. Do not try to disable any of the system interlocks or safety mechanisms.

WARNING! Ionizing Radiation Hazard, Biohazard, or Toxic Chemical Hazard. Before cleaning or maintenance, identify whether decontamination is required. If radioactive materials, biological agents, or toxic chemicals have been used with the system, then the customer must decontaminate the system before cleaning or maintenance.

Clean the Surfaces

Clean the external surfaces of the system after a spill or when they become dirty.

Required Materials
• Soft cloth

1. Use a soft, damp cloth to clean the surfaces of the system.
2. Use a soft, dry cloth to remove any moisture from the surfaces.

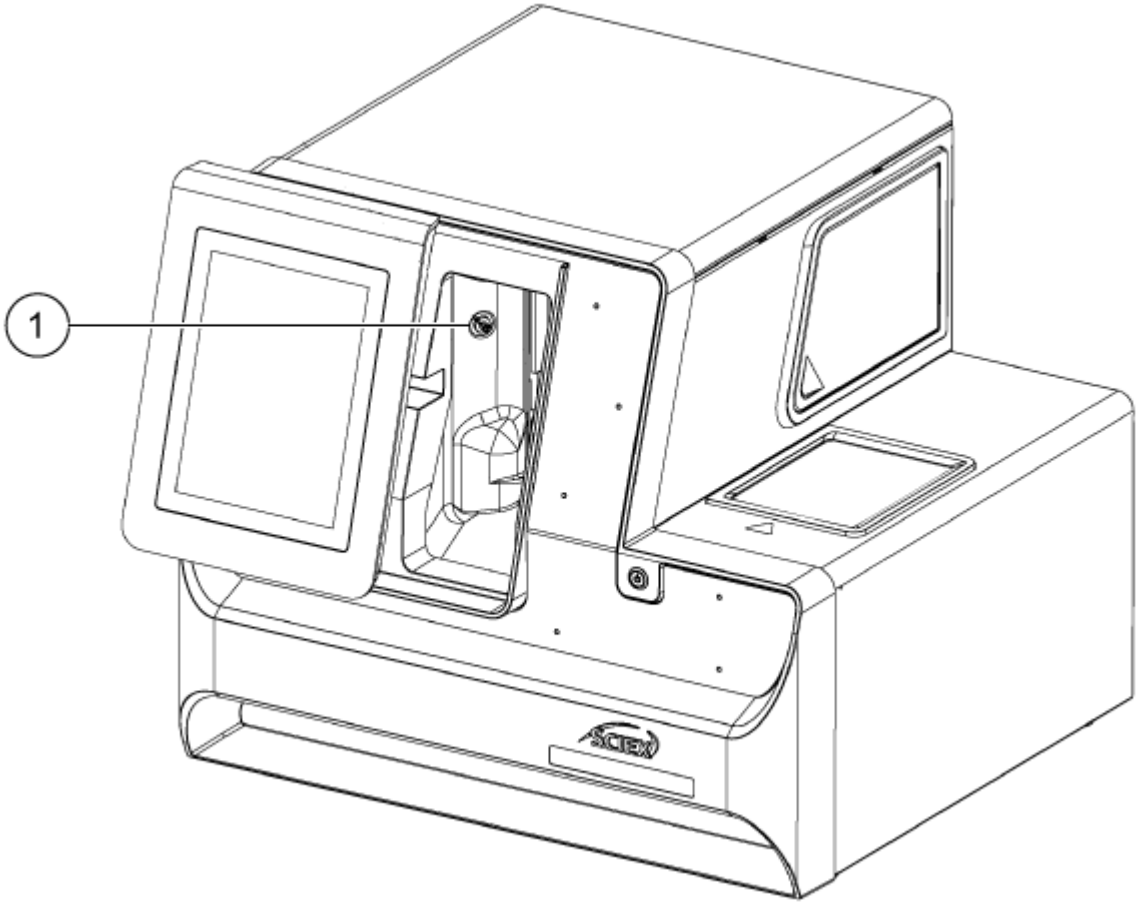
Add Capillary Cartridge Coolant

Required Materials
• Capillary cartridge coolant (PN 359976) • Fill tool (PN 144647)

1. Examine the level of the coolant on the BioPhase 8800 system front panel.
   If the cartridge coolant level is red, orange, or yellow, then add coolant.
2. Move the panel to the left to get access to the coolant fill port.
3. Attach the fill tool to the port.
4. Hold up the end of the syringe and slowly fill the syringe with coolant while monitoring the indicator until the required fill level is reached.
5. Let the syringe drain.
6. Do steps 4 and 5 again until the cartridge coolant level is green.

Note: When the cartridge coolant level is blue, the coolant reservoir is too full. Do not add more coolant.

Figure 7-1 Coolant Fill Port



Item	Description
1	Coolant fill port

Clean the Sample Lid and the Plate Compartment Cover

Remove and examine the sample lid at regular intervals. If required, then clean the sample lid and plate compartment cover.

Required Materials
• Wet cloth • Dry cloth • (Optional) Laboratory tissues

1. On the front panel, touch **Eject Sample** or **Eject Reagent**.
   The plate compartment cover opens automatically to show the plate compartment.

   Figure 7-2 Plate Compartment Open

2. If plates are installed, then remove them.
3. Remove the plate compartment cover and sample lid.
   a. Press down on the notch at the front of the white plate compartment cover to dislodge it from the blue sliding door.
   b. Pull the plate compartment cover far enough forward to remove it.

The sample lid is in the plate compartment cover.

Figure 7-3 Plate Compartment Cover Partially Forward, Notch Circled in Red

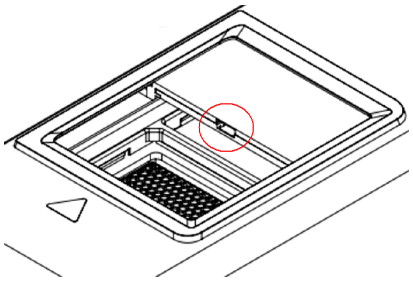
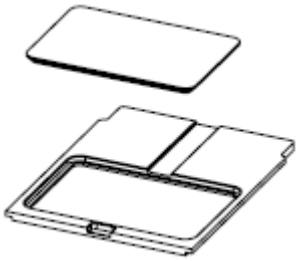
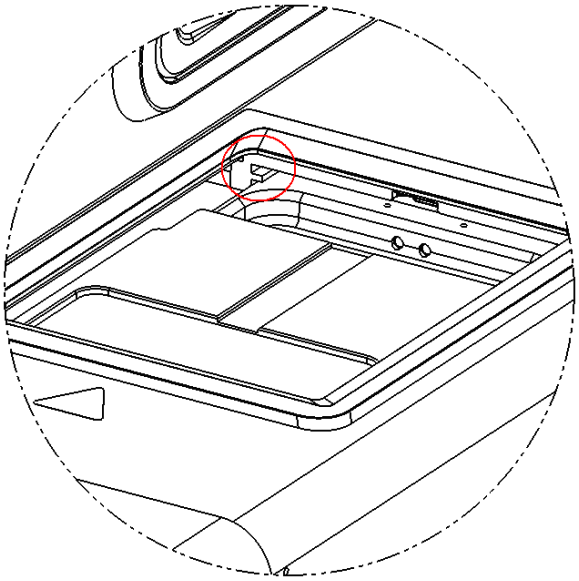


Figure 7-4 Sample Lid, Top, and Plate Compartment Cover, Bottom



4. Use a wet cloth or laboratory tissue to clean the bottom of the sample lid and the plate compartment cover.
5. Install the sample lid on the plate compartment cover, and then install the lid and cover in the slot in the plate compartment. Push the lid and cover in until they click in place.

Figure 7-5 Slot in Plate Compartment, Circled in Red



6. Install the plates that were removed in step 1.
7. On the front panel, touch **Load Sample** or **Load Reagent**.

Install a UV Filter

The UV detector is supplied with two filters: 220 nm and 280 nm. If a different filter is required, then one or both of the filters can be replaced. More filters are available from SCIEX. Refer to the table: Table 9-1.

Note: The filter is installed in a filter unit, so if a new filter is required, then a filter unit must be purchased.

Prerequisite Procedures
• Prepare a clean, dust-free area near the system.

Required Materials
• UV filter unit • Powder-free gloves • 2.5-mm hex driver

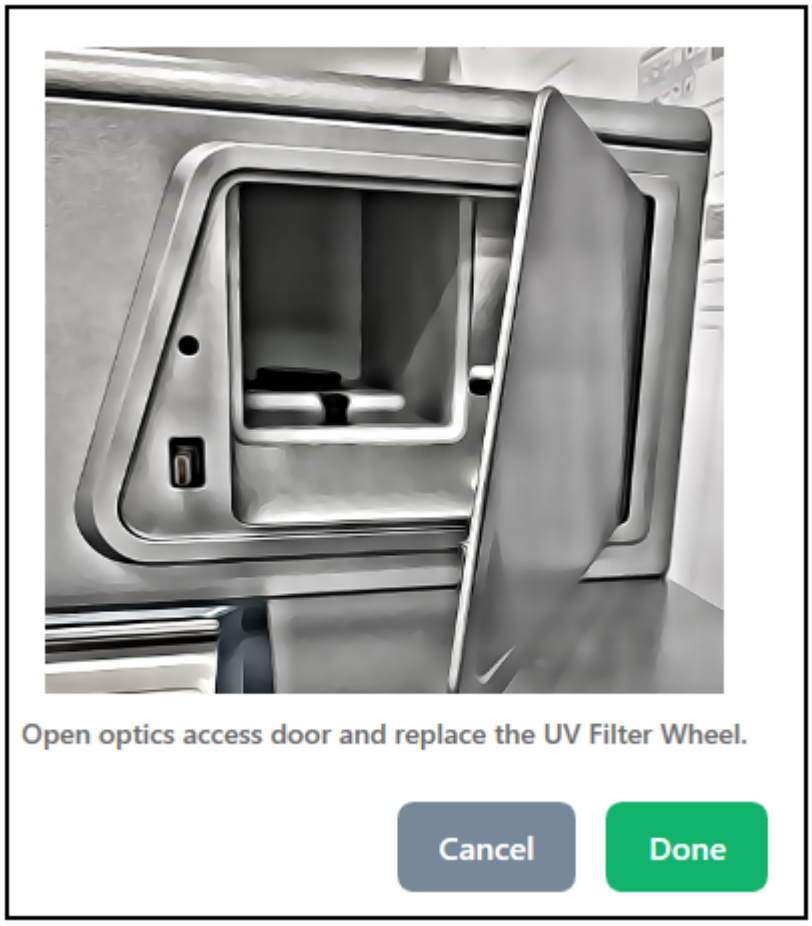
1. On the front panel, do the following:
   a. Touch **Direct Control**.
      The Direct Control window opens.
   b. Touch **Wavelength Settings**.

