March 2024

EZ2® Connect and EZ2 Connect Fx User Manual

For use with EZ2 Connect software version 1.2

REF 9003210, 9003220

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Sample to Insight

Table of Contents

1. Introduction

Thank you for choosing the EZ2 Connect. We are confident it will become an integral part of your laboratory.

This user manual describes the EZ2 Connect and EZ2 Connect Fx.

Before using the EZ2 Connect, it is essential that you read this user manual carefully and pay attention to the safety information. The instructions and safety information in the user manual must be followed to ensure safe operation of the instrument and to maintain the instrument in a safe condition.

1.1. About this user manual

This user manual provides information about the EZ2 Connect in the following sections:

- Introduction — contains the intended use and requirements for users
- General information — contains information regarding the intended use and requirements of the EZ2 Connect
- Safety Information — includes important information on any hazards related to the EZ2 Connect and how to properly use the instrument
- General Description — an overview of the features of the EZ2 Connect
- Installation Procedures — instructions on how to set up the instrument before its first use
- Operating Procedures — includes instructions related to protocol runs
- Maintenance Procedures — contains information about cleaning and maintenance
- Troubleshooting — instructions on what to do in case of any problems with the EZ2 Connect
- Glossary — an alphabetical list of terms or words used in this user manual with explanations
- Technical Specifications — Technical data

The appendices contain the following information:

- Appendix A – Legal requirements for the EZ2 Connect
- Appendix B – EZ2 Connect Parts and Components/Consumables— an overview of the accessories available for the EZ2 Connect
- Appendix C – Consignes de sécurité
- Appendix D – Sicherheitshinweise
- Document Revision History — the changes made to the user manual

1.2. General information

1.2.1. Technical assistance

At QIAGEN®, we pride ourselves on the quality and availability of our technical support. Our Technical Services Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of QIAGEN products. If you have any questions or experience any difficulties regarding the EZ2 Connect or QIAGEN products, do not hesitate to contact us.

QIAGEN customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other scientists and to the researchers at QIAGEN. We therefore encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

When contacting QIAGEN Technical Services about errors, please have the following information ready:

- EZ2 Connect serial number and software version
- Error code (if applicable)
- Description of instrument status after error (worktable, consumables, etc.) and photos if possible
- Timepoint when the error occurred for the first time
- Frequency of error occurrence (i.e., intermittent or persistent error)
- EZ2 Connect Support Package (see Section 7.1.1)

1.2.2. Policy statement

It is the policy of QIAGEN to improve products as new techniques and components become available. QIAGEN reserves the right to change specifications at any time. In an effort to produce useful and appropriate documentation, we appreciate your comments on this user manual. Please contact QIAGEN Technical Services.

1.3. Intended use of the EZ2 Connect

The EZ2 Connect system is designed to perform automated isolation and purification of nucleic acids in molecular diagnostic and/or molecular biology applications. The EZ2 Connect is intended to be used only in combination with QIAGEN kits indicated for use with the EZ2 Connect instrument for the applications described in the kit handbooks. The EZ2 Connect system is intended for use by professional operators, such as technicians and physicians trained in molecular biological techniques and the operation of the EZ2 Connect system.

1.4. Requirements for EZ2 Connect users

The table below covers the general level of competence and training necessary for transportation, installation, use, maintenance, and servicing of the EZ2 Connect.

Task	Personnel	Training and experience
Delivery	No special requirements	No special requirements
Installation	Laboratory technicians or equivalent	Appropriately trained and experienced personnel familiar with the use of computers and automation in general
Routine use (running protocols)	Laboratory technicians or equivalent	Professional users, such as technicians or physicians, trained in molecular biology techniques
Routine maintenance	Laboratory technicians or equivalent	Professional users, such as technicians or physicians, trained in molecular biology techniques
Servicing and annual maintenance	QIAGEN Field Service specialists or service technicians of an authorized agent	Specialists trained, certified, and authorized by QIAGEN

1.5. Materials required

All instrument parts and components that are required for usage are delivered with the instrument. In case that a part needs to be replaced refer to Appendix B (Ordering information).

Note: Only use parts and components supplied by QIAGEN.

1.6. Materials required but not provided

The EZ2 Connect supports the usage of several nucleic acid extraction kits which can be found at **www.qiagen.com**. The compatible kits can be identified via the suffix "EZ2" or "EZ1&2".

The EZ2 Connect Fx supports additionally the usage of kits for forensic applications.

Note: Please ensure that the chosen kit is compatible with your system. Kits for forensic use are only compatible with the EZ2 Connect Fx. Kits for diagnostic sample preparation (DSP) can only be used with the EZ2 Connect MDx. Check the associated kit webpage if your kit is compatible or ask your sales representative.

Note: Only use kits manufactured by QIAGEN.

1.7. Glossary

For a glossary of terms used in this user manual, refer to the Section 8 (page 156) of this user manual.

1.8. Parts and components

For information about EZ2 Connect parts and components, refer to the Appendix B – EZ2 Connect Parts and Components/Consumables section (page 163) of this user manual.

2. Safety Information

Before using the EZ2 Connect, it is essential that you read this user manual carefully and pay attention to the safety information. The instructions and safety information in the user manual must be followed to ensure safe operation of the instrument and to maintain the instrument in a safe condition.

Possible hazards that could harm the user or result in damage to the instrument are clearly stated at the appropriate places throughout this user manual.

The following types of safety information appear in this user manual.

WARNING The term WARNING is used to inform you about situations that could result in personal injury to you or others.

Details about these circumstances are given in a box like this one.

CAUTION The term CAUTION is used to inform you about situations that could result in damage to an instrument or other equipment.

Details about these circumstances are given in a box like this one.

The guidance provided in this manual is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.

Please be aware that you may be required to consult your local regulations for reporting serious incidents that have occurred in relation to the device to the manufacturer and/or its authorized representative (only applicable for CE-marked devices with an authorized representative established in the EU) and the regulatory authority in which the user and/or the patient is established.

2.1. Proper use

WARNING/ CAUTION **Risk of personal injury and material damage**

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

WARNING **Risk of personal injury**

The EZ2 Connect is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone. Use the handle attached to the box to lift the EZ2 Connect. After the EZ2 Connect has been unpacked, lift the instrument by placing your hands underneath the bottom of the instrument.

CAUTION **Risk of personal injury and material damage**

Do not move the EZ2 Connect during operation.

Perform the maintenance as described in the Section 6 (see page 131). QIAGEN charges for repairs that are required due to incorrect maintenance.

In case of emergency, power OFF the EZ2 Connect at the power switch located in front of the instrument and unplug the power cord from the power outlet.

CAUTION **Damage to the instrument**

Avoid spilling water or chemicals onto the EZ2 Connect. Instrument damage caused by water or chemical spillage will void your warranty.

WARNING **Risk of fire or explosion**

When using ethanol or ethanol-based liquids on the EZ2 Connect, handle such liquids carefully and in accordance with the required safety regulations. If liquid has been spilled, wipe it off and leave the EZ2 Connect hood open to allow flammable vapors to disperse.

WARNING **Risk of explosion**

The EZ2 Connect is intended for use with reagents and substances supplied with QIAGEN kits as outlined in respective instructions for use. Use of other reagents and substances may lead to fire or explosion.

If hazardous material is spilled on or inside the EZ2 Connect, the user is responsible for carrying out appropriate decontamination.

Note: Do not place items on top of the EZ2 Connect.

CAUTION **Damage to the instrument**

Ensure that the EZ2 Connect is switched off (power OFF) and main plug removed from power outlet before you manually move the mechanical components of the instrument.

CAUTION **Damage to the instrument**

Do not lean against the instrument or touchscreen.

2.2. Electrical safety

Note: If operation of the instrument is interrupted in any way (e.g., due to interruption of the power supply or a mechanical error), first switch off the EZ2 Connect instrument, then disconnect the electrical cord from the power supply before attempting troubleshooting or service activity.

WARNING **Electrical hazard**

Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous.

Intentional interruption is prohibited.

Lethal voltages inside the instrument

When the instrument is connected to line power, terminals may be live and opening covers or removing parts is likely to expose live parts.

WARNING **Damage to electronics**

Before powering ON the instrument, make sure that the correct supply voltage is used.

Use of incorrect supply voltage may damage the electronics.

To check the recommended supply voltage, refer to the specifications indicated in the type plate of the instrument.

WARNING **Risk of electric shock**

Do not open any panels on theEZ2 Connect.

Risk of personal injury and material damage

Only perform maintenance that is specifically described in this user manual. Any other maintenance or repair may only be carried out by authorized field service.

To ensure satisfactory and safe operation of the EZ2 Connect, follow the advice below:

- The line power cord must be connected to a line power outlet that has a protective conductor (earth/ground).
- Place the instrument in a location so that the power cord is accessible and can be readily connected/disconnected.
- Use only the power cord delivered by QIAGEN.
- Do not operate the instrument with any covers or parts removed.
- If liquid has spilled inside the instrument, switch off the instrument, and if the spill has not been completely contained in the bottom tray, disconnect it from the power outlet, and contact QIAGEN Technical Services for advice before attempting any troubleshooting.

If the instrument becomes electrically unsafe, prevent other personnel from operating it and contact QIAGEN Technical Services.

The instrument may be electrically unsafe when:

- The EZ2 Connect or the line power cord appears to be damaged.
- The EZ2 Connect has been stored in unfavorable conditions for a prolonged period.
- The EZ2 Connect has been subjected to severe transport stresses.
- Liquids have come into direct contact with electrical components of the EZ2 Connect.
- The power cord has been exchanged with a power cord that was not intended to be used with the EZ2 Connect.

WARNING **Electric hazard**

Do not touch the EZ2 Connect with wet hands.

WARNING **Electric hazard**

Never install a fuse different from that specified in the user manual.

2.3. Operating conditions

Parameters such as temperature range and humidity range are described in the Section 9 (see page 157).

WARNING **Explosive atmosphere**

The EZ2 Connect is not designed for use in an explosive atmosphere.

WARNING **Risk of overheating**

To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2 Connect.

Slits and openings that ensure the ventilation of the instrument must not be covered.

WARNING **Risk of explosion**

The EZ2 Connect is intended for use with reagents and substances supplied with QIAGEN kits. Use of other reagents and substances may lead to fire or explosion.

CAUTION **Damage to the instrument**

Direct sunlight may bleach parts of the instrument, cause damage to plastic parts. The EZ2 Connect must be located out of direct sunlight.

CAUTION **Damage to the instrument**

Do not use the EZ2 Connect in the vicinity of sources of strong electromagnetic radiation (for example, unshielded, deliberately operated high-frequency sources or mobile radio devices), because these can interfere with the proper operation.

2.4. Biological safety

Samples and reagents containing materials from humans should be treated as potentially infectious. Use safe laboratory procedures as outlined in publications such as Biosafety in Microbiological and Biomedical Laboratories, HHS (**https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf**). You should be aware of the health hazard presented by such agents and should use, store, and dispose of such samples according to the required safety regulations.

WARNING **Samples containing infectious agents**

Samples used with the EZ2 Connect may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Always wear safety glasses, gloves, and a lab coat.

The responsible body (for example, a laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe, and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents as defined in the applicable Material Safety Data Sheets (MSDSs) or the OSHA1,* ACGIH,† or COSHH‡ documents.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

2.5. Chemicals

WARNING **Hazardous chemicals**

Some chemicals used with the EZ2 Connectmay be hazardous or may become hazardous after completion of purification.

Always wear safety glasses, gloves, and a lab coat.

The responsible body (for example, a laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe, and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents as defined in the applicable Material Safety Data Sheets (MSDSs) or the OSHA1,* ACGIH,† or COSHH‡ documents.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

Toxic fumes

WARNING **Toxic fumes**

Do not use bleach to clean or disinfect the EZ2 Connect or the labware, as bleach in contact with salts from the buffers can produce toxic fumes.