      Figure 7-6 Wavelength Settings Button

   c. To replace the filter, touch **Replace Filter**. If values for **UV Filter 1** and **UV Filter 2** are not supplied, then the **Replace Filter** button is not available.
      The touchscreen changes to show an image and instructions.

Figure 7-7 Access Door for the Optics Compartment

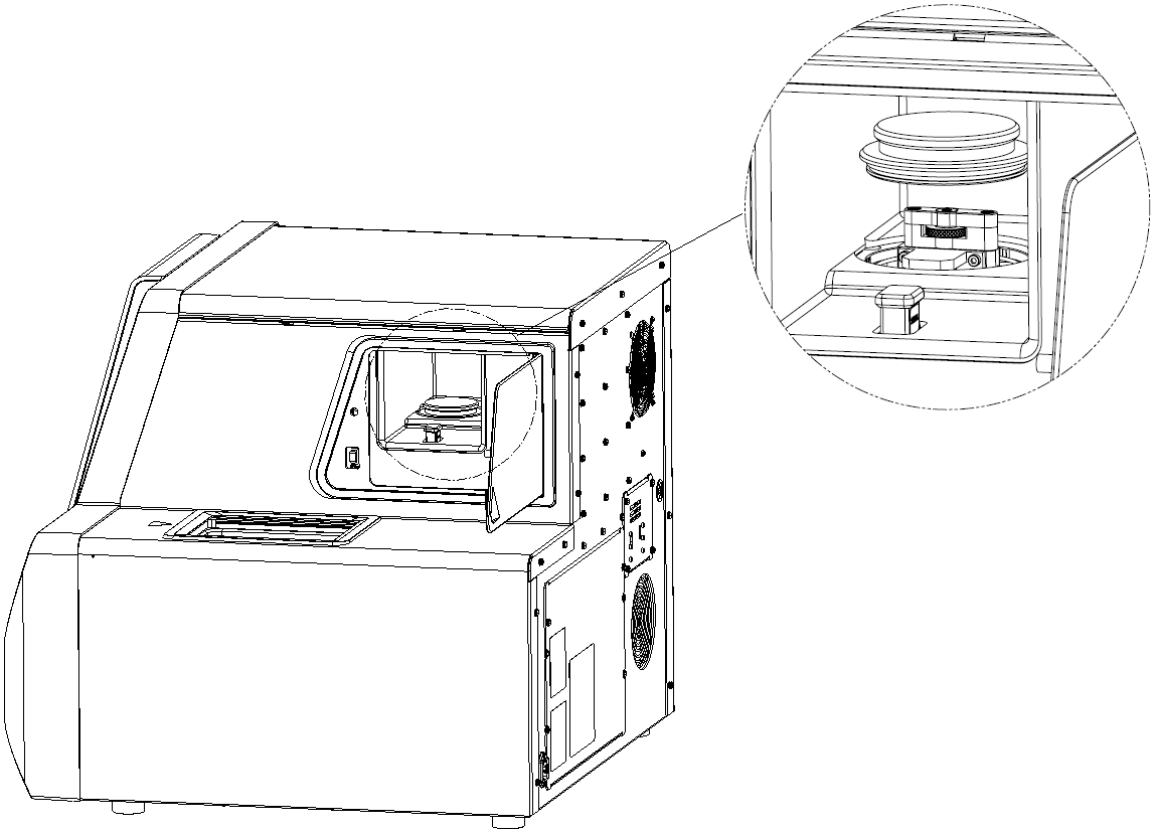


2. On the system, push in the lower left corner to unlock the access door for the optics compartment, and then pull the door open.

CAUTION: Potential Data Loss. Do not open the access door for the optics compartment during a run. If the door opens, then the voltage system and light source turn off, and the separation might be compromised.

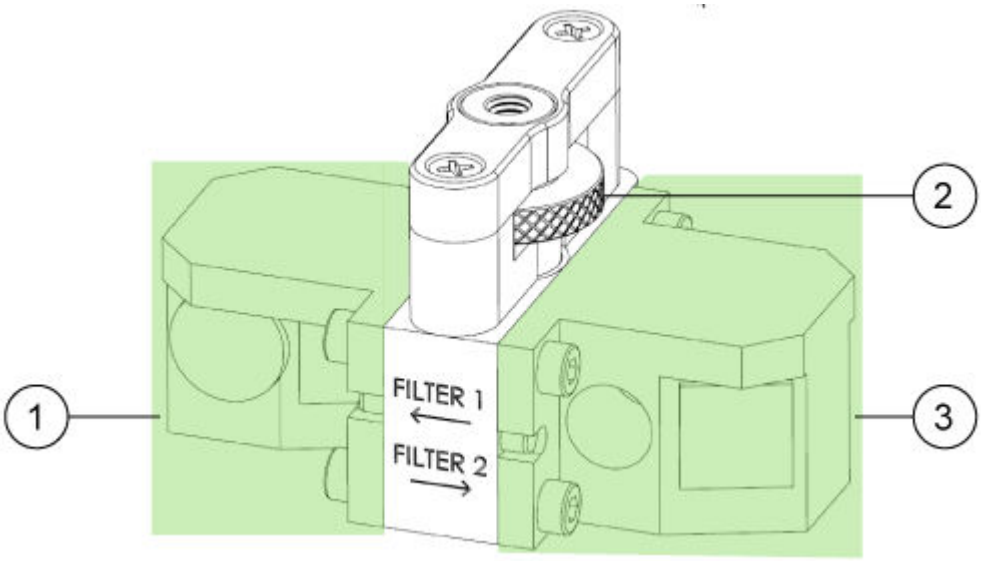
3. Turn the round cover counterclockwise to remove it, and then put it on the dust-free area with the smaller side down.

Figure 7-8 Filter Cover in the Optics Compartment



4. Hold the top of the filter assembly with one hand, turn the thumbscrew counterclockwise to loosen it, and then lift the filter assembly out of the system.

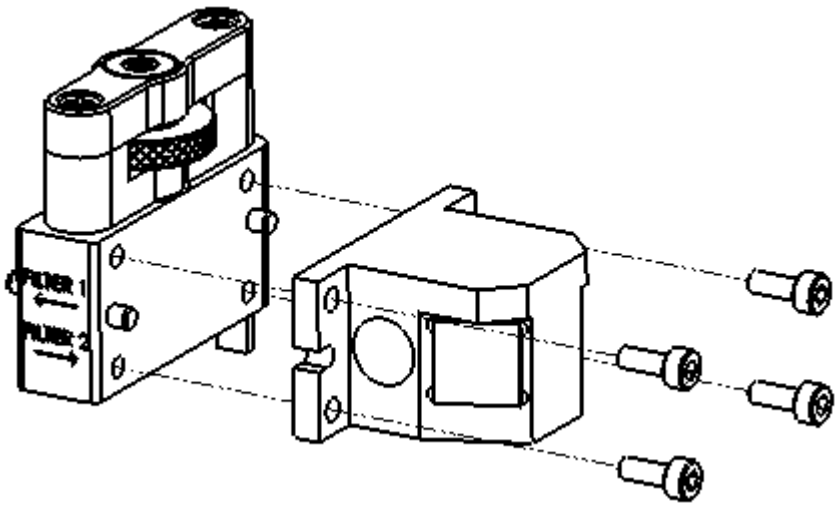
Figure 7-9 UV Filter Assembly



Item	Description
1	UV filter unit 1
2	Thumbscrew
3	UV filter unit 2

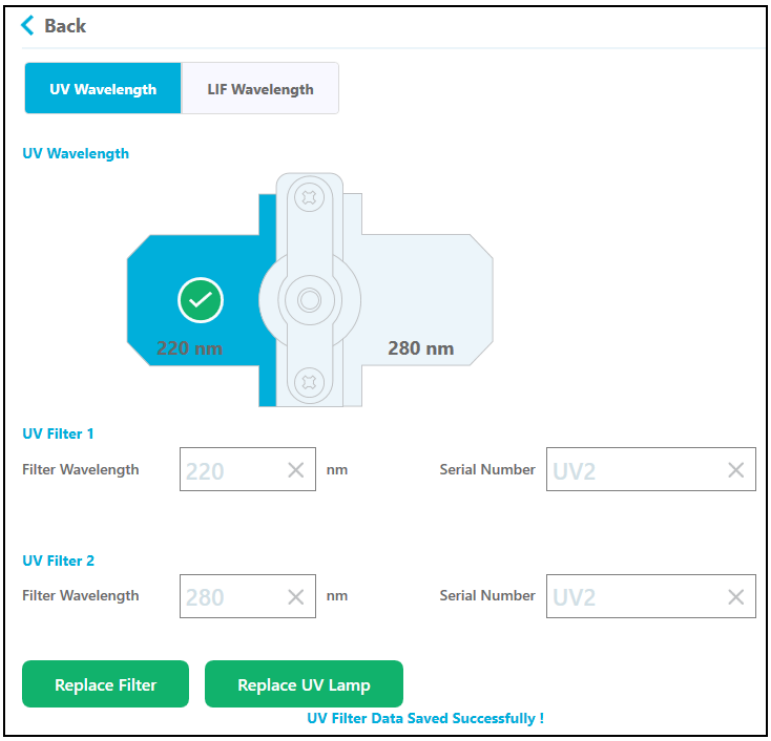
5. To prevent overheating, close the access door for the optics compartment.
6. Use the 2.5-mm hex driver to loosen the four screws that attach the filter unit.
   Do not touch the optical surfaces of the filters.

Figure 7-10 Filter Assembly and Screws: Only One Filter Unit Shown



7. If required, then disconnect the other filter unit.
8. Install the filter unit in the filter assembly.
    a. Record the wavelength and serial number of the new filter unit for use in step 11.
    b. For each filter unit, use the 2.5-mm hex driver to install the four screws.
    c. Open the access door for the optics compartment.
    d. Put the filter assembly in the system.
    e. Turn the thumbscrew clockwise to tighten it.
    f. Install the round cover.
9. Close the access door for the optics compartment.
10. On the front panel, touch **Done**.
11. On the front panel, update the filter information:
    a. Type a UV wavelength and serial number for UV filter unit 1.
    b. Type a UV wavelength and serial number for UV filter unit 2.
    c. Touch **Done**.