Note: If you work with volatile solvents, toxic substances, etc., you must provide an efficient laboratory ventilation system to remove vapors that may be produced.

2.6. Waste disposal

Used consumables, such as reagent cartridges and disposable filter-tips, may contain hazardous chemicals or infectious agents from the purification process. Such waste must be collected and disposed of properly, according to local safety regulations.

For information about how to dispose of the EZ2 Connect, see Appendix A: Waste Electrical and Electronic Equipment (WEEE).

CAUTION **Hazardous chemicals and infectious agents**

Waste may contain toxic or infectious material and must be disposed of properly. Refer to your local safety regulations for proper disposal procedures.

2.7. Mechanical hazards

The hood of the EZ2 Connect must remain closed during operation of the instrument. Only open the hood when instructed to do so by the instructions for use or when prompted by the graphical user interface (GUI).

The worktable of the EZ2 Connect moves during operation of the instrument. While loading the worktable, always stand clear of the instrument. Do not lean on the worktable when the pipetting unit of the instrument is moving to reach loading position with its lid open. Wait until the pipetting unit completes its movements before you start to load or unload.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

The hood is locked during operation for safety reasons and a sensor detects the hood position. If the hood sensor or lock is not functioning correctly, contact QIAGEN Technical Services.

WARNING **Moving parts**

Avoid contact with moving parts during operation of the EZ2 Connect. Under no circumstances should hands be placed under the pipetting unit during movement. Do not attempt to remove any plasticware from the worktable while the instrument is operating.

2.8. Heat hazard

The EZ2 Connect worktable contains a heating system.

WARNING **Hot surface**

The heating system can reach temperatures of up to 95°C (203°F). Avoid touching it when it is hot, in particular, shortly after a run has been carried out.

2.9. Radiation

The EZ2 Connect instrument has a UV LED lamp. The wavelength of the UV light produced by the UV LED lamp is 275 to 285 nm. This wavelength corresponds to ultraviolet light Type C, which can be used to support decontamination procedures. A mechanical lock ensures that the hood is closed for operation of the UV LED. If the hood sensor or lock is not functioning correctly, contact QIAGEN Technical Services.

WARNING **UV radiation**

Avoid looking directly into UV light. Do not expose your skin to UV light.

The EZ2 Connect can be used with a 2D handheld barcode scanner to allow kit barcode and sample barcode scanning.

WARNING **Risk of personal injury**

Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.

2.10. Maintenance safety

WARNING/ CAUTION **Risk of personal injury and material damage**

Only perform maintenance that is specifically described in this user manual.

Perform the maintenance as described in the Section 6 (see page 131). QIAGEN charges for repairs that are required due to incorrect maintenance.

WARNING/ CAUTION **Risk of personal injury and material damage**

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

Operate the EZ2 only as described in the Section 5 (see page 41). QIAGEN charges for repairs that are required due to incorrect operation.

WARNING **Risk of fire**

After cleaning the EZ2 Connect with alcohol-based disinfectant, leave the instrument door open to allow flammable vapors to disperse.

Only clean the EZ2 Connect with alcohol-based disinfectant when worktable components have cooled down.

CAUTION **Damage to the instrument**

Do not use bleach, solvents, or reagents containing acids, alkalis, or abrasives to clean the EZ2 Connect.

CAUTION **Damage to the instrument**

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the EZ2 Connect. Spray bottles should be used only to clean items that have been removed from the worktable and if permitted by local laboratory operating practices.

CAUTION **Damage to the instrument**

After wiping the worktable with paper towels, make sure that no residual pieces of paper towel remain. Pieces of paper towel remaining on the worktable could lead to a worktable collision.

WARNING/ CAUTION **Risk of personal injury and material damage**

Do not open any panels on EZ2 Connect.

Only perform maintenance as described in this user manual.

2.11. Symbols on the EZ2 Connect instrument

The following symbols appear on the EZ2 Connect instruments.

Symbol	Location	Description
	Heating system — inside instrument	Heat hazard — the temperature of the heating system can reach up to 95°C.
	Near the tip rack	Biohazard — the tip rack may be contaminated with biohazardous material and must be handled with gloves.
	On the back of the instrument	UV radiation hazard — avoid looking directly into UV light. Do not expose your skin to UV light.
	On handheld barcode scanner	Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.
	Robotic arm – inside instrument	Crush hazard — the nozzle unit may crush your fingers or hand.
	Type plate on the back of the instrument	CE mark for Europe.
	Type plate on the back of the instrument	CSA mark for Canada and the USA.
	Type plate on the back of the instrument	RCM (former C-Tick) for Australia and New Zealand.
	Type plate on the back of the instrument	RoHS mark for China (the restriction of the use of certain hazardous substances in electrical and electronic equipment).
	Type plate on the back of the instrument	WEEE mark for Europe.
	Type plate on the back of the instrument	Legal manufacturer.
	Type plate on the back of the instrument	Unique Device Identifier (UDI) as a 2D barcode in Data Matrix format.
GTIN	Type plate on the back of the instrument	Global Trade Item Number.
SN	Type plate on the back of the instrument	Serial number.
REF	Type plate on the back of the instrument	Catalog number.
	Type plate on the back of the instrument	Consult instructions for use.

Symbol	Location	Description
	Type plate on the back of the instrument	See warnings and precautions.
	Type plate on the back of the instrument	Date of manufacture.

3. General Description

The EZ2 Connect system is designed to perform automated isolation and purification of nucleic acids in molecular biology applications.

3.1. Principle

The EZ2 is available in different variants. This user manual focuses on the EZ2 Connect and EZ2 Connect Fx.

The EZ2 Connect performs fully automated nucleic acid purification from up to 24 samples per single run using magnetic particle technology. It is used in molecular biology applications.

The EZ2 Connect has preinstalled protocols that are used with QIAGEN kits to purify nucleic acids. The instrument's touchscreen display allows the user to easily select protocols. The intuitive software/user interface guides the user through the run setup process, which includes selecting variable parameters. Afterward, the operator loads labware and samples onto the EZ2 Connect worktable, while following the instructions shown on the display. The order and contents of the labware are determined by each protocol. When the protocol run starts, the isolation of nucleic acids is carried out automatically in a modular workflow. Users can connect to their instrument remotely with a computer or a mobile device (e.g., a tablet) and the QIAsphere® App using the associated QIAsphere Connectivity Package (Section 5.3.9 and Appendix B – EZ2 Connect Parts and Components/Consumables), enabling quick response times and the ability to monitor runs while being away from the instrument.

The aspiration and dispensation of samples and reagents and the separation of magnetic particles are performed by the 24-channel pipettor head and magnet module. If required by the protocol, the temperature of the liquids is controlled by the heating system.

The EZ2 Connect Fx incorporates all the characteristics of the EZ2 Connect, as well as some additional features, which are particularly relevant for forensic workflows. These features include:

- An internal camera, which is used for load checks and reagent cartridge barcode reading
- An external barcode reader, which is used for reading sample IDs and Q-card barcodes
- A sample recovery function for forensic protocols
- Extended user management
- User Interface with additional features
- Additional reporting functions

3.2. External features of the EZ2 Connect

Figure 1. The front of the EZ2 Connect.

1 Touchscreen

2 Hood

3 Power button

4 USB ports

Note: Two additional USB ports are located on the rear of the touchscreen (not shown).

Figure 2. The back of the EZ2 Connect.

5 RJ-45 Ethernet port

6 Power cord socket — including instrument main fuse

7 Ventilation openings

8 Instrument type plate

3.2.1. Touchscreen

The EZ2 Connect has a 10.1 inch color touchscreen display with a resolution of 1280 x 800 pixels. The GUI is displayed on the touchscreen, allowing the user to operate the instrument, set up and start runs, perform maintenance procedures, monitor the instrument status, change settings, and download reports.

Figure 3. EZ2 Connect touchscreen display with GUI.

3.2.2. Hood

The EZ2 Connect hood protects the interior of the instrument from external contamination during protocol runs. Additionally, the hood protects operators from moving parts during protocol runs and UV irradiation during decontamination procedures.

The hood must be closed to enable a protocol run to start. The hood is locked at the start of a run and remains locked throughout the run. This protects users from moving parts on the worktable. The hood can be manually opened to gain access to the worktable when no protocol is running. During operation of the EZ2 Connect, the hood must remain closed and should only be opened when you are instructed to do so by the user manual or instructions on the GUI.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

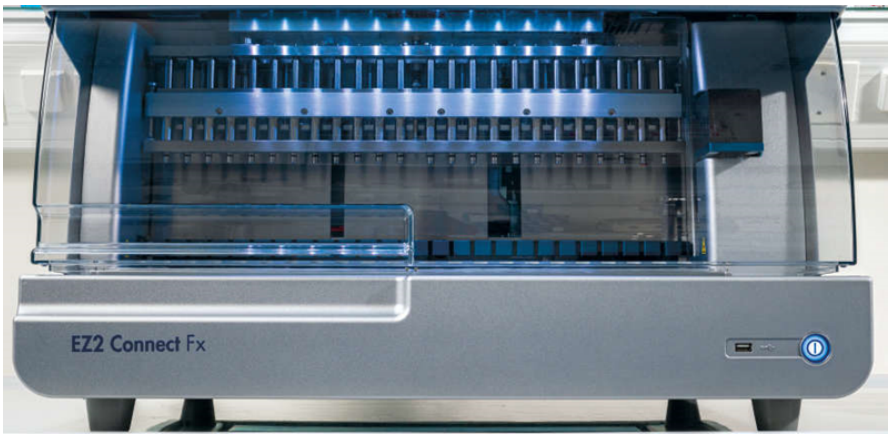


Figure 4. TheEZ2 Connect Fx with the hood closed.

3.2.3. Power button

The power button is located on the bottom right corner of the front of the EZ2 Connect. To turn on the EZ2 Connect, press the button. After you press the button, the power button lights up, the startup screen appears on the touchscreen, and the instrument initializes.

To save energy, the EZ2 Connect can be turned off when not in use. To turn off the EZ2 Connect, press the power button.

Figure 5. Location of the power button.

3.2.4. USB ports

The EZ2 Connect has three USB ports. One is located next to the power button, on the front of the instrument. The other two are located on the back of the touchscreen display.

The USB ports allow you to connect a USB drive to the EZ2 Connect. A USB drive that is connected to the instrument can be used to, for example, transfer report files. For more information on saving reports, refer to the instructions provided in Section 5.9 (see page 109).

In addition, you can use the USB drive to upload protocols, or update the software, if you have the relevant files on your USB drive. For more information on uploading protocols, refer to the Section 5.3.6. For more information on software updates, refer to the Section 5.3.8 (see page 66).

The handheld barcode scanner is connected to the EZ2 Connect using any one of the three available USB ports.

The Wi-Fi adapter, if used, is connected to the EZ2 Connect using any one of the three available USB ports. Those on the rear of the touchscreen might be most convenient.

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Do not remove the USB drive or interrupt power while downloading or transferring data or software to or from the instrument.

Important: USB devices other than those listed above should not be connected to any of the USB ports on the EZ2 Connect.

3.2.5. RJ-45 Ethernet port

The RJ-45 Ethernet port is located on the back of the instrument (highlighted white in image below). The port is used to connect the EZ2 Connect to a local area network.

Figure 6. Location of RJ-45 port (highlighted by white frame).

3.2.6. Power cord socket

The power cord socket is located on the back of the EZ2 Connect (highlighted white in image below) and is used for connecting the instrument to a power outlet via the supplied power cord.

Figure 7. Location of power cord socket (highlighted by white frame).

On some instruments, there might be a sign with 230 V on the power cord socket (Figure 8). This power socket can still work with different input voltages. There is no action needed if the input voltage differs from the voltage written on the sign, if the voltage is inside of the allowed operating voltage range (100–240 V).

Figure 8. Alternative variant of the power socket with 230 V sign.

WARNING **Electrical hazard**

Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous.