Figure 7-11 UV Filter Data Saved



Install a UV Lamp

The UV lamp is used by the UV detector. If the baseline is excessively noisy or the lamp will not illuminate, it might be necessary to replace the lamp.

Required Materials
• UV lamp • Powder-free gloves

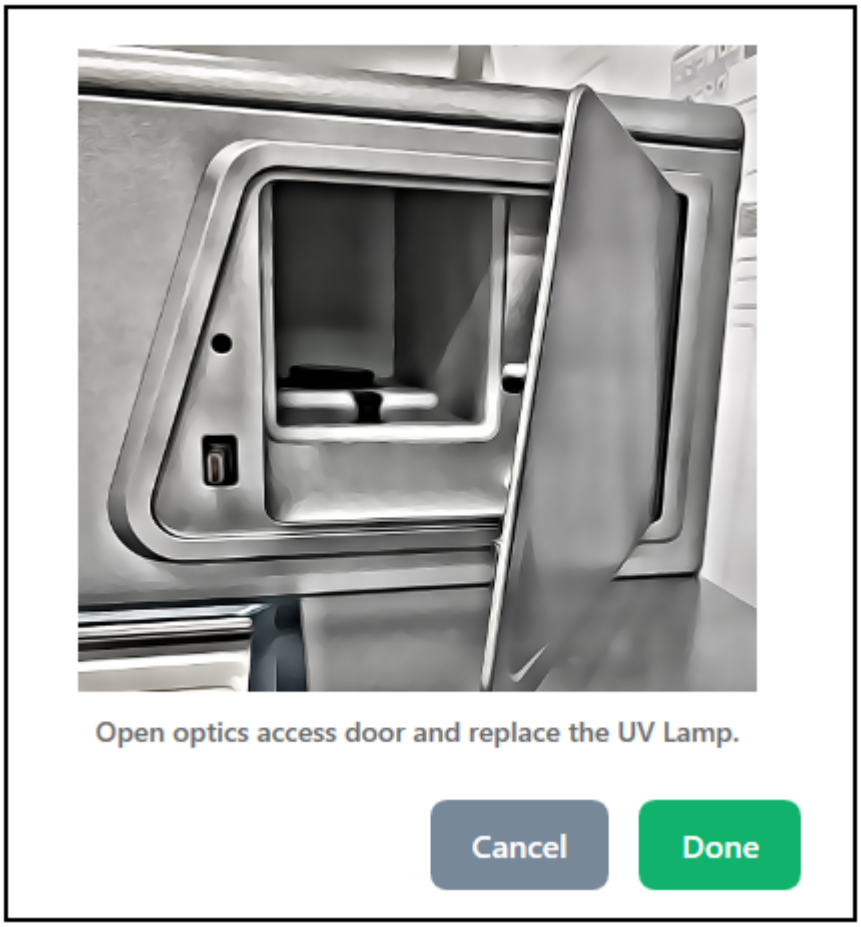
WARNING! Hot Surface Hazard. Before replacing a lamp let the lamp cool fully. A hot lamp will cause burns.

1. On the front panel, do the following:
   a. Touch **Direct Control**.
      The Direct Control window opens.
   b. Touch **Wavelength Settings**.

Figure 7-12 Wavelength Settings Button

c. Touch **Replace UV Lamp**.
A window opens with an image and instructions.

Figure 7-13 Access Door for the Optics Compartment

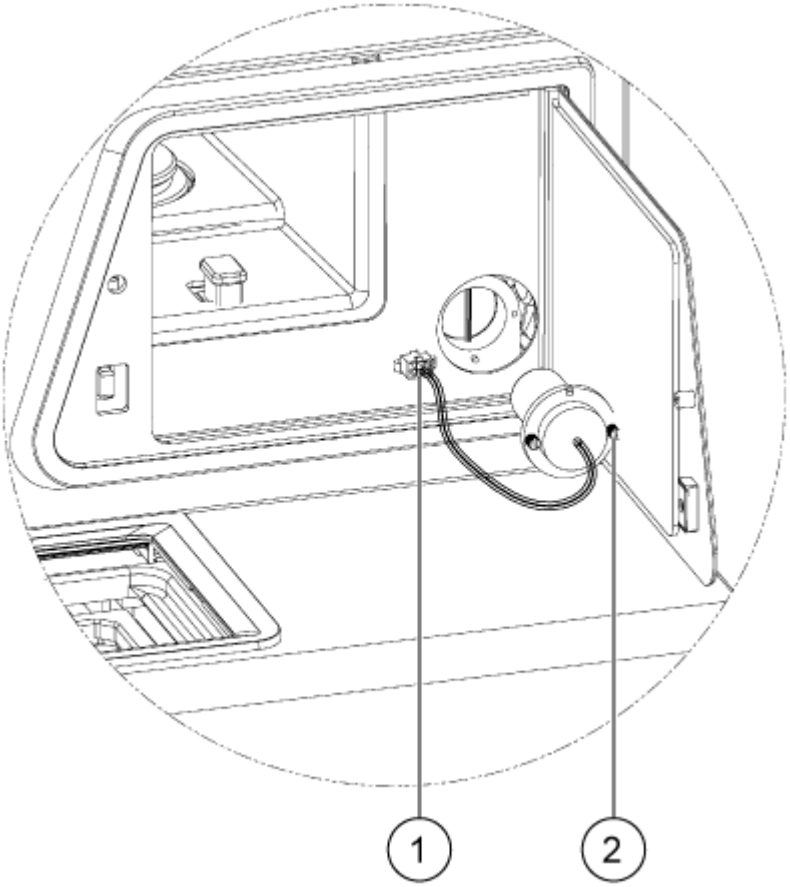


2. On the system, push in the lower left corner to unlock the access door for the optics compartment, and then pull the door open.

CAUTION: Potential Data Loss. Do not open the access door for the optics compartment during a run. If the door opens, then the voltage system and light source turn off, and the separation might be compromised.

A safety interlock turns off power to the lamp when the access door is opened.

Figure 7-14 UV Lamp Replacement

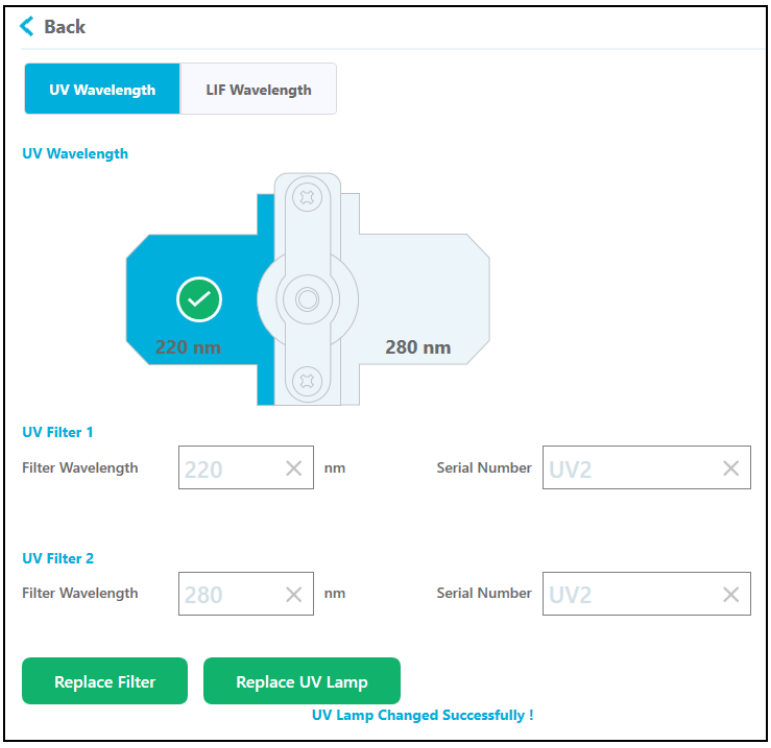


Item	Description
1	Lamp plug
2	Thumbscrew

3. Wait for the lamp to cool before removing it.
4. Press the side tabs of the connector to disconnect it from the panel.
5. Loosen the captive thumbscrews, and then press the connector latching tab.
6. Remove the lamp.

7. Install the new lamp, aligning the pin with the notch.
8. Tighten the captive thumbscrews.
9. Install the connector.
10. Close the access door for the optics compartment.
    A safety interlock turns on power to the lamp when the access door is closed.
11. On the front panel, touch **Done**.

Figure 7-15 UV Lamp Changed



12. If required, on the front panel ribbon, touch the **UV Lamp** button.
    The lamp turns on and the timer counts down to show the remaining time before the lamp is ready.

Install the Filters for the LIF Detector

The LIF detector is supplied with two filters: a notch filter that blocks light at 488 nm and an emission filter that transmits light at 520 nm. More filters are available from SCIEX. Refer to the table: Table 9-1.

Note: Both filters are installed in a filter holder, so if a new filter is required, then the filter holder must be purchased.

Required Materials
• Filter holder with filters • Powder-free gloves

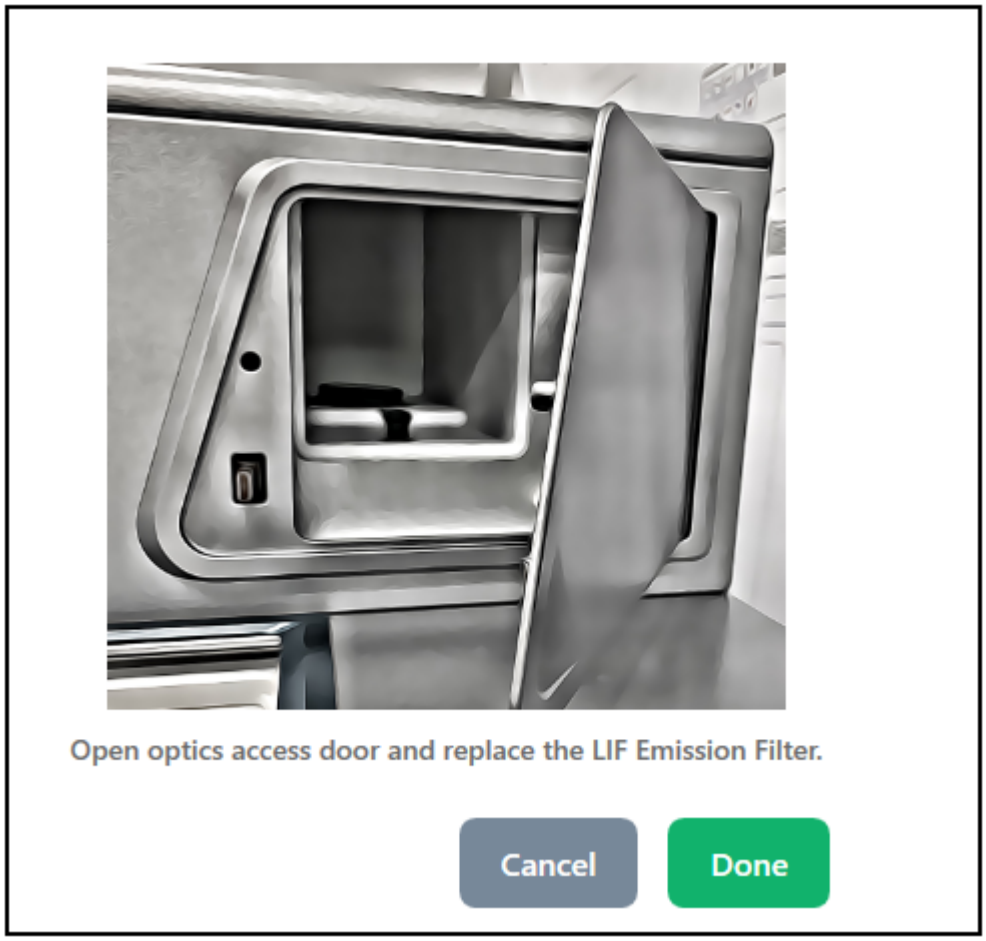
1. On the front panel, do the following:
   a. Touch **Direct Control**.
      The Direct Control window opens.
   b. Touch **Wavelength Settings**.