Intentional interruption is prohibited.

Lethal voltages inside the instrument

When the instrument is connected to line power, terminals may be live and opening covers or removing parts is likely to expose live parts.

WARNING **Damage to electronics**

Before turning the instrument on, make sure that the correct supply voltage is used.

Use of incorrect supply voltage may damage the electronics.

To check the recommended supply voltage, refer to the specifications indicated on the type plate of the instrument.

WARNING **Risk of electric shock**

Do not open any panels on the EZ2 Connect.

Risk of personal injury and material damage

Only perform maintenance that is specifically described in this user manual.

3.2.7. Ventilation openings

EZ2 Connect ventilation openings allow the internal components of the instrument to be cooled.

WARNING **Risk of overheating**

To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2 Connect.

Slits and openings that ensure the ventilation of the instrument must not be covered.

3.2.8. Barcode scanner

The barcode scanner delivered with the instrument can be connected to the EZ2 Connect using any one of the 3 USB ports. The scanner is used for reading the barcode on the kit Q-Card (supplied with sample preparation kits) and sample barcodes. For more information on how to use the barcode scanner, refer to the Section 5.12 (see page 112).

WARNING **Risk of personal injury**

Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.

3.3. Internal features of the EZ2 Connect

Figure 9. Interior of theEZ2 Connect.

1	Pipettor head	**Internal features not marked in the picture**:	
2	Cartridge rack	—	Heating system
3	Tip rack	—	UV LED lamp
4	Magnet module	—	Internal light
5	Camera		

3.3.1. Pipettor head

The pipettor head is mounted above the worktable and moves in the Z direction (meaning up and down) to reach the sample and reagent tubes on the worktable. The worktable itself moves in the Y direction (meaning front to back) so that the pipettor head is above the appropriate position in the cartridge or tip rack during each action that is performed by the instrument.

The pipettor head contains 24 high-precision syringe pumps that are connected to tip adapters that can be attached to filter-tips. The syringe pumps operate simultaneously and can aspirate or dispense small volumes of liquid through the attached filter-tips.

Another component of the pipettor head is the piercing unit that is located behind the tip adapters. The piercing unit is a row of 24 metal spikes that puncture the foil sealing the reagent cartridges. During operation, the piercing unit opens all wells of the reagent cartridges in a dedicated order. The pipettor head then automatically picks up filter-tips from the tip rack and performs aspiration and dispensation operations at different locations on the worktable before ejecting the tips back into the tip holder held on the tip rack at the end of the run.

Figure 10. EZ2 Connect pipettor head.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

WARNING **Moving parts**

Avoid contact with moving parts during operation of the EZ2 Connect. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the worktable while the instrument is operating.

3.3.2. Worktable

The EZ2 Connect worktable contains two movable rack types (the cartridge rack and the tip rack) that hold all the labware required for a protocol run, and the heating system, which controls the temperature of liquids during a run.

Cartridge rack

Figure 11. Cartridge rack with some cartridges inserted.

Figure 12. Removable cartridge rack inside the instrument.

There are two position dedicated cartridge racks: the left cartridge rack is used for cartridges in positions 1 to 12, and the right cartridge rack is used for cartridges in positions 13 to 24. The left and right cartridge racks together hold up to 24 reagent cartridges.

For more information on how to load the EZ2 Cartridge Rack, refer to Section 5.6.1 (see page 98).

Sealed reagent cartridges (supplied with the kits) are prefilled and contain the reagents needed for a protocol run. Each cartridge consists of 10 sealed reagent wells and 2 empty heating positions. One heating position is a well and the other is a slot that can hold a tube.

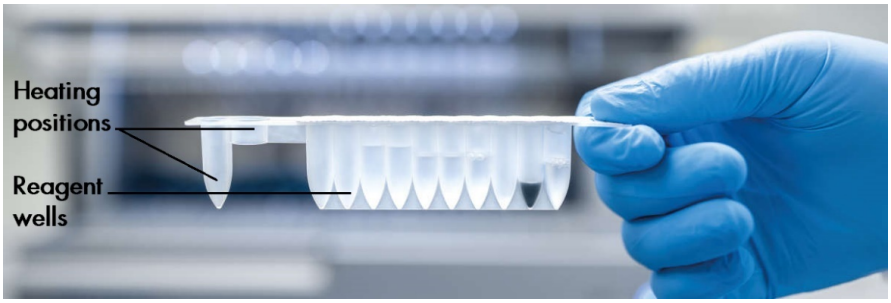


Figure 13. An EZ1/2 cartridge.

Tip rack

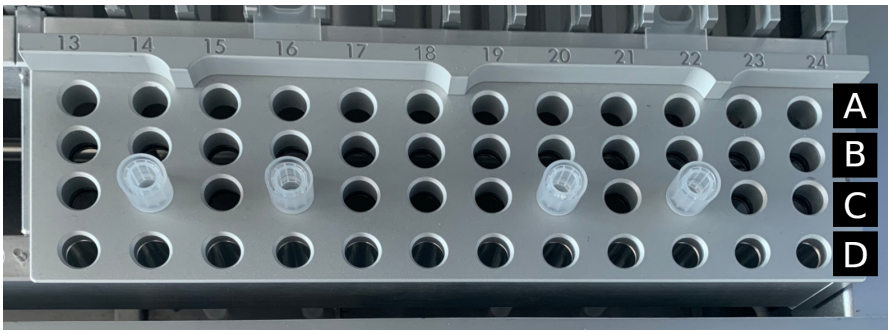


Figure 14. Tip rack with four inserted tip holders/filter tips.

Figure 15. Tip racks inside the instrument.

There are two position dedicated tip racks: the left tip rack is used for labware in positions 1 to 12, and the right tip rack is used for labware in positions 13 to 24.

The tip racks are located at the front of the worktable. Each consists of 4 rows and 12 positions:

Important: Only use QIAGEN recommended tubes (see respective kit handbooks for more information).

Figure 16. Tip holders and filter tips.

For information on how to load the tip rack, refer to the Section 5.6.2 (see page 99).

Heating system

The heating system is located under the rear part of the cartridge rack. If necessary, the protocol will heat the wells in positions 11 and 12 of the cartridge (depending on the used protocols).

Figure 17. Heatable positions in the cartridge rack (highlighted by white frame).

WARNING **Hot surface**

The heating system can reach temperatures of up to 95°C (203°F). Avoid touching it when it is hot, in particular.

Bottom tray

The two bottom trays are located underneath the tip and cartridge racks. Their role is to prevent contamination of the EZ2 Connect that could be caused by liquids that are unintentionally spilled. The bottom trays can be removed and cleaned as described in the Section 6.3 (see page 137).

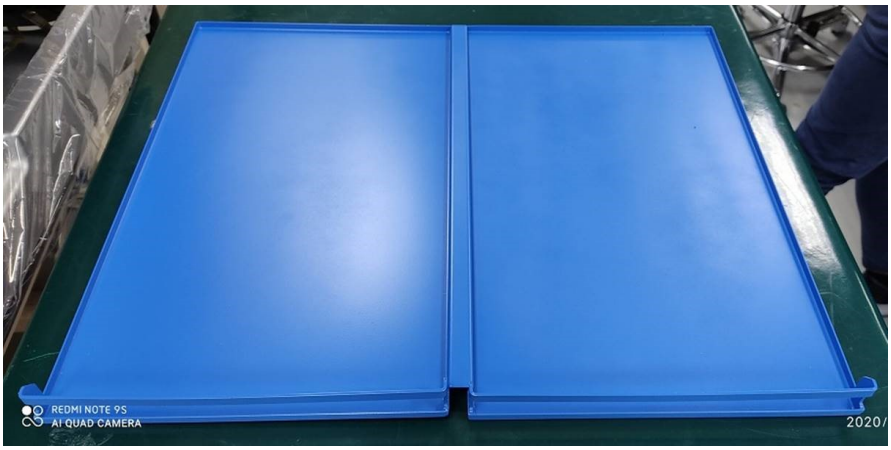


Figure 18. TheEZ2 Connect bottom tray.

3.3.3. Magnet module

The EZ2 Connect magnet module consists of magnets that are used to capture magnetic particles that are present in the liquid aspirated into the filter-tips.

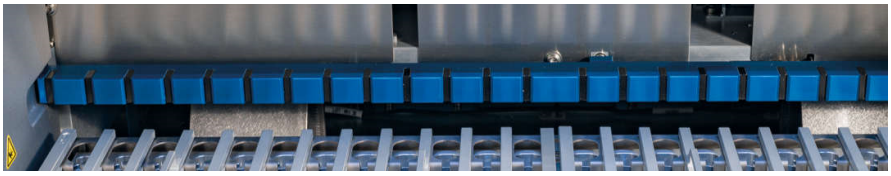


Figure 19. The EZ2 Connect magnet module.

3.3.4. Camera

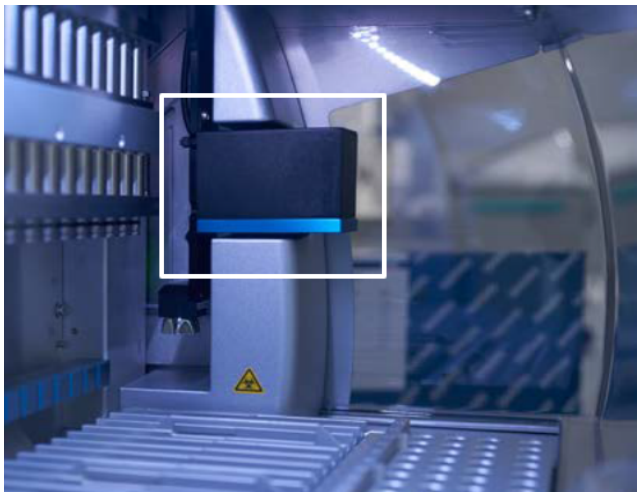


Figure 20. Camera module (highlighted by white frame; just EZ2 Connect Fx).

The EZ2 Connect Fx has a built-in camera that is used for load checks, which includes reading barcodes from cartridges.

Load checks are done before a protocol run starts. The camera checks if labware has been loaded in the correct positions. The results of the load check are shown on the screen. For more information on the load check, refer to the Section 5.7.1 (see page 103).

The camera also reads the cartridge 2D barcodes. The information that is collected from the 2D barcodes is included in run reports.

3.3.5. UV LED lamp

The EZ2 Connect is equipped with a UV LED light to support decontamination. During the maintenance decontamination procedure, the UV LED moves over the worktable. The UV decontamination procedure is described in Section 6.5 UV decontamination.

Note: The hood must be closed before starting a maintenance procedure and is automatically locked during the procedure.

WARNING **UV radiation**

Do not expose your skin to UV light from the UV LED lamp.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

3.3.6. Internal light

The EZ2 Connect has a built-in LED light. The internal light illuminates the worktable and informs about the current status of the run. There are two modes of the LED light:

- Blinking light – indicates that operator activity is required (e.g., when an error occurs).
- Constant light – the default setting, used in all other situations.

4. Installation Procedures

This section provides instructions on installation environment requirements as well as unpacking, installing, and packing the EZ2 Connect.

4.1. Installation environment

4.1.1. Site requirements

The EZ2 Connect must be located out of direct sunlight, away from heat sources, and away from sources of vibration and electrical interference. Refer to Section 9 (see page 157) for the operating conditions (temperature and humidity). The site of installation should be free of excessive drafts, excessive moisture, and excessive dust, and should not be subject to large temperature fluctuations.

Use a level workbench that is large enough and strong enough to accommodate the EZ2 Connect. To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2 Connect. Refer to Section 9 (see page 157) for the weight and dimensions of the EZ2 Connect. Ensure that the workbench is dry, clean, and vibration-proof, and has additional space for accessories.