      Figure 7-16 Wavelength Settings Button

   c. Touch **LIF Wavelength**.
   d. Touch **Replace Filter**.
      A window opens with an image and instructions.

Figure 7-17 Access Door for the Optics Compartment

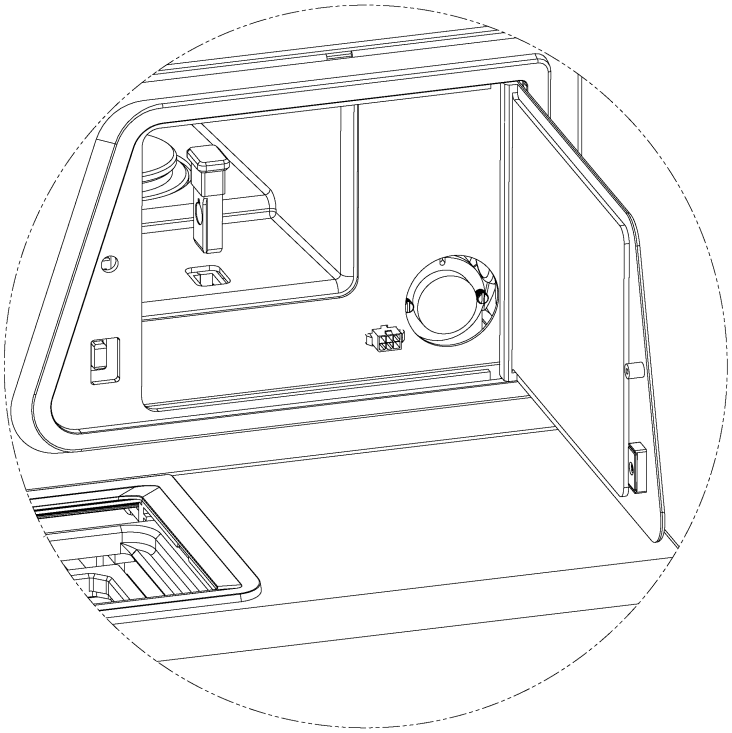


2. On the instrument, push in the lower left corner to unlock and pull open the access door for the optics compartment.

CAUTION: Potential Data Loss. Do not open the access door for the optics compartment during a run. If the door opens, then the voltage system and light source turn off, and the separation might be compromised.

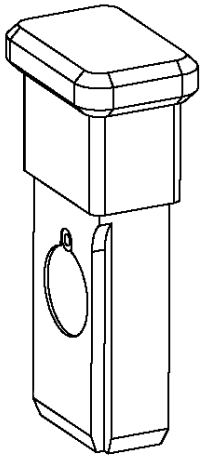
A safety interlock turns off power to the laser when the access door is opened.

Figure 7-18 Optics Access Door Open



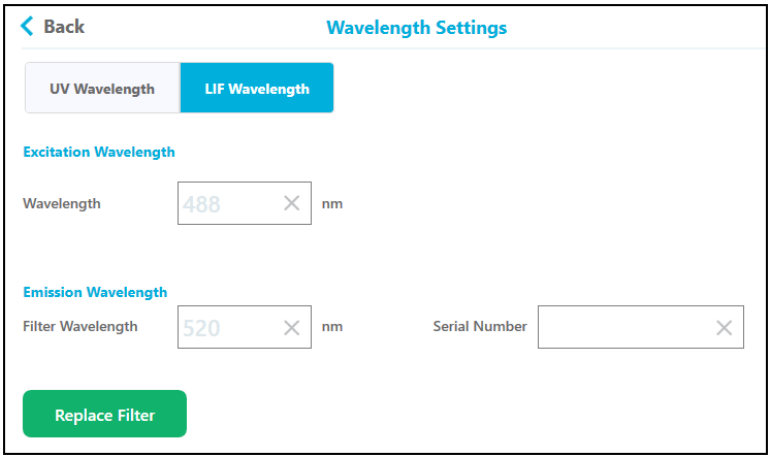
3. Remove the filter holder.
4. Install a new filter holder.
   The label on the filter should face the rear of the system.
   When the filter is installed, the label cannot be seen.

Figure 7-19 LIF Filter Holder



5. Touch **Done**.
6. On the front panel, update the LIF filter information:
   a. In the Emission Wavelength section, type the filter wavelength and serial number.
   b. Touch **Done**.

Figure 7-20 LIF Wavelength



Normalize the LIF Detector Intensity

Note: This feature is supplied for legacy purposes only. SCIEX does not recommended this procedure for use with the BioPhase 8800 system.

Laser induced fluorescence (LIF) detection systems can give different responses if changes are made to the optical path, such as installation of a different cartridge or running the separation on a different system. Therefore, results for the LIF detector are expressed in relative fluorescence units (RFU) instead of lumens or another unit of measure.

A function for LIF detector intensity normalization is available from the BioPhase 8800 front panel. The normalization uses a SCIEX-supplied solution to correct for these influences.

Required Materials
• LIF Performance Test Mix • Capillary Performance Run Buffer A

1. Add 1 mL of LIF Performance Test Mix and 1 mL of Capillary Performance Run Buffer A to a vial to make a 2 mL solution.
2. With a pipette, add 200 µL of the reagents to the sample inlet plate as listed in the following table.

Table 7-1 Normalization Reagents in Sample Inlet Plate

Column	Reagent
1	(Leave empty)
2	Capillary Performance Run Buffer A
3	Capillary Performance Run Buffer A
4	Diluted LIF Performance Test Mix
5 through 12	(Leave empty)

3. With a pipette, add 1.5 mL of Capillary Performance Run Buffer A to the wells in columns 2 through 4 of the sample outlet plate.

   Do not add anything to the wells in column 1 or columns 5 though 12.
4. Put the sample plates in the system.
5. On the front panel, touch **Normalization**.

Figure 7-21 Normalization Button

6. In the **Target RFU** field, type `40`, and then touch **Start Normalization**.

   Note: To normalize the LIF detector response to match results from a PA 800 Plus system, use the **Target RFU value** specified in the LIF Calibration Wizard in the 32 Karat software on the PA 800 Plus controller.

   The sequence run screen is shown. The normalization takes approximately 12 minutes. When the normalization is complete, a message opens.

7. Touch **OK**.
   The run sequence window opens.

8. Review the results:

   a. On the front panel, touch **Normalization**.

   b. Review the values in the **New Factors** column.
      The values should be between 0.5 and 2.0.

   c. Touch **Save Normalization**.
      If the values are out of range, then the user can accept the new factors or do the normalization again.

      To do the normalization again, use a new sample plate.

Replace the Fuse

WARNING! Fire Hazard or Electrical Shock Hazard. Before replacing fuses, turn off the system and disconnect it from the mains supply. Replace a fuse only with a fuse of the correct type and rating. Failure to follow these guidelines might result in fire, electric shock, or instrument malfunction.

Required Materials
• 10 A 250 V fuse, marked T10A250V • Small, flat-bladed screwdriver

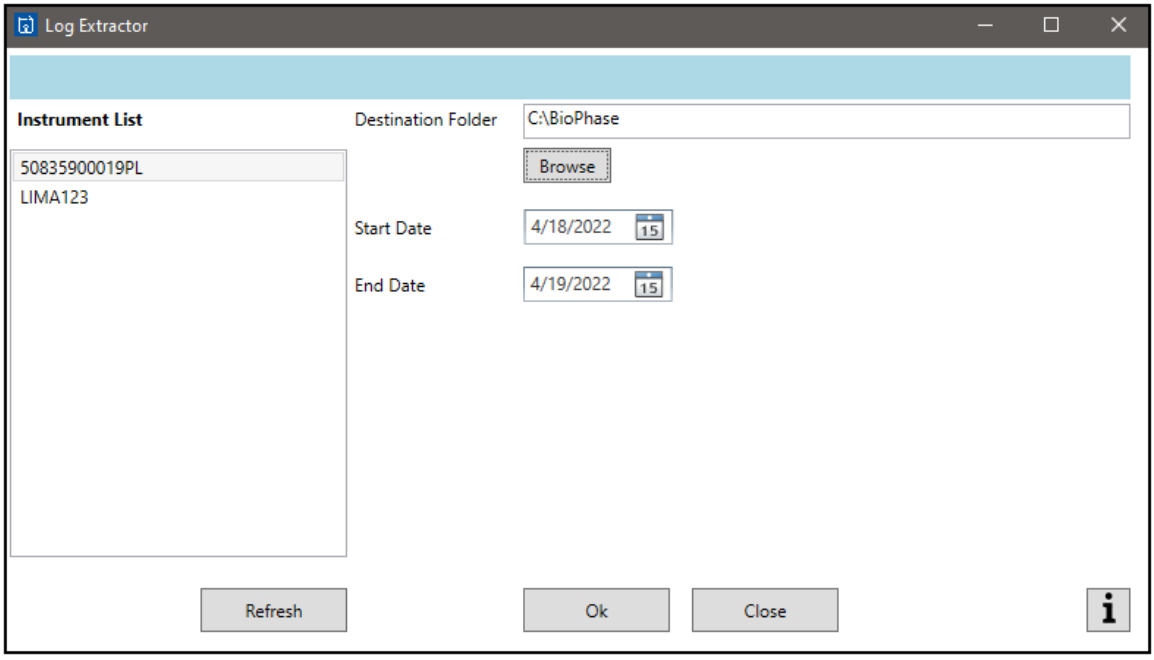
1. Turn off the system.
2. Disconnect the mains supply cable from the mains supply outlet and from the back of the system.
3. Use a small flat-bladed screwdriver to remove the fuse holder located above the connector for the mains supply cable.
4. Remove the fuse from the fuse-carrier assembly.
5. Install the fuse in the fuse-carrier assembly, and then install the assembly in the system.
6. Connect the mains supply cable to the back of the system and the mains supply outlet.
7. Turn on the system.
8. On the Windows desktop, open the BioPhase software and then log on to the software.
9. If the system does not operate normally, or if the fuse blows again, then contact sciex.com/request-support.

Export the System Log

The BioPhase Log File Extractor software is a utility to export the log from a BioPhase 8800 system. SCIEX Technical Support might request this log to help troubleshoot issues with the system.

1. On the desktop, double-click the **BioPhase Log File Extractor** icon.
   The BioPhase Log File Extractor software opens. On the left is a list of BioPhase 8800 systems.

Figure 7-22 Log Extractor Window



2. In the list on the left, click the BioPhase 8800 system with the log to be exported. Click **Refresh** to refresh the instrument list.
3. For **Destination Folder**, click **Browse** to select the folder for the exported log.
4. (Optional) To select a range to be exported, click **Select a date** and select the first and last dates for the range.
5. Click **OK**.
   The results are exported to an XML file with the txt file extension.

Project Management Software 8

The Project Management software is used to make projects available on the BioPhase 8800 system, to give the user the permission to access projects, and to give the user sign-off authorization.

The Project Management software can use project folders in both the local computer and network configurations.

- To use the Project Management software in a local computer configuration, the user must have login credentials for the local computer. Projects are kept on the local computer.
- To use the Project Management software in a network configuration, the user must have login credentials for the domain isolator and permission to access the customer network. Projects are kept in user-designated project folders on the network.

Figure 8-1 Project Management Software

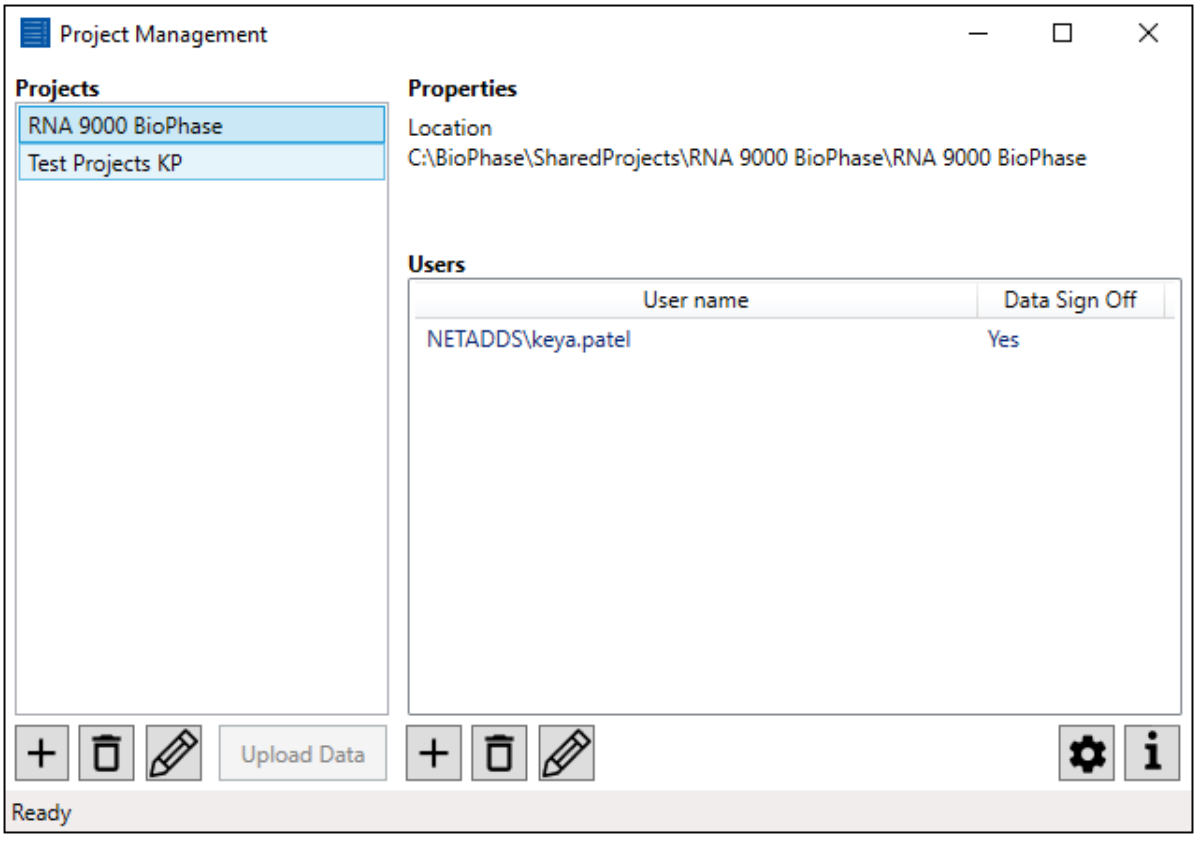
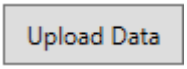


Table 8-1 Lists and Functions

Label	Description
Projects	Shows the available projects.
Properties	Shows the location of the selected project.
Users	Shows the users associated with the selected project. The columns in the list are: • **Username**: Shows the user name for the user. • **Data Sign Off**: Shows whether the user is authorized to sign data electronically for the project.
	Click to add a project in the **Projects** list. Refer to the section: Make a Project Available on the System.
	Click to delete a project from the **Projects** list. Refer to the section: Delete Access to a Project on the System.
	Click to edit a project in the **Projects** list. Refer to the section: Edit a Project.
	Click to manually upload data files from the Project Management software to the main server. Refer to the section: Upload Data.
	Click to add a user in the **Users** list. Refer to the section: Add a User to a Project.
	Click to delete a user in the **Users** list from a project. Refer to the section: Delete a User from a Project.
	Click to edit a user in the **Users** list. Refer to the section: Edit a User.
	Click to configure how users are authenticated. Refer to the section: Configure User Authentication.
	Click to see the Project Management software information. Refer to the section: See the Project Management Software Version.

Add a Project Folder in File Explorer

This task is typically done by the lab manager or administrator.

1. Open File Explorer.
2. Type the file path, in the search field: `C:/BioPhase/Projects` and then press **Enter**.
3. Click **New Folder**, and then type the name of the project for the folder name.
   In the BioPhase software, the new project folder is shown.

Make a Project Available on the System

Use this procedure to make a project available on the BioPhase 8800 system.

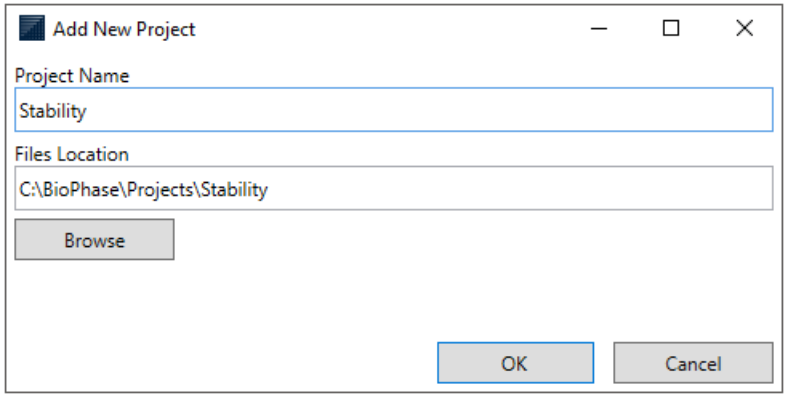
1. Open the Project Management software.
2. At the bottom of the **Projects** list, click +.
   The Add New Project dialog opens.
3. To find the project, click **Browse**, and then look for and select the project folder.

   Note: If the project is located on a mapped network drive, use the full path to the folder in the **Files Location**. If the mapped drive name is used instead of the full path, then there might be problems accessing the projects.

4. In the **Project Name** field, type the name of the project.

   The **Project Name** is the name of the project that is shown on the BioPhase 8800 system front panel. The folder that contains the project is not renamed on the computer.

   Figure 8-2 Add New Project Dialog



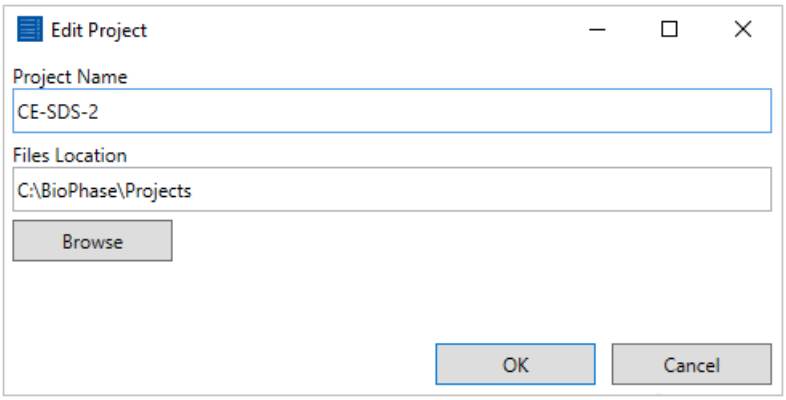
5. Click **OK**.
   The Add New Project dialog closes and the project is shown in the **Projects** list and on the BioPhase 8800 system front panel.
6. To give a user access to the project, add them to the project. Refer to the section: Add a User to a Project.

Edit a Project

Use this procedure to change the name or location of a project folder.

1. Open the Project Management software.
2. In the **Projects** list, click a project.
3. At the bottom of the **Projects** list, click  .

Figure 8-3 Edit Project Dialog



4. To change the name of the project, type a name in the **Project Name Field**.
   The project name is shown on the BioPhase 8800 system front panel.
5. To select a different folder for the project, click **Browse**, browse to the location of the folder, and then click **Select Folder**.

   Note: If the project is on a mapped network drive, use the full path to the folder in the **Files Location**. If the mapped drive name is used instead of the full path, then there might be problems accessing the projects.