The EZ2 Connect must be placed within approximately 1.5 m of a properly grounded (earthed) AC power outlet. The power line to the instrument should be voltage regulated and surge protected. Ensure that the EZ2 Connect is positioned so that it is easy to access the power connector at the back of the instrument and the power switch on the front at all times, and that it is easy to turn the instrument off and disconnect it.

Note: It is recommended to plug the instrument directly into its own power outlet and to not share the power outlet with another lab equipment.

WARNING **Explosive atmosphere**

The EZ2 Connect is not designed for use in an explosive atmosphere.

WARNING **Risk of overheating**

To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2 Connect.

Slits and openings that ensure the ventilation of the instrument must not be covered.

WARNING **Risk of personal injury and material damage**

The EZ2 Connect is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone.

CAUTION **Damage to the instrument**

Direct sunlight may bleach parts of the instrumentt, may cause damage to plastic parts, and may interfere with the load check.

The EZ2 Connect must be located out of direct sunlight.

CAUTION **Damage to the instrument**

Do not use the EZ2 Connect in the vicinity of sources of strong electromagnetic radiation (for example, unshielded, deliberately operated high-frequency sources or mobile radio devices), because these can interfere with the proper operation.

4.1.2. Power requirements

TheEZ2 Connect operates at: 100–240 V AC ± 10%, 50/60 Hz, 1000 VA.

Make sure the voltage rating of the EZ2 Connect is compatible with the AC voltage available at the installation site.

WARNING **Damage to electronics**

Before powering ON the instrument, make sure that the correct supply voltage is used.

Use of incorrect supply voltage may damage the electronics.

To check the recommended supply voltage, refer to the specifications indicated in the type plate of the instrument.

WARNING **Electrical hazard**

Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous.

Intentional interruption is prohibited.

Lethal voltages inside the instrument

When the instrument is connected to line power, terminals may be live and opening covers or removing parts is likely to expose live parts.

4.1.3. Grounding requirements

To protect operating personnel, the National Electrical Manufacturers' Association (NEMA) recommends theEZ2 Connect should be correctly grounded (earthed). The instrument is equipped with a 3-conductor AC power cord that, when connected to an appropriate AC power outlet, grounds (earths) the instrument. To preserve this protection feature, do not operate the instrument from an AC power outlet that has no ground (earth) connection.

4.2. Unpacking the EZ2 Connect

WARNING **Risk of personal injury**

The EZ2 Connect is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone.

The following items are delivered:

- EZ2 Connect instrument
- Quick-start guide and safety instructions
- Left and right cartridge racks
- Left and right sample/tip racks

- Power cord set
- USB drive
- Silicone grease
- Handheld barcode scanner (only with the EZ2 Connect Fx)
- Connectivity package (supplied separately)

To unpack the EZ2 Connect

1. Before unpacking the EZ2 Connect, move the package to the site of installation and check that the arrows on the package point upward. In addition, check whether the package is damaged. In case of damage, contact QIAGEN Technical Service.
2. Open the top of the transportation box and remove the top layer (PE foam).
3. Remove the accessories box together with the PE foam at its perimeter.

Figure 21. Accessories box.

4. Remove the outer carton box by holding at the cut-out area and lifting up the outer carton box.
5. Remove the 2 pieces of protective foam from the unit.
6. Move the unit to the workbench or trolley from the packaging. When lifting the EZ2 Connect, slide your fingers under the side of the instrument and keep your back straight.

   Important: Two persons are required to lift the EZ2 Connect.

   Important: Do not hold the touchscreen display while unpacking or lifting the EZ2 Connect. This might damage the instrument.
7. Remove the foam strip that is placed in the gap between the hood and the front top cover.
8. Remove the pieces of tape that secure the hood to the base panels.
9. Remove the protective film that covers the hood.

10. Open the hood and remove the transport lock from the pipetting head by pulling the transport lock from bottom.

Figure 22. Transport lock.

11. Remove silica gel package from the unit.
12. Remove the transport lock for Y axis (front to back) by pushing the bottom of the transport lock toward the rear direction and pull the transport foam out from the rear. There are a total of two transport locks for Y-axis.
13. Check if the packing list document is included after unpacking the EZ2 Connect.
14. Read the packing list to check all items have been received. If anything is missing, contact QIAGEN Technical Services.
15. Check that the EZ2 Connect is not damaged and that there are no loose parts. If anything is damaged, contact QIAGEN Technical Services. Make sure that the EZ2 Connect has equilibrated to ambient temperature before powering on.
16. Retain the package in case you need to transport the EZ2 Connect in the future. Refer to the Section 4.4 (page 40) for more details. Using the original package minimizes the possibility of damage during transportation of the EZ2 Connect.

4.3. Installing the EZ2 Connect

This section describes important actions that must be performed before operating the EZ2 Connect. These actions include:

- Removal of the EZ2 Connect accessories and shipping material
- Installation of the AC power cord
- Installation of external barcode scanner
- Installation of the Wi-Fi adapter (if supplied with connectivity package)
- Initial configuration
- Camera exposure calibration
- If an installation qualification/operational qualification (IQ/OQ) is required in your laboratory setup, this service can be ordered together with the instrument. For details, please contact QIAGEN Technical Services.

Note: To ensure that your EZ2 Connect has the latest Software and Protocol versions installed, please visit the EZ2 Connect webpage at **www.qiagen.com**

4.3.1. Removal of the EZ2 Connect accessories and shipping materials

1. Remove the power cord, barcode scanner, and the quick-start guide from accessories box on top of the EZ2 Connect.
2. Remove the USB stick, cartridge racks, and tip racks.
3. Ensure all shipping foams, transport locks, and other packing material have been removed as described in the Section 4.2 (see page 31).

4.3.2. Installation of the AC power cord

1. Remove the power cord from the foam packing material on top of the EZ2 Connect.

   Note: Only use the power cord that is supplied with the EZ2 Connect.
2. Ensure that the power button is set to OFF. When ON, the power button is slightly pushed into the slot; when OFF, it is flush with the surface.

Figure 23. Location of the power button.

3. Check that the voltage rating on the type plate at the back of the EZ2 Connect matches the voltage available at the installation site.

   Note: The EZ2 Connect AC inlet is set up to accept all input voltages within the range 100–240 V AC and does not need to be configured manually – see Section 3.2.6 Power cord socket.
4. Plug the power cord into the instrument power cord socket.
5. Plug the power cord into a grounded power outlet.
6. Do not switch on power to the instrument at this point. Power needs to be OFF for subsequent installation of USB devices described in the following steps.

WARNING **Damage to electronics**

Before powering ON the instrument, make sure that the correct supply voltage is used.

Use of incorrect supply voltage may damage the electronics.

To check the recommended supply voltage, refer to the specifications indicated in the type plate of the instrument.

WARNING **Electrical hazard**

Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous.

Intentional interruption is prohibited.

Lethal voltages inside the instrument

When the instrument is connected to line power, terminals may be live and opening covers or removing parts is likely to expose live parts.

4.3.3. Installation of external barcode scanner (optional)

1. Remove the barcode scanner from the box.
2. Before powering on the instrument, connect the barcode scanner to any one of the three USB ports located either on the front of the instrument or on the rear of the touchscreen.

WARNING **Risk of personal injury**

Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.

4.3.4. Installation of Wi-Fi adapter (optional)

Note: Wi-Fi adapter is supplied with the connectivity package in certain regions. If supplied, the following steps should be performed to correctly install the Wi-Fi adapter.

1. Remove the Wi-Fi adapter from the packaging.
2. Before turning on the instrument, plug the Wi-Fi adapter into one of the three USB ports located on either the front of the instrument or on the rear of the touchscreen.

   Note: It may be more convenient to use the USB ports on the rear of the touchscreen.

4.3.5. Initial configuration of the EZ2 Connect

Note: Make sure that the EZ2 Connect has equilibrated to ambient temperature before powering on.

1. To power on the EZ2 Connect instrument, first ensure the hood is closed. After pressing the power button, the power button lights up, the startup screen appears on the touchscreen, a sound plays, and the instrument initializes.

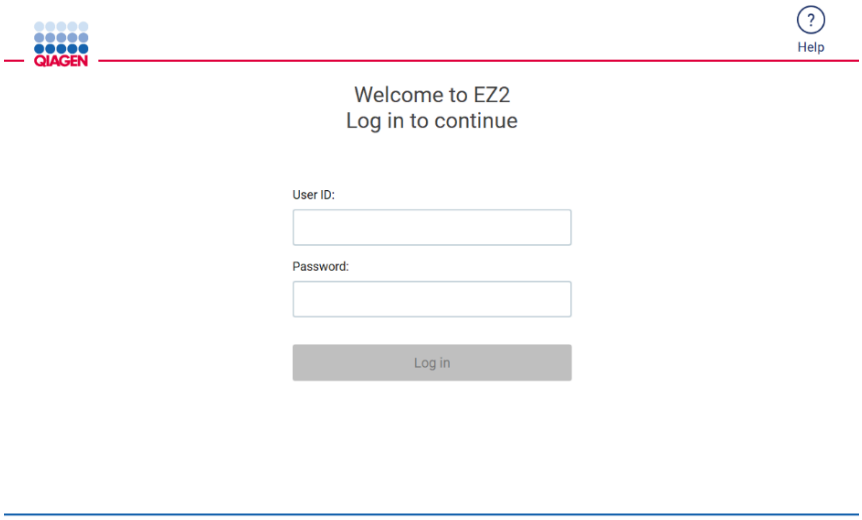


Figure 24. The login screen.

Tap the **Help** icon in the header section on the login screen to open the Help center window. The Help center allows the user to change the password in case all user with Admin role are locked or the current password has been forgotten.

Note: It is recommended to create a second user with Admin role to unlock the other Admin account if needed.

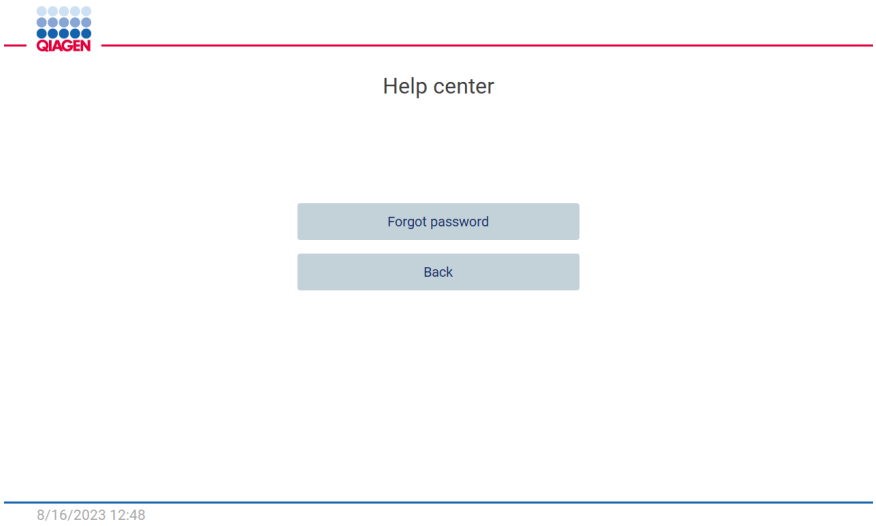


Figure 25. Help center window.

2. To log in for the first time, enter “Admin” in both User ID and Password fields, then press **Log in**. After this login, the “Set a new password” screen appears.