   The Files Location field shows the new folder.
6. Click **OK**.
   The Edit Project dialog closes and if required, the project name updates in the **Projects** list. When the BioPhase 8800 system looks for the project folder, it uses the new path.

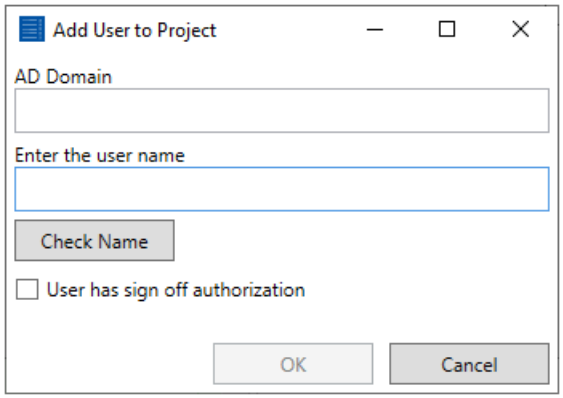
Add a User to a Project

Use this procedure to add a user to a project.

1. Open the Project Management software.
2. In the **Projects** list, click a project.

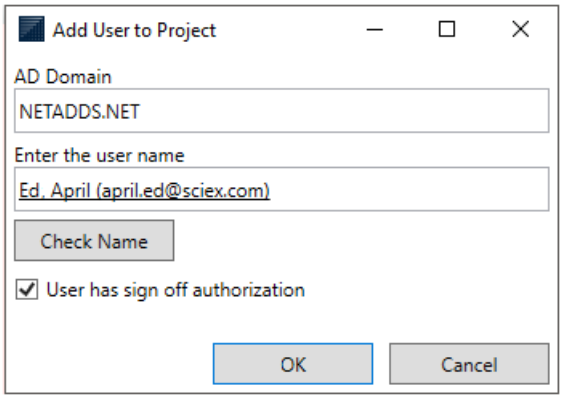
3. At the bottom of the **Users** list, click +.
   The Add User to Project dialog opens.

Figure 8-4 Add User to Project Dialog



4. In the **Enter the user name** field, type the name of the user who should be given access to the project.
   This is the same user name that is used to log on to the computer.
5. Click **Check Name**.
   If the user name is found, the **Enter the user name** field is updated with more information.

Figure 8-5 Add User to Project Dialog



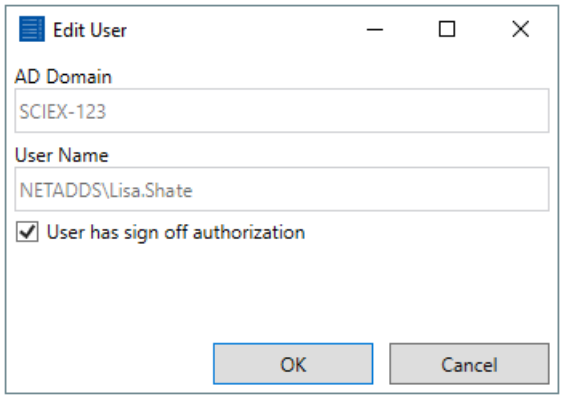
6. To give the user sign-off authorization, click **User has sign off authorization**.
7. Click **OK**.
   The Add User to Project dialog closes and the name of the user who was added shows in the **Users** list.

Edit a User

Use this procedure to change sign-off authorization for a user.

1. Open the Project Management software.
2. In the **Projects** list, click a project.
3. At the bottom of the **Users** list, click  .

Figure 8-6 Edit User Dialog



4. Do one of the following:
   - To give the user sign-off authorization, click **User has sign off authorization**.
   - To remove sign-off authorization, clear **User has sign off authorization**.
5. Click **OK**.
   The Edit User dialog closes and the Data Sign Off column updates in the **Users** list.

Delete Access to a Project on the System

Use this procedure to delete all user access to a project.

1. In the **Projects** list, click a project.
2. At the bottom of the **Projects** list, click  .
3. In the warning dialog, click **Yes**.

Note: This procedure deletes user access to a folder. The project folder is not deleted.

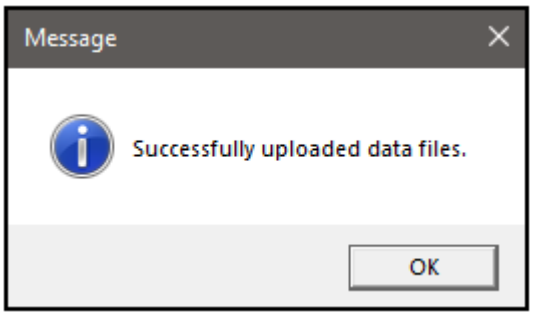
Upload Data

The Project Management upload data file feature is used to manually upload data files from the Project Management software to main server when the data connection between the domain isolator and instrument is lost.

Note: If there is no archived data, then the **Upload Data** button is not available.

1. If the data connection between domain isolator and front panel is lost, wait for the run to be completed.
2. Start the computer again, and then open the Project Management software.
3. From the Project Management software home page, click **Upload Data** to upload the archived data files to the main server.
4. Click OK.

Figure 8-7 Message Dialog



Delete a User from a Project

Use this procedure to delete a user from a project.

1. In the **Projects** list, click a project.
2. In the **Users** list, click a user associated with the project.
3. At the bottom of the **Users** list, click .
   The deleted user cannot get access to the project on the BioPhase 8800 system front panel.

Confirm Project Setup

1. On the BioPhase 8800 system, log in with the credentials of a user who has been assigned to a project.
2. On the front panel, touch **Run Sequence**.

The list of projects is shown in the blue panel on the left side of the Run Sequence window.

3. Touch  to refresh the **Projects** list.
4. Make sure that the assigned projects are shown. If the assigned projects are not shown, do the following steps.
5. Touch **Log off**.
6. Log on as a user with Administrator privileges. In the Login dialog:
   a. In the **Username** field, type **admin**.
   b. In the **Passcode** field, type **password**.
   c. Touch **Log In**.
7. Touch **Configuration**.

Note: The **Configuration** button is only available for users who have Administrator privileges.

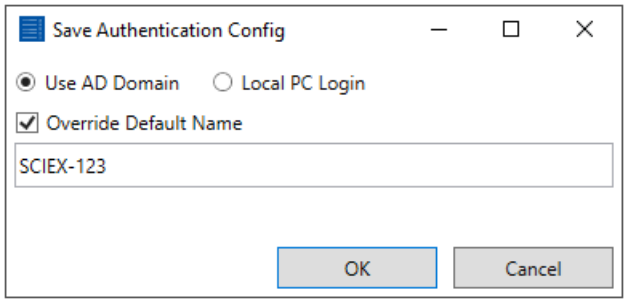
8. Touch **Save**.
9. Touch **Log off**.
10. Do steps 1 through 4 again.

Configure User Authentication

Use this procedure to configure how users are authenticated.

1. Open the Project Management software.
2. At the bottom of the **Users** list, click  .

Figure 8-8 Save Authentication Config Dialog



3. Select how users are authenticated.

- If users will be authenticated by Microsoft Active Directory authentication, click **Use AD Domain**.
  - If authentication will be done by a domain other than the default domain, then do step 4.
  - If authentication will be done by the default domain, click **OK**, and then start the computer again.
- If users will be authenticated by the local computer, click **Local PC Login**, click **OK**, and then start the computer again.

4. To specify a domain for authentication, do the following:
   a. Select **Override Default Name**.
   b. Type the domain name.
      Names can only contain alphanumeric characters, and . (period), - (dash), and _ (underscore).

      Note: Make sure that the domain name is correct. If the domain name is not correct, then users might not be able to log onto the front panel.

   c. Click **OK**.
   d. Start the computer again.

See the Project Management Software Version

Use this procedure to see the Project Management software version.

1. Open the Project Management software.
2. At the bottom of the **Users** list, click  .
   The About Project Management Software dialog opens.
3. Click **OK** to close the dialog.

Order Parts 9

- Use any of the following options to order parts from SCIEX:
  - **Internet**: For customers in the United States, Canada, United Kingdom, Belgium, Netherlands, France, Germany, and Switzerland, go to store.sciex.com
  - **E-mail**: Sales.Americas@sciex.com
  - **Telephone**: (877) 740-2129, Option 1 (toll-free, United States only), or go to sciex.com/contact-us to find a local office
  - **Fax**: (800) 343-1346

Cartridges and Parts

Part Number	Description
359976	Capillary cartridge coolant, 450 mL
5080311	BioPhase Chemistry Plate Kit (4 sample plates, 4 reagent plates, 8 outlet plates)
5080313	BioPhase sample plates (20 plates)
5080314	BioPhase reagent plates (20 plates)
5080315	BioPhase outlet plates (20 plates)
5080121	Cartridge, 8 capillaries, 30 cm long, 360 µm o.d., 50 µm i.d., bare fused-silica capillary
5080119	Cartridge, 8 capillaries, 30 cm long, 360 µm o.d., neutral capillary

Table 9-1 Filters

Part Number	Description
5085153	UV filter assembly with 220 nm and 280 nm filters
5066890	UV filter, 220 nm
5072643	UV filter, 280 nm
5085159	LIF filter holder with 520 nm emission filter and 488 nm notch filter
5085178	LIF filter holder with 560 nm emission filter and 488 nm notch filter

Table 9-1 Filters (continued)

Part Number	Description
5085177	LIF filter holder with 600 nm emission filter and 488 nm notch filter

Table 9-2 Lamp

Part Number	Description
5065163	Deuterium lamp

System Specifications A

Instrument Specifications

Dimensions (H × W × D)	72 cm x 62 cm x 69 cm (28.2 inches × 24.4 inches × 27.2 inches)
Weight	90.9 kg (200 lb)
Electrical	Power requirement: 100 VAC to 240 VAC, 10 A, 50 Hz or 60 Hz, Class I Power consumption: Supply voltage must not exceed 10% of nominal Fuses: • T10 A • 250 V Installation (overvoltage) category: Category II
Working environment	Altitude: ≤ 2,000 m (6,562 ft) above sea level Humidity: < 70% (noncondensing) at 30 °C Temperature: 15 °C to 30 °C (59 °F to 86 °F) recommended
Maximum heat dissipation	600 W (2,047 BTU/hr) under steady-state conditions
Maximum sound pressure	70 dB Maximum pressure at 1 m: 66 dB

Detector Specifications

UV Detector Specifications

Table A-1 UV Detector Specifications

Available filters	220 nm and 280 nm
Filter bandwidth	25 nm nominal

Table A-1 UV Detector Specifications (continued)