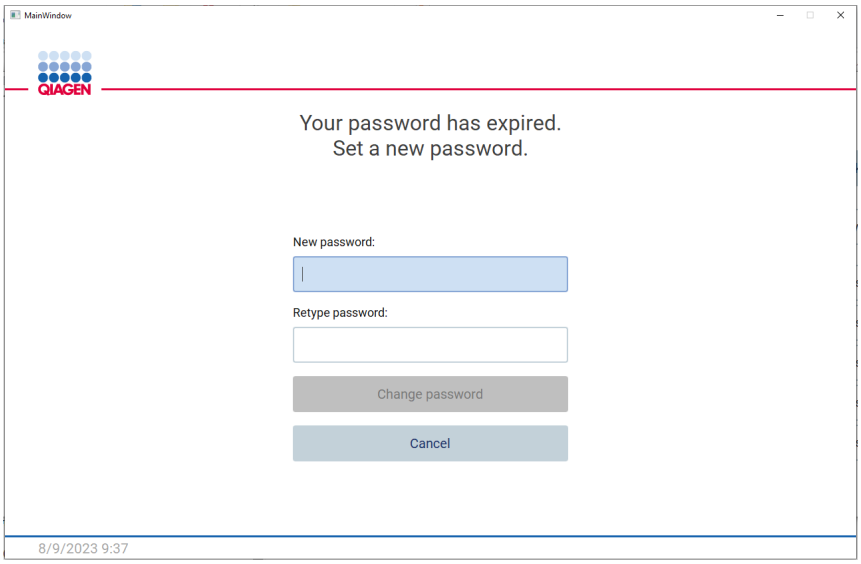


Figure 26. Set a new password screen after first log in.

Note: Only Administrators can change instrument settings.

Note: The system requires a password change for all newly created accounts. The EZ2 Connect default password policy is a strong password, which requires a password between 8 and 40 characters and includes upper and lower case characters, a number, and a special character.

3. From the **Configuration** menu under the **System** tab, you can modify the Device Name, Date, and Time fields. You can also find information on the software version, serial number, and firmware version. For further details, see Section 5.3.1 (see page 49).

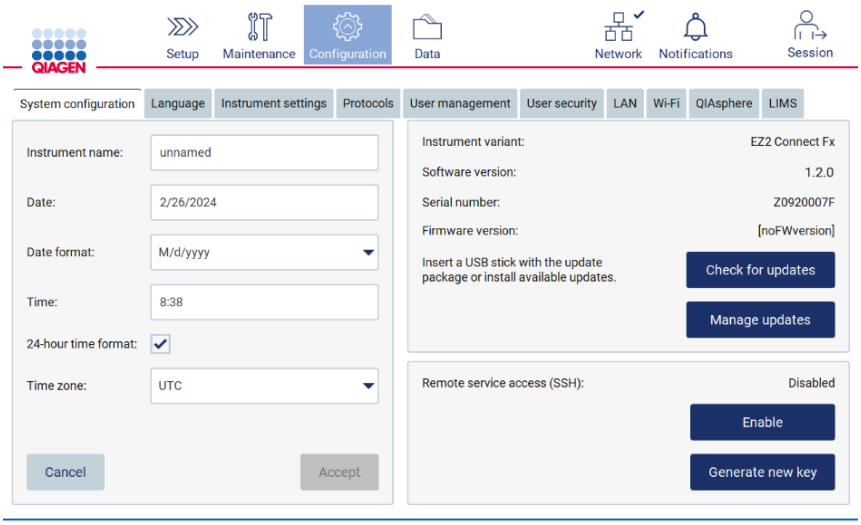


Figure 27. The System configuration tab.

4. You may adjust settings of the EZ2 Connect according to your preferences through the **Instrument settings** tab under the **Configuration** menu. For further details see Section 5.3.2 (see page 51).

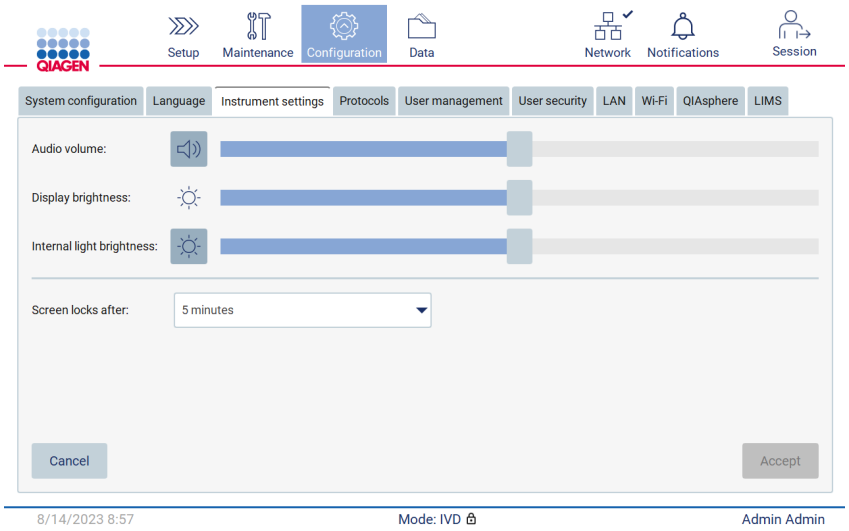


Figure 28. Details on the Instrument setting tab.

4.3.6. Performing camera exposure calibration (for EZ2 Connect Fx only)

Note: Only Administrators can perform the camera exposure calibration.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

1. Before first use in the final installation site, the camera exposure calibration must be performed.
2. From the **Maintenance** menu under the **Camera LED** tab, follow the instructions on the user interface.

3. Make sure that you use the tip racks from the same instrument in the same order (the racks are designed to be installed in only one orientation) as later on in the run. Only the standard tip rack (cat. no. 9027009) shall be used for exposure calibration.

Figure 29. Camera exposure calibration screen.

4. During the calibration routine, the following message will be displayed:

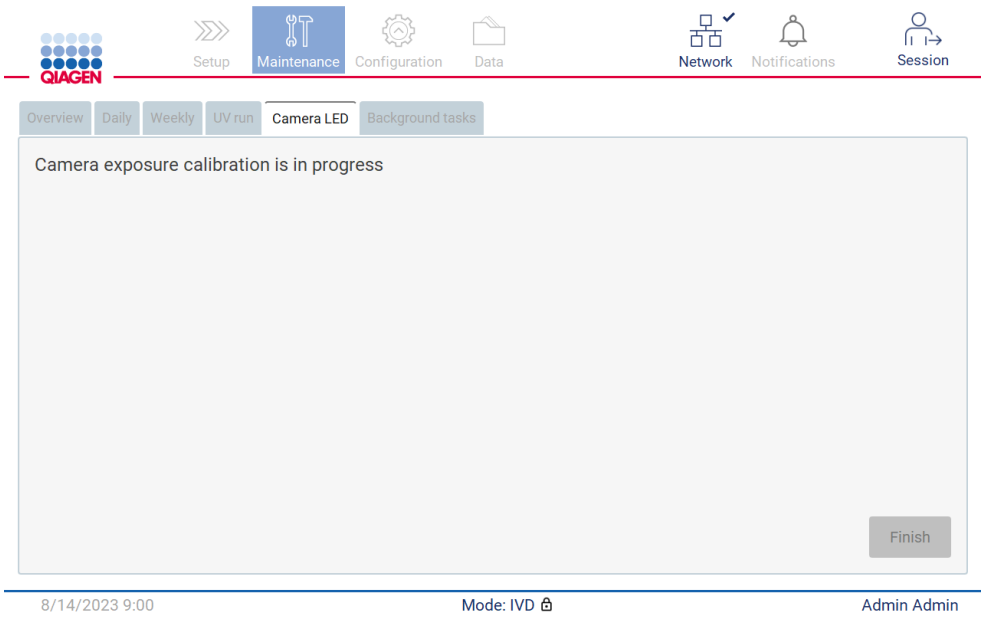


Figure 30. Camera exposure calibration is in progress message.

Note: For support or technical advice regarding this, please contact QIAGEN Technical Service Department, or see our Technical Support Center at **support.qiagen.com**

4.4. Packaging and transportation of the EZ2 Connect

WARNING **Risk of personal injury**

The EZ2 Connect is too heavy to be lifted by one person. To avoid personal injury or damage to the instrument, do not lift the instrument alone. Use the handle attached to the box to lift the

Before transporting the EZ2 Connect, the instrument must first be decontaminated. Refer to Sections 6.1.1 and 6.1.2 for more details. Then prepare the instrument as follows.

1. Prepare the packing materials.
2. Install transport locks (two) for Y axis.
3. Install transport lock for P axis.
4. Close instrument hood and install the foam strip in the gap between the hood and the front top cover.
5. Move instrument to transportation box base.

   Important: Two persons are required to lift the EZ2 Connect.

   Important: Do not hold the touchscreen display while unpacking or lifting the EZ2 Connect; this might damage the instrument.
6. Install outer carton box.
7. Package accessories into the accessories box, place onto the top of the transportation box together with the PE foam at its perimeter.
8. Add the top layer PE foam.
9. Seal the outside edges of the carton with tape.

   Note: Using the original package minimizes potential damage during transportation of the EZ2 Connect.

5. Operating Procedures

This section describes how to operate the EZ2 Connect instrument.

Before proceeding, it is recommended that you familiarize yourself with the features of the instrument as described in the Sections 3.2 and 3.3 (see pages 17 and 23, respectively).

The EZ2 Connect is intended to be used only in combination with QIAGEN kits indicated for use with the EZ2 Connect for the applications described in the kit handbooks.

The hood of the EZ2 Connect must remain closed and will automatically lock during operation of the instrument. Only open the hood when instructed to do so by the instruction for use or GUI.

The worktable of the EZ2 Connect moves during operation of the instrument. Never open the EZ2 Connect hood while the instrument is operating.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

WARNING **Moving parts**

Avoid contact with moving parts during operation of the EZ2 Connect. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the worktable while the instrument is operating.

WARNING **Risk of personal injury**

Do not attempt to move the EZ2 Connect during operation.

WARNING/ CAUTION **Risk of personal injury and material damage**

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

CAUTION **Damage to the instrument**

Avoid spilling water or chemicals onto the EZ2 Connect. Instrument damage caused by water or chemical spillage will void your warranty.

WARNING **Risk of fire or explosion**

When using ethanol or ethanol-based liquids on the EZ2 Connect, handle such liquids carefully and in accordance with the required safety regulations. If liquid has been spilled, wipe it off and leave the EZ2 Connect hood open to allow flammable vapors to disperse.

WARNING **Risk of explosion**

The EZ2 Connect is intended for use with reagents and substances supplied with QIAGEN kits. Use of other reagents and substances may lead to fire or explosion.

CAUTION **Risk of personal injury**

Ensure that the EZ2 Connect is switched off before you manually move the mechanical components of the instrument.

CAUTION **Damage to the instrument**

Do not lean against the instrument or touchscreen.

WARNING **Samples containing infectious agents**

Samples used with the EZ2 Connect may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Always wear safety glasses, gloves, and a lab coat.

The responsible body (for example, a laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe, and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents as defined in the applicable Material Safety Data Sheets (MSDSs) or the OSHA1,* ACGIH,† or COSHH‡ documents.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

CAUTION **Hazardous chemicals and infectious agents**

The waste contains samples and reagents. This waste may contain toxic or infectious material and must be disposed of properly. Refer to your local safety regulations for proper disposal procedures.

WARNING **Hot surface**

The heating system can reach temperatures of up to 95°C (203°F). Avoid touching it when it is hot, in particular.

WARNING **UV radiation**

Avoid looking directly into UV light. Do not expose your skin to UV light.

WARNING **Risk of personal injury**

Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.

5.1. General information

The EZ2 Connect is operated using a touchscreen display, which guides you step-by-step through the correct loading of the worktable and selection of the protocol. The following actions can be done using the user interface:

- Guided run setups
- Check the status of the run and the instrument
- Guided maintenance procedures
- Generate, save, and download run reports, support files, sample list templates, and audit trails
- Change instrument settings to customize your EZ2 Connect

Note: The instrument's touchscreen does not support swiping and multi gestures.

Each screen of the user interface consists of three elements: the toolbar, the main content, and the footer.