UV source	30 W pre-aligned deuterium lamp
UV source lifetime	1,000 hours

(Optional) LIF Detector Specifications

Table A-2 LIF Detector Specifications

Baseline drift	< 0.2 RFU/hr
Baseline noise	< 0.005 RFU peak to peak
Dynamic range (at a setting of 1,000)	> 10^4
Default filters	488 nm notch filter (to block excitation wavelength) and 520 nm bandpass filter
Laser	3 mW, 488 nm solid state
Laser life span	10,000 hours
RFU range	0 RFU to 1,000 RFU
Sensitivity	1 × 10^{11} M sodium fluorescein with signal-to-noise > 2
Wavelength range for optics	Excitation: 488 nm Detection: 500 nm to 750 nm (filter dependent)

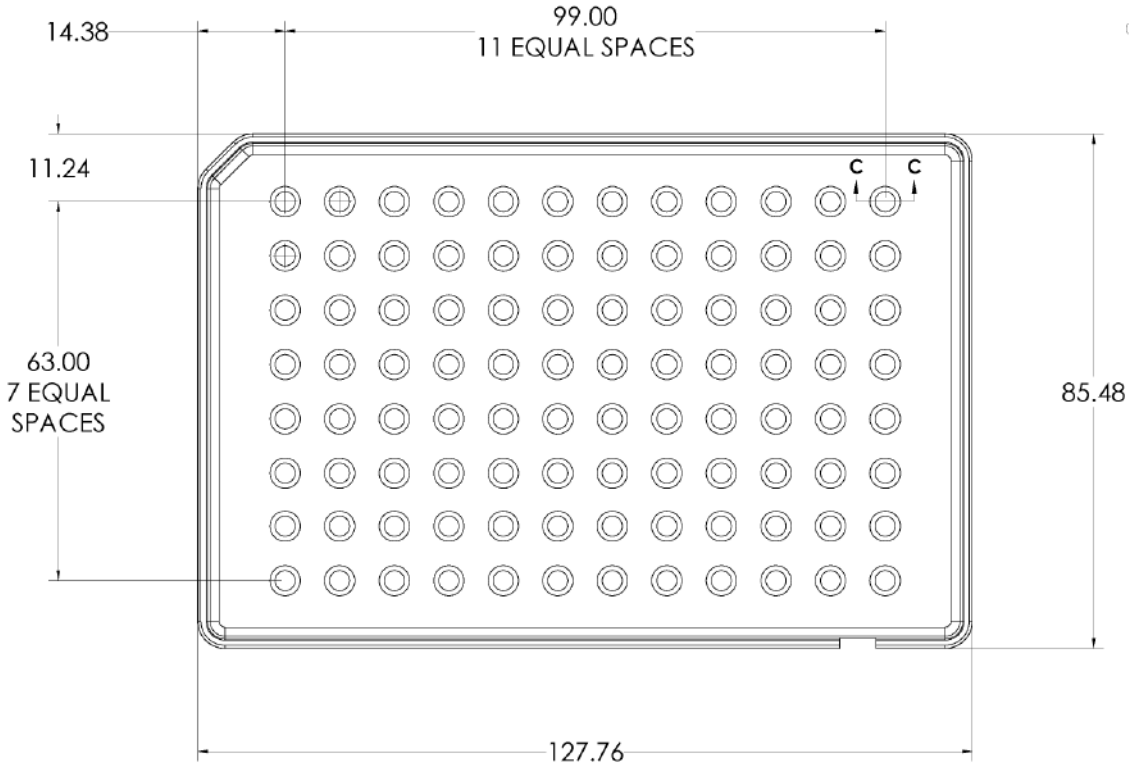
Plate Specifications

This section describes how to configure the liquid-handling system to operate with the sample, reagent, and outlet plates.

Sample Plate Specifications

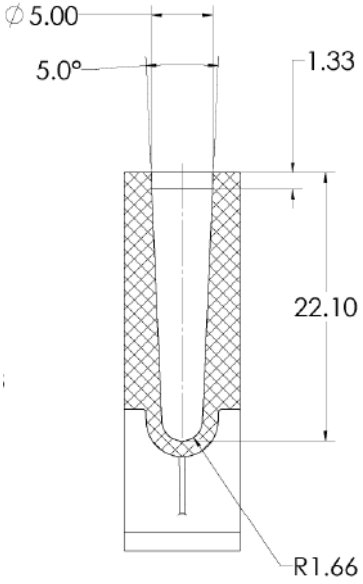
To configure the liquid-handling system to operate with the sample plates, use the dimensions in the following figures. The sample plate conforms to ANSI Society for Laboratory Automation and Screening (SLAS) standards.

Figure A-1 Sample Plate Dimensions



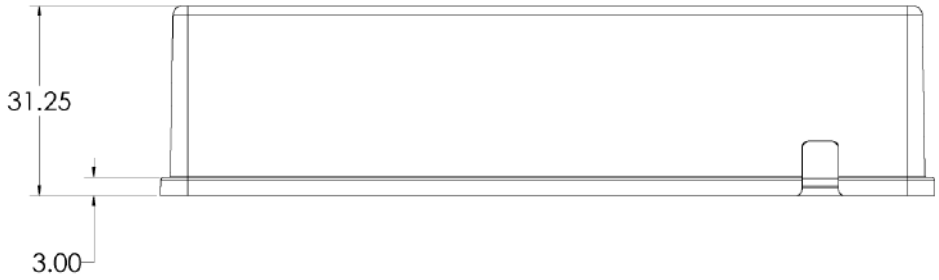
Dimension	Value
Left edge to center of well A1	14.38 mm
Top edge to center of well A1	11.24 mm
Length at base	127.76 mm
Width at base	85.48 mm

Figure A-2 Sample Plate Well Cross-Section Dimensions



Dimension	Value
Well depth	22.10 mm
Well size at opening	5.00 mm
Pitch between wells	9.00 mm

Figure A-3 Sample Plate Side View Dimensions

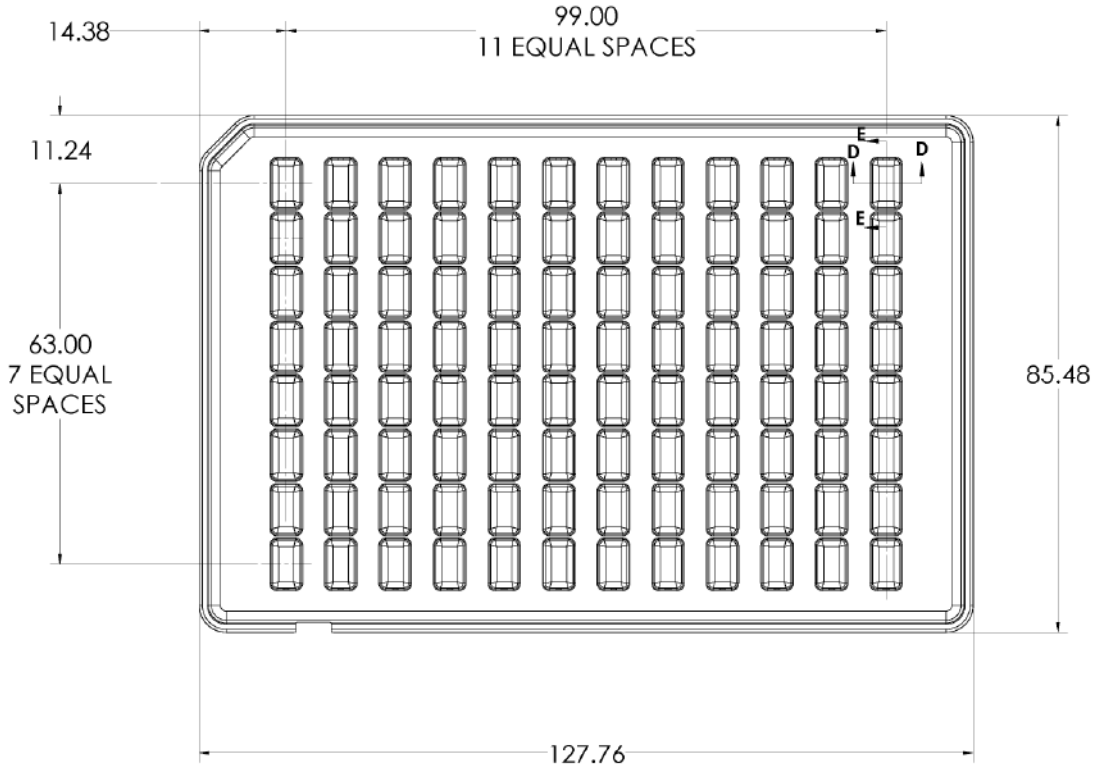


Dimension	Value
Overall height	31.25 mm

Reagent Plate Specifications

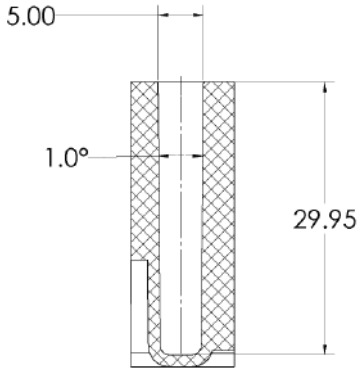
To configure the liquid-handling system to operate with the reagent plates, use the dimensions in the following figures.