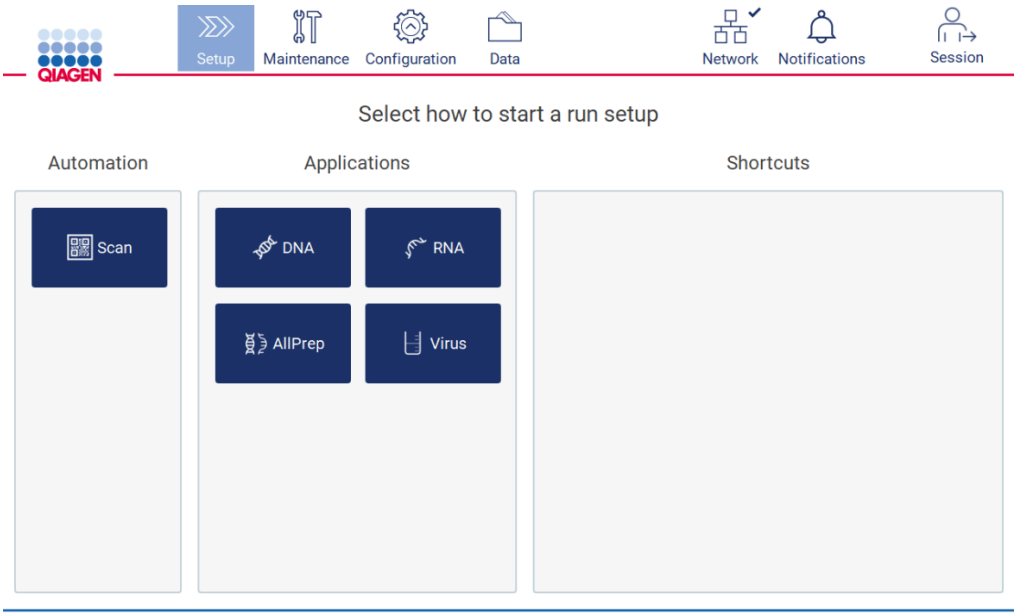


Figure 31. The home screen (for EZ2 Connect Fx for Admin and Advanced users).

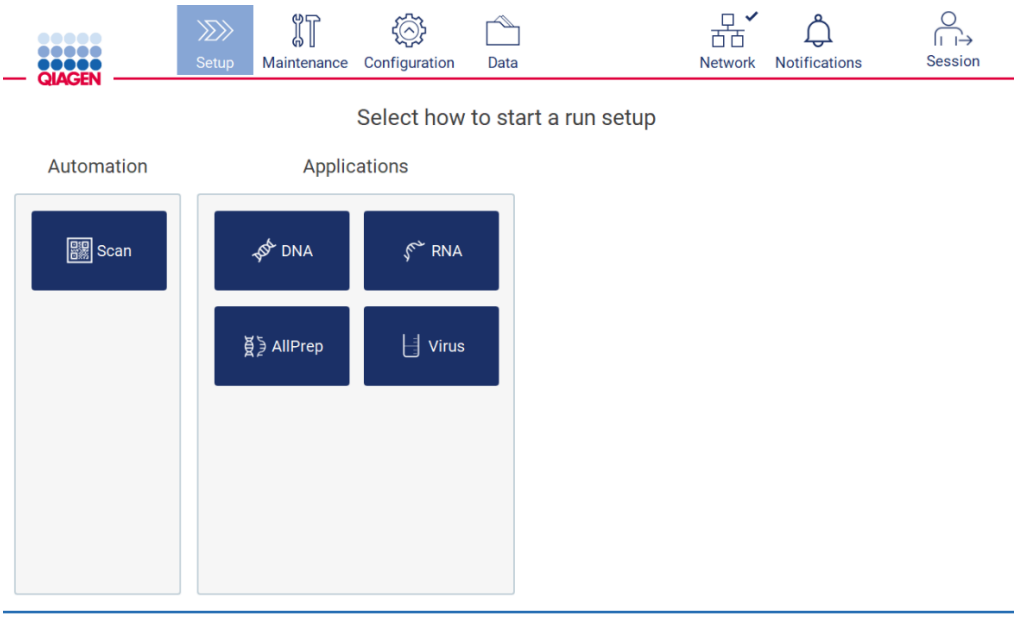


Figure 32. The home screen (for EZ2 Connect and the EZ2 Connect Fx Operator).

Toolbar

The toolbar is used to access the main sections of the EZ2 Connect software, to check the connection status of the LAN/Wi-Fi, and notifications, and to log out of the application. The toolbar contains the same buttons throughout the whole application, but some buttons are disabled during protocol setup, protocol runs, and maintenance procedures. Some buttons are also disabled because of user rights or, for example, if LIMS is not used.

The following elements enable the user to work and interact with the User Interface:

Table 1. Description of elements in the user interface

Element	Description
Setup	Tap this button to go to the Home screen, where you can start the setup process of a protocol run.
Maintenance	Tap this button to go to the **Maintenance** section, where you can configure data exchange, and access maintenance procedures.
Configuration	Tap this button to go to the **Configuration** section, where you can change settings, manage users, configure network and QIAsphere Base connections, and change your password.
Data	Tap this button to access Run reports, Support packages, and Audit trail.
LIMS results	Tap this button to display the LIMS sending results status.
Network	Tap this button to see the current status of the network connection(s) (LAN and Wi-Fi).

Table 1. Description of elements in the user interface (continued)

Element	Description
Notifications	Tap this button to see a new warning, errors, or important info notifications.
Session	Tap this button to lock the screen or log out from the current session.

Main content

The part of the screen where the main content of each view is displayed.

Footer

The footer shows the current date and time and the name of the user that is currently logged in.

5.1.1. Entering text and numbers

An on-screen keyboard is used for entering text in editable fields of the EZ2 Connect instrument software. To access the keyboard, tap the field that you want to edit. The keyboard appears.

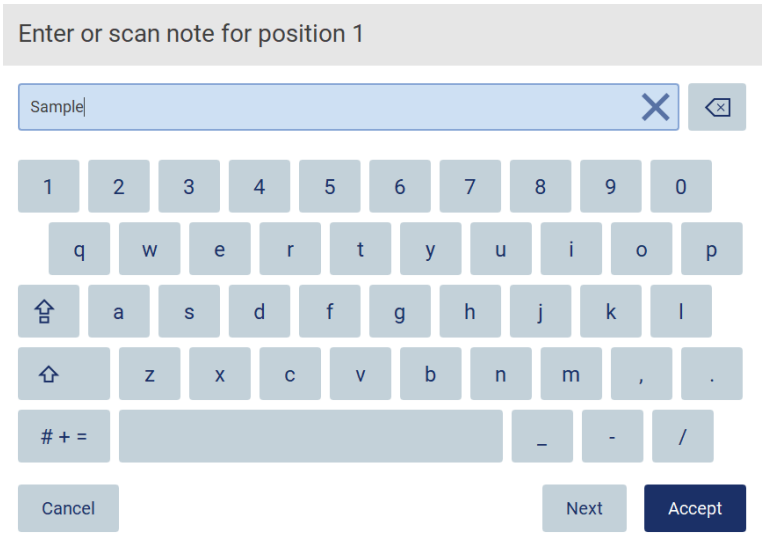


Figure 33. The on-screen keyboard.

The default layout of the keyboard is lowercase QWERTY, with numbers from 1 to 0, commonly used special characters, a space bar, a **Shift** key, a **Caps Lock** key, and the **Special Characters** # + = key. To enter a character, tap the relevant letter, number, or special character on the keyboard. To enter one uppercase letter, tap **Shift**. To enter multiple consecutive uppercase letters, tap **Caps Lock**. Tap **Caps Lock** again to turn off the uppercase input mode. To see special characters, tap **Special Characters** # + =. To go back to the alphabetic characters, tap A B C.

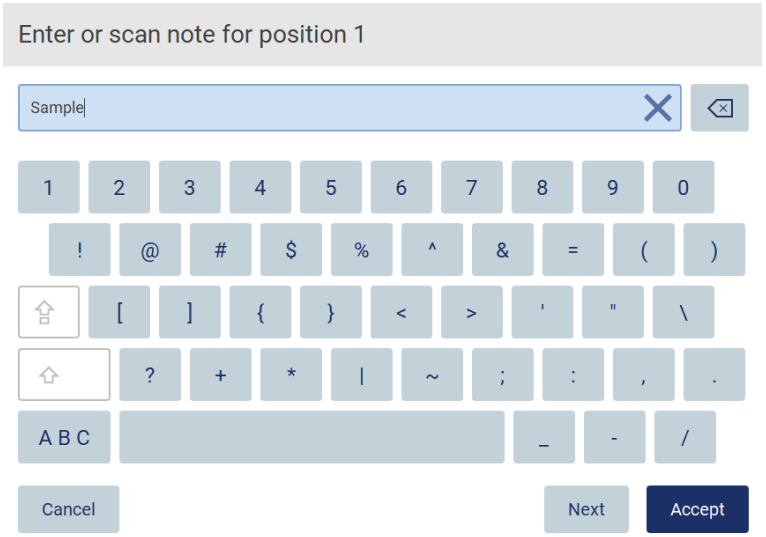


Figure 34. The on-screen keyboard in special character mode.

To remove one character to the left of the cursor, tap **Backspace**. To delete all characters from the field, tap **Clear All**.

Some fields have requirements or restrictions that need to be followed. If the entered text does not match the requirements of the field, an error message appears, and the input is not accepted.

To proceed, modify the text, so that it follows the requirements.

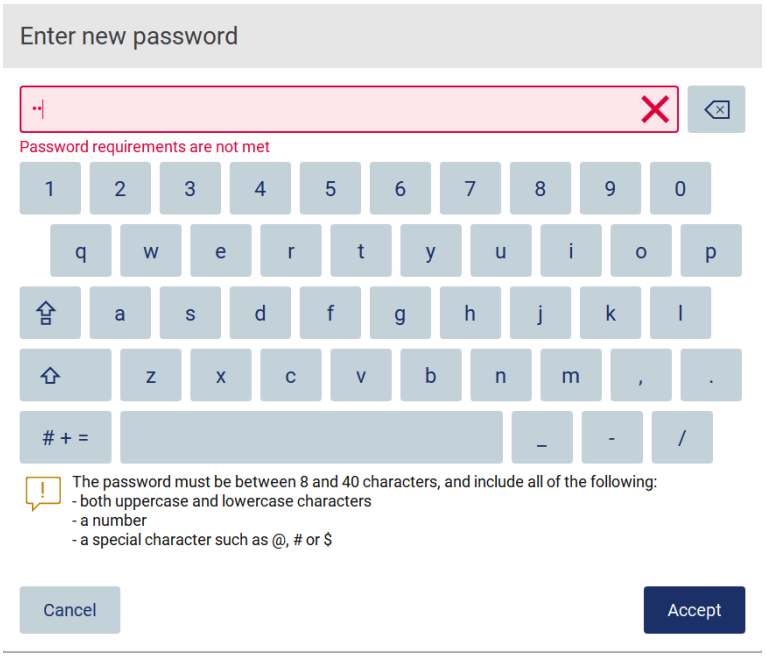


Figure 35. Example of text field validation.

If certain characters are not allowed in a field, they are deactivated on the keyboard and they cannot be entered in the field.

5.2. Starting the EZ2 Connect

1. Close the hood of the instrument.
2. Press the power button. If sounds are enabled on the instrument, a sound is played as the instrument is switched on. The startup screen appears, and the instrument is initialized. After the initialization is done, the Log in screen appears.

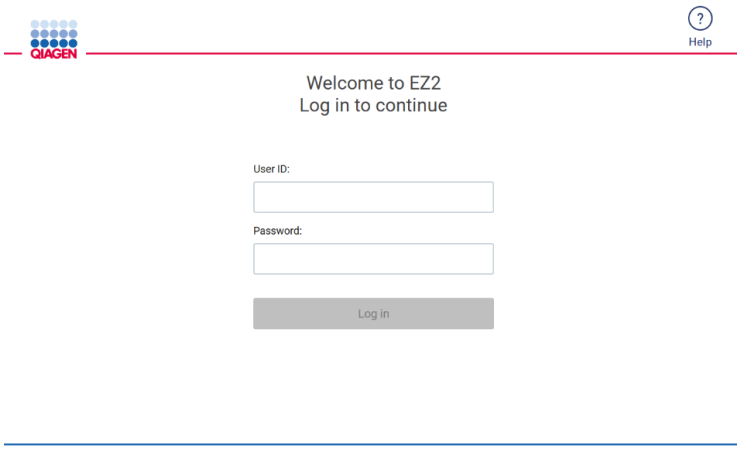


Figure 36. The login screen.

3. Tap the User ID field and enter your user ID using the on-screen keyboard. For more information on using the on-screen keyboard, refer to the Section 5.1.1 (see page 45).

   Note: If this is the first time the EZ2 Connectis switched on, enter the default user ID, that is “Admin”.

4. Tap the Password field and enter your password using the on-screen keyboard.

   Note: If this is the first time the EZ2 Connect is switched on, enter the default password, which is ”Admin”.

   Note: After log in, the system will check available disk space and a warning message will appear if insufficient disk space is available for five protocol runs. See Section 5.14, Data menu, for details on how to download and delete run reports to free up disk space.

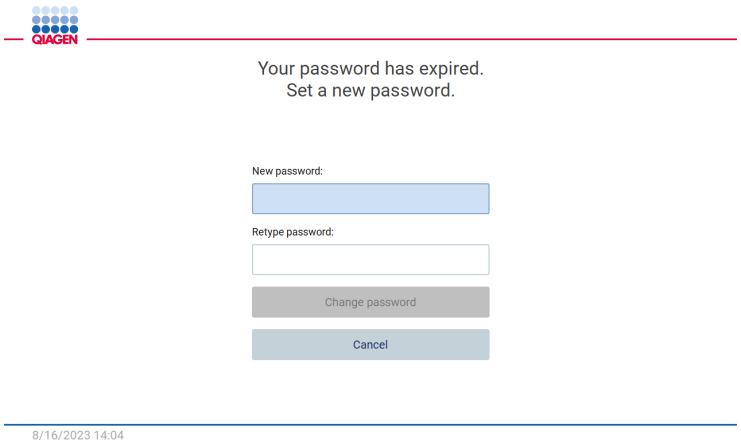


Figure 37. Set a new password screen after first log in.

Note: After the first log in using the default Admin account, the password must be changed according to the Password policy described in Section 5.3.5 (see page 59) and as per instruction in Section 5.3.4 (see page 57).

5. Tap **Log in**. If the credentials you entered are correct, the Home screen appears. If the credentials you entered are incorrect, an error message is shown.

   Note: If the number of failed login attempts exceeds the limit set by your Administrator (this is set to three attempts by default), your account is locked. To activate your account, contact your Administrator. If you are the only user with an Administrator role and your account is locked, contact QIAGEN Technical Support.

   Note: It is recommended to create at least one more account with Administrator role in addition to the default Admin account. In case one Administrator is locked due to wrong credentials, the other Administrator can unlock the account (see Section 5.3.3).

5.3. Configuring the EZ2 Connect

Administrators of the EZ2 Connect can adjust instrument settings, manage users, upload and delete protocols, update software, and configure network connectivity.

Note: Users whose role is defined as Operator do not have access to settings and configuration features of the software.

5.3.1. Setting basic system data

To set the instrument name, date, time, and date format, follow the steps below:

Note: Only Administrators can change system settings.

1. Tap the **Configuration** icon on the toolbar.

Figure 38. System configuration tab.

2. Tap the **System configuration**.

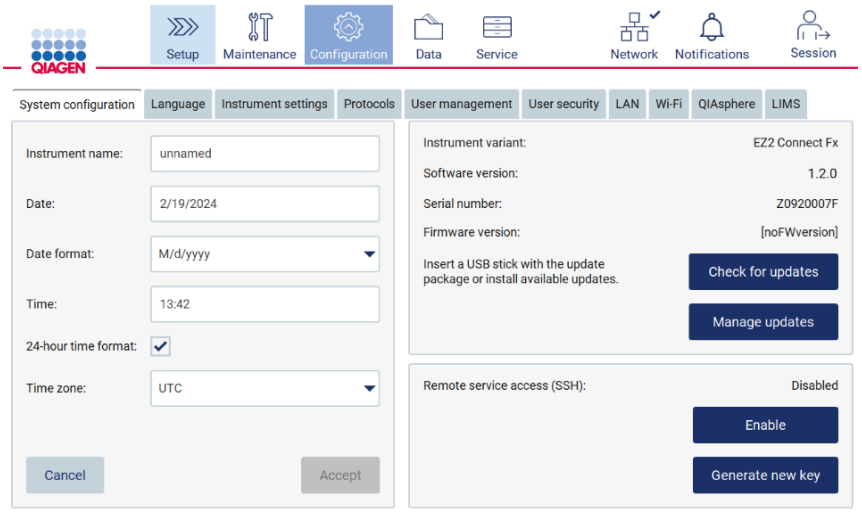


Figure 39. System configuration tab.

3. To set the device name, tap the Instrument name field, and enter a name using the on-screen keyboard. To save the name, tap **Accept**.

   Note: The device name cannot be longer than 24 characters. The name cannot contain special characters or spaces.

4. To set the date, tap the Date field, and select the date using the date picker. To change the month, the year, or both, use the left and right arrows on either side of the month and year label. To select a specific date, tap the day on the calendar. To confirm your selection, tap **Accept**.

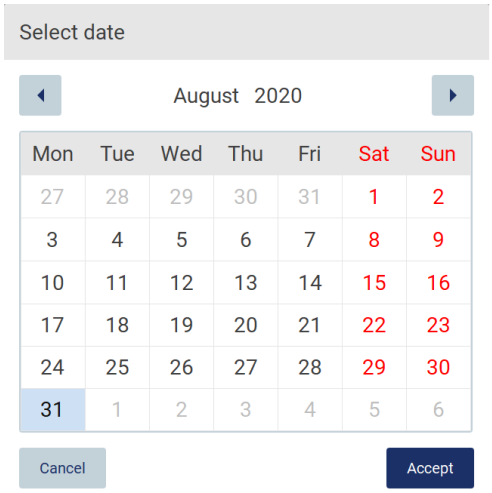


Figure 40. Select date dialog.

5. To set the date format, tap the Date format drop-down list and select one of the listed formats.
6. To set the time, tap the Time field and enter the time using the on-screen keyboard.
7. To use the 24-hour time format, select the "24-hour time format" checkbox. To use the 12 hour format, clear the "24-hour time format" checkbox.
8. To save the settings, tap **Accept**.

5.3.2. Changing instrument settings

You can adjust the settings of the EZ2 Connect according to your preferences.

Note: Only Administrators can change Instrument settings.

To modify Instrument settings, follow the steps below:

1. Tap the **Configuration** icon on the toolbar.

Figure 41. Configuration button on the toolbar.

2. Tap **Instrument settings**.

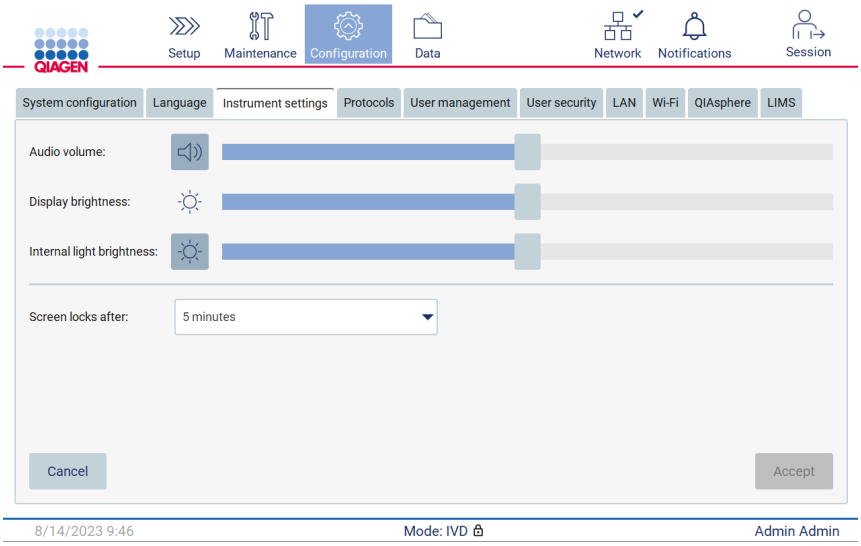


Figure 42. Configuration button on the toolbar.

3. To adjust the volume of the audio, use the **Audio volume** slider. A sound is played each time you change the volume. To mute the device, tap **Audio**, or move the slider to the far-left position.
4. To adjust the brightness of the touchscreen, use the **Display brightness** slider. By moving the slider to far left, the minimal brightness will be set.
5. To adjust the brightness of the internal light, use the **Internal light brightness** slider. To turn the internal light off, tap Internal light brightness, or move the slider to the far-left position.
6. To adjust the time until the lock screen appears, tap on the drop-down menu next to "Screen locks after". It is possible to set the time between 1 and 30 minutes or to disable the lock screen. The lock screen will appear after 5 minutes with default settings.

   Note: It is recommended to leave the lock screen function activated in order to avoid unauthorized access to the system.
7. Tap **Accept** to save the modified settings or tap **Cancel** to restore previously saved settings.

5.3.3. Managing users

The EZ2 Connect user management allows you to create and edit user accounts with 2 different roles: Administrator and Operator. When you use the EZ2 Connect for the first time, a default user (Admin) is pre-installed and configured.

Note: The EZ2 Connect Fx version has an additional Advanced user role who can create shortcut protocols.

Note: User management is only available to users with the Administrator role.

Adding a new user

Note: Only Administrators can add new users.

1. Tap the **Configuration** icon on the toolbar.

Figure 43. Configuration button on the toolbar.

2. Tap the **User management** tab. Existing users are shown in the table.

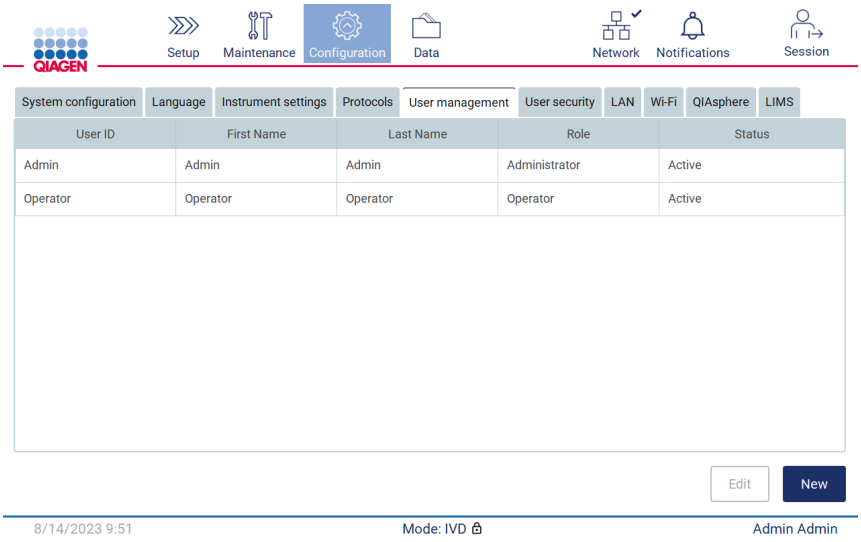


Figure 44. The User Management tab.