Figure A-4 Reagent Plate Dimensions



Dimension	Value
Left edge to center of well A1	14.38 mm
Top edge to center of well A1	11.24 mm
Length at base	127.76 mm
Width at base	85.48 mm

Figure A-5 Reagent Plate Well Cross-Section Dimensions



Dimension	Value
Well depth	29.95 mm
Well size at opening	5.00 × 8.27 mm
Pitch between wells	9.00 mm

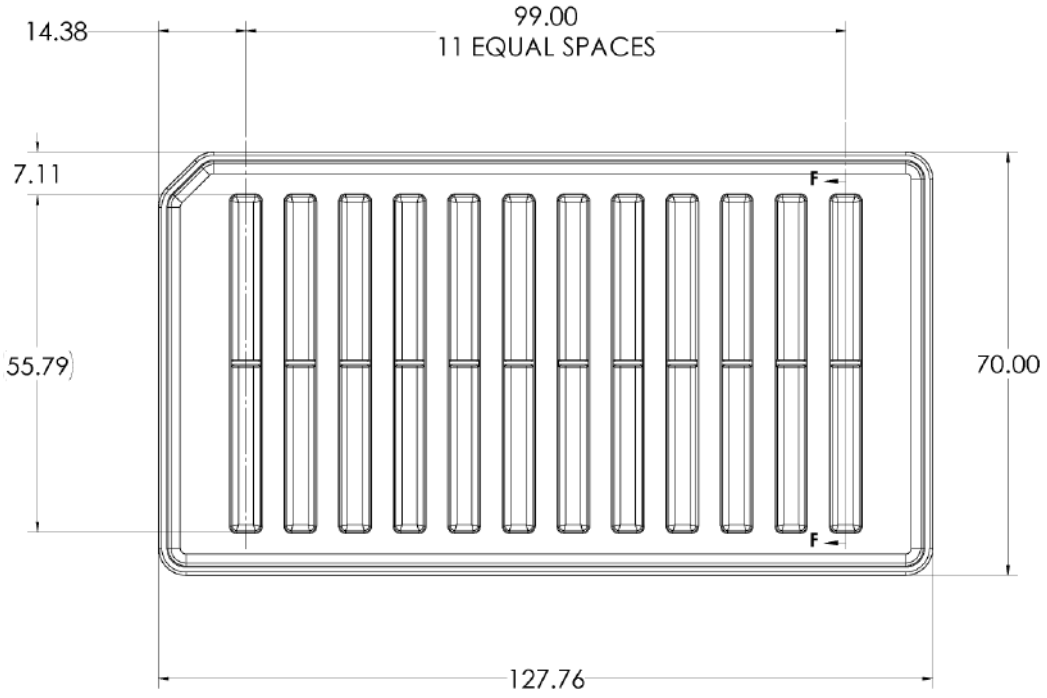
Figure A-6 Reagent Plate Side View Dimensions

Dimension	Value
Overall height	31.25 mm

Outlet Plate Specifications

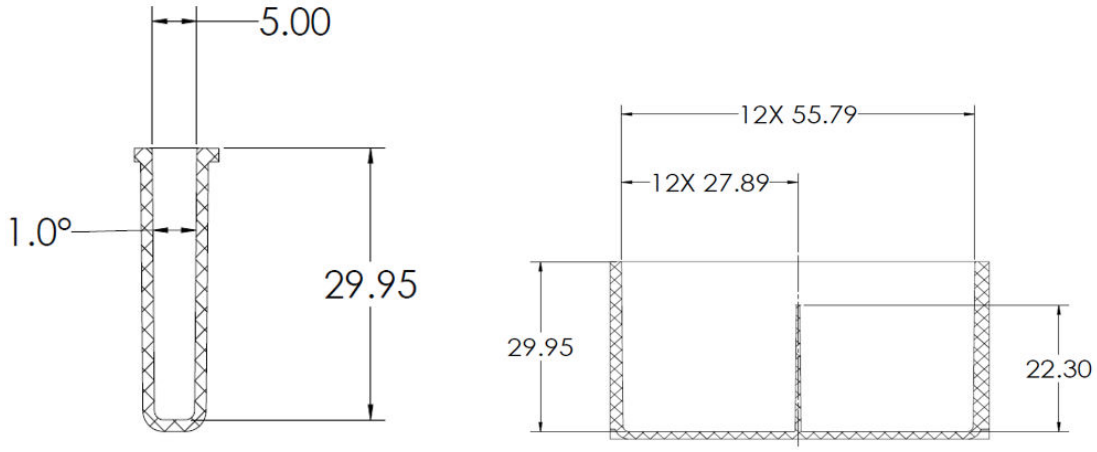
To configure the liquid-handling system to operate with the outlet plates, use the dimensions in the following figures.

Figure A-7 Outlet Plate Dimensions



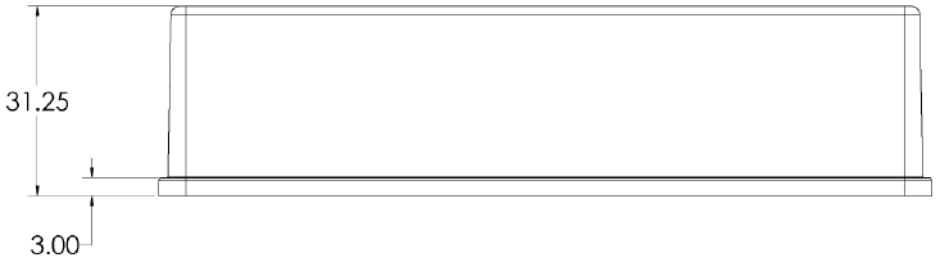
Dimension	Value
Left edge to center of column 1	14.38 mm
Top edge to top edge of well	7.11 mm
Length at base	127.76 mm
Width at base	70.00 mm

Figure A-8 Outlet Plate Well Cross-Section and Side-Section Dimensions



Dimension	Value
Well depth	29.95 mm
Well size at opening	5.00 × 55.79 mm
Pitch between wells	9.00 mm

Figure A-9 Outlet Plate Side View Dimensions



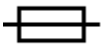
Dimension	Value
Overall height	31.25 mm

Glossary of Symbols B

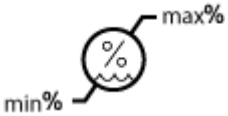
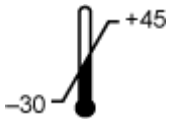
Note: Not all of the symbols in the following table are applicable to every instrument.

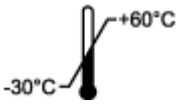
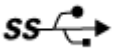
Symbol	Description
	Australian Regulatory Compliance Mark. Indicates that the product complies with Australian Communications Media Authority (ACMA) EMC and Electrical Safety Requirements.
	Alternating current
A	Amperes (current)
	Asphyxiation Hazard
EC REP	Authorized representative in the European community
	Biohazard
CE	CE Marking of Conformity
C US	cCSAus mark. Indicates electrical safety certification for Canada and USA.
REF	Catalog number

Symbol	Description
	Caution. Consult the instructions for information about a possible hazard. **Note:** In SCIEX documentation, this symbol identifies a personal injury hazard.
	China RoHS Caution Label. The electronic information product contains certain toxic or hazardous substances. The center number is the Environmentally Friendly Use Period (EFUP) date, and indicates the number of calendar years the product can be in operation. Upon the expiration of the EFUP, the product must be immediately recycled. The circling arrows show the product is recyclable. The date code on the label or product indicates the date of manufacture.
	China RoHS logo. The device does not contain toxic and hazardous substances or elements above the maximum concentration values and the device is an environmentally-friendly product that can be recycled and reused.
	Consult instructions for use.
	Crushing Hazard
	cTUVus mark for TUV Rheinland of North America
	Data Matrix symbol that can be scanned by a barcode reader to obtain a unique device identifier (UDI)
	Environmental Hazard

Symbol	Description
	Ethernet connection
	Explosion Hazard
	Eye Injury Hazard
	Fire Hazard
	Flammable Chemical Hazard
	Fragile
	Fuse
Hz	Hertz
	International safety symbol Caution, risk of electric shock (ISO 3864), also known as High Voltage symbol If the main cover must be removed, then contact a SCIEX representative to prevent electric shock.
	Hot Surface Hazard
	In Vitro Diagnostic Device

Symbol	Description
	Ionizing Radiation Hazard
	Keep dry. Do not expose to rain. Relative humidity must not exceed 99%.
	Keep upright.
	Lacerate/Sever Hazard
	Laser Radiation Hazard
	Lifting Hazard
	Magnetic Hazard
	Manufacturer
	Moving Parts Hazard
	Pacemaker Hazard. No access to people with pacemakers.

Symbol	Description
	Pinching Hazard
	Pressurized Gas Hazard
	Protective Earth (ground)
	Puncture Hazard
	Reactive Chemical Hazard
	Serial number
	Toxic Chemical Hazard
	Transport and store the system within 66 kPa to 103 kPa.
	Transport and store the system within 75 kPa to 101 kPa.
	Transport and store the system within the specified minimum (**min**) and maximum (**max**) levels of relative humidity, noncondensing.
	Transport and store the system within –30 °C to +45 °C.

Symbol	Description
	Transport and store the system within –30 °C to +60 °C.
	USB 2.0 connection
	USB 3.0 connection
	Ultraviolet Radiation Hazard
UK CA	United Kingdom Conformity Assessment Mark
UKRP	United Kingdom Responsible Person
VA	Volt Ampere (apparent power)
V	Volts (voltage)
	WEEE. Do not dispose of equipment as unsorted municipal waste. Environmental Hazard
W	Watts (power)
	*yyyy-mm-dd* Date of manufacture

Glossary of Warnings C

Note: If any of the labels used to identify a component become detached, then contact a SCIEX field service employee (FSE).

Label	Translation (if applicable)
EN61326—1, EN61326—2-6, CLASS A, GROUP 1, ISM EQUIPMENT	EN61326—1, EN61326—2-6, CLASS A, GROUP 1, ISM EQUIPMENT
FCC Compliance. 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.	FCC Compliance. 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.
FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.	FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.
WARNING: Lifting Hazard. FOUR PERSONS REQUIRED TO LIFT THIS EQUIPMENT.	WARNING: Lifting Hazard. FOUR PERSONS REQUIRED TO LIFT THIS EQUIPMENT.
WARNING: NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.	WARNING: NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL. **Note:** Consult instructions for use.
WARNING: CANCER AND REPRODUCTIVE HARM. www.P65Warnings.ca.gov	WARNING: CANCER AND REPRODUCTIVE HARM. www.P65Warnings.ca.gov

Contact Us

Customer Training

- In North America: NA.CustomerTraining@sciex.com
- In Europe: Europe.CustomerTraining@sciex.com
- Outside the EU and North America, visit sciex.com/education for contact information.

Online Learning Center

- SCIEX Now Learning Hub

Purchase Supplies and Reagents

Reorder SCIEX supplies and reagents online at store.sciex.com. To set up an order, use the account number, found on the quote, order confirmation, or shipping documents. Currently, customers in the United States, Canada, United Kingdom, Belgium, Netherlands, France, Germany, and Switzerland have access to the online store, but access will be extended to other countries in the future. For customers in other countries, contact a local SCIEX representative.

SCIEX Support

SCIEX and its representatives maintain a staff of fully-trained service and technical specialists located throughout the world. They can answer questions about the system or any technical issues that might arise. For more information, visit the SCIEX website at sciex.com or contact us in one of the following ways:

- sciex.com/contact-us
- sciex.com/request-support

Cybersecurity

For the latest guidance on cybersecurity for SCIEX products, visit sciex.com/productsecurity.

Documentation

This version of the document supersedes all previous versions of this document.

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To find software product documentation, refer to the release notes or software installation guide that comes with the software.

To find hardware product documentation, refer to the documentation that comes with the system or component.

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