3. To add a new user, tap **New**. The Create new account dialog box is shown.

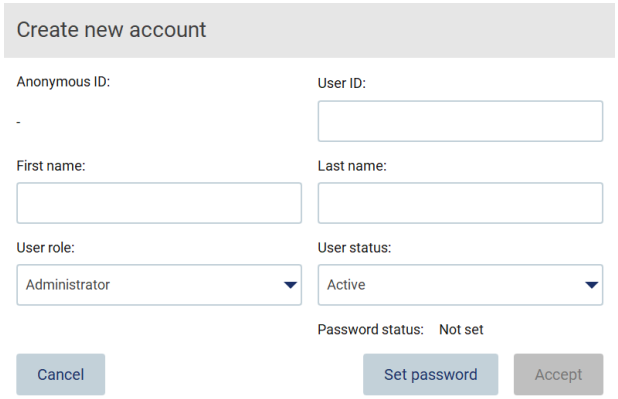


Figure 45. Create an new account dialog.

4. Tap the respective boxes to enter the User ID, first name, and Last name using the on-screen keyboard. The Anonymous ID is generated automatically and is used to identify users in reports and audit trails.

   Note: Only Administrators can view the full details of a user account. As a result, only Administrators can identify users based on their anonymous IDs.

5. Select the User role and User status from their respective drop-down lists.

6. Tap **Set password**. The Set user password dialog box appears. Enter the password in the New password field and again in the Retype password field. The password must meet the criteria displayed in the dialog box. To look up the password policy, refer to the Section 5.3.5 (see page 59).

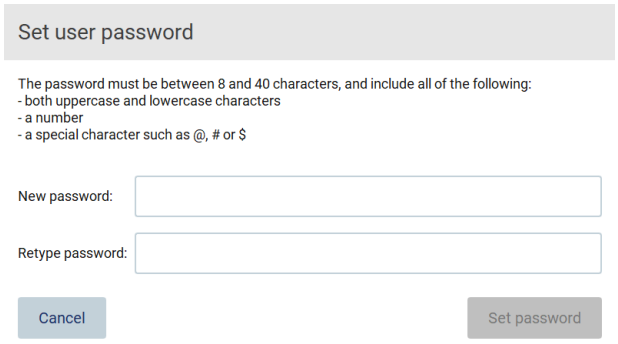


Figure 46. Set user password dialog box.

7. Tap **Set password**. If the passwords match, the password status is set to active.

   Note: Users must change their password after upon first login. Tap **Accept**. The user is added.

Note: It is recommended to create at least one more account with Administrator role in addition to the default Admin account. In case one Administrator is locked due to wrong credentials, the other Administrator can unlock the account.

Editing an existing user account

Note: Only Administrators can edit user accounts.

1. Tap the **Configuration** icon on the toolbar and tap the **User management** tab. Existing users are shown in the table.

Figure 47. Configuration button on the toolbar.

2. Tap the **User management** tab. Existing users are shown in the table.

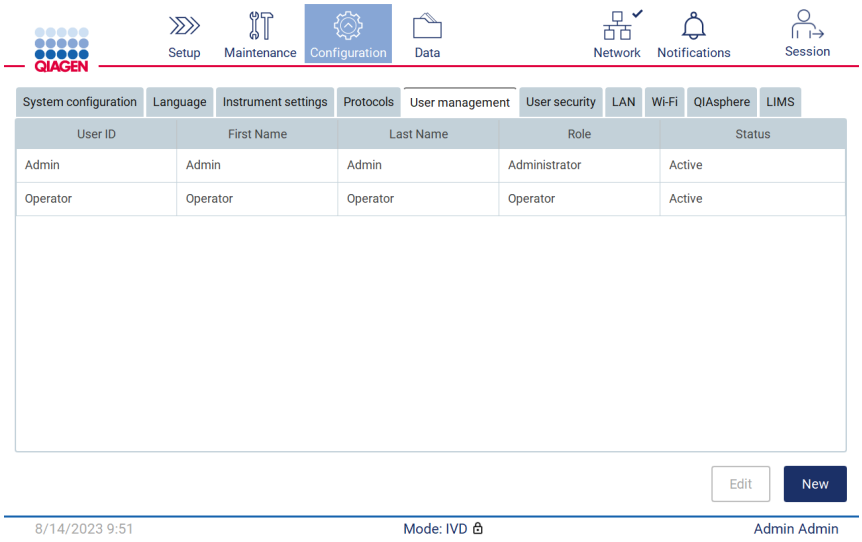


Figure 48. The User Management tab.

3. Tap the table row that corresponds to the user whose profile you want to edit. The Edit user account dialog box appears.

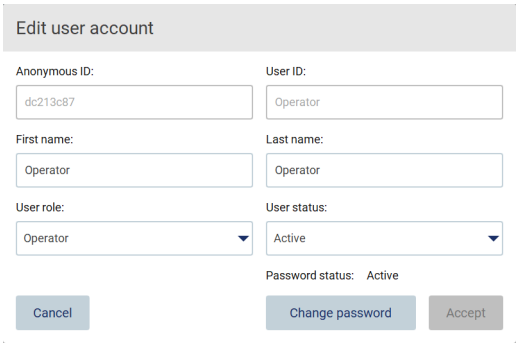


Figure 49. Edit user account dialog box.

4. To edit the First name or Last name, tap the respective boxes and modify the contents using the on-screen keyboard.
5. To change the **User role** or **User status**, tap the respective drop-down lists and select an option.

6. To change the password of the user, tap **Change password**. The Change user password dialog box appears.

   Note: This can be done if a user forgets his password.

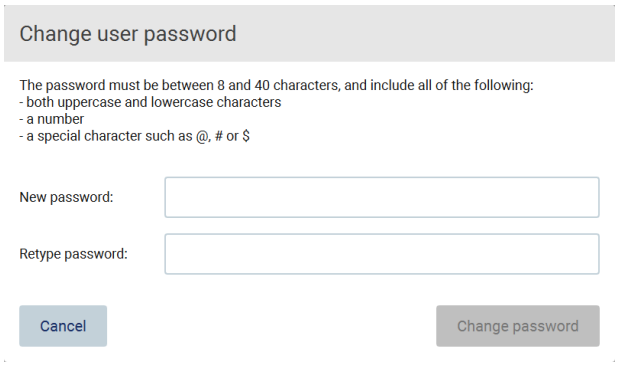


Figure 50. Change user password screen.

7. Enter the password in the New password field and again in the Retype password field. The password must meet the criteria displayed in the dialog box. To look up the password policy, refer to the Section 5.3.5 (see page 59).

   Note: The password policies can be changed for specific user roles, by an Administrator. This process is described in Section 5.3.5.

8. Tap **Change password**.
9. To save the changes made to the user account, tap **Accept**.

Note: For cybersecurity reasons, an Operator must change the password provided by the Administrator upon first login.

Deactivating/Activating a user

Note: Only Administrators can delete user accounts. If a user account is automatically inactivated due to many wrong login attempts, it can be reactivated either by a secondary Administrator and the procedure below or by using the help center (see Section 4.3.5).

1. Tap the **Configuration** icon on the toolbar.

Figure 51. Configuration button on the toolbar.

2. Tap the **User management** tab. Existing users are shown in the table.

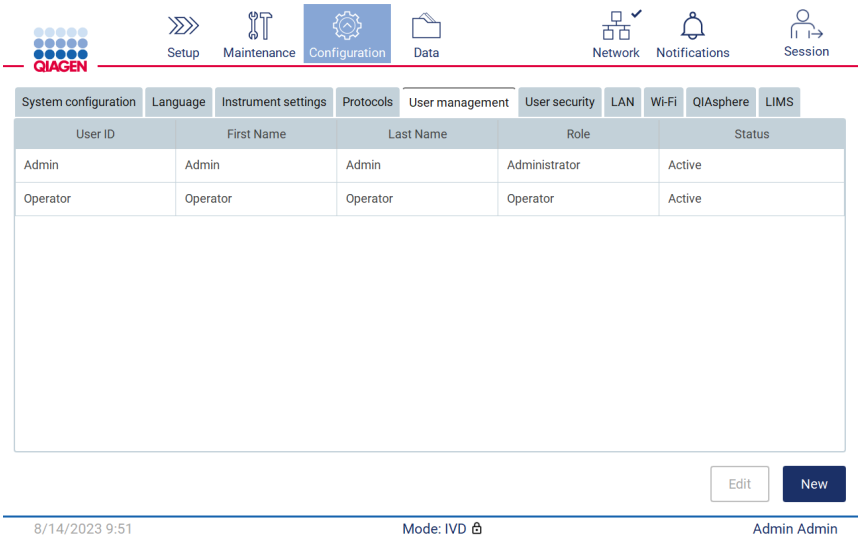


Figure 52. The User Management tab.

3. Tap the table row that corresponds to the user that you want to deactivate or reactivate.
4. Tap **Edit**.
5. Tap the User status drop-down list and select the desired status (**Active** or **Inactive**).
6. Tap **Accept**.

5.3.4. Changing password

All active users can change their own passwords. Additionally, Administrators can change the passwords of other users. For more information on how to change passwords of other users, refer to the Editing an existing user account section (see page 54).

Note: For cybersecurity reasons, an Operator must change the password provided by the Administrator upon first login.

Note: The new password must be different from the 3 previous passwords.

To change your own password, follow the procedure below.

1. Tap the **Configuration** icon on the toolbar.

Figure 53. The Configuration button on the toolbar.

2. Tap **Edit**.

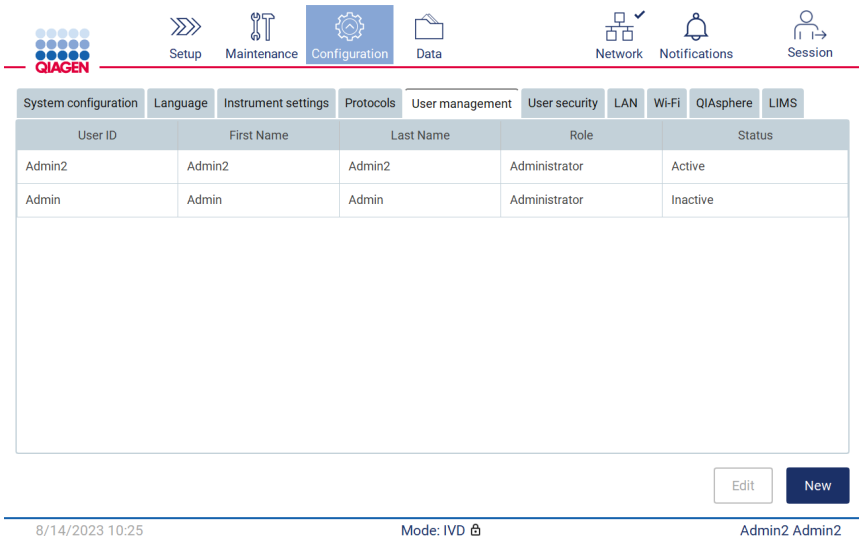


Figure 54. User Management tab (visible only for Administrator roles).

3. Tap **Change password**.

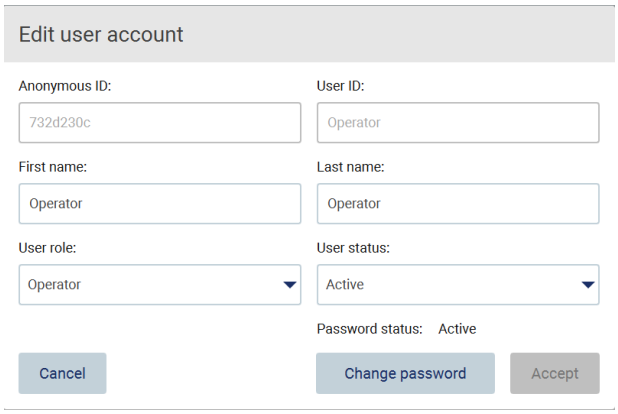


Figure 55. Change password screen.

4. Tap the Current password field and enter your current password using the on-screen keyboard.
5. Tap **Accept**.
6. Enter the password in the New password field and again in the Retype password field. The password must meet the criteria displayed on the screen.
7. Tap **Change password**.

   Note: For Operator roles, the configuration screen looks different.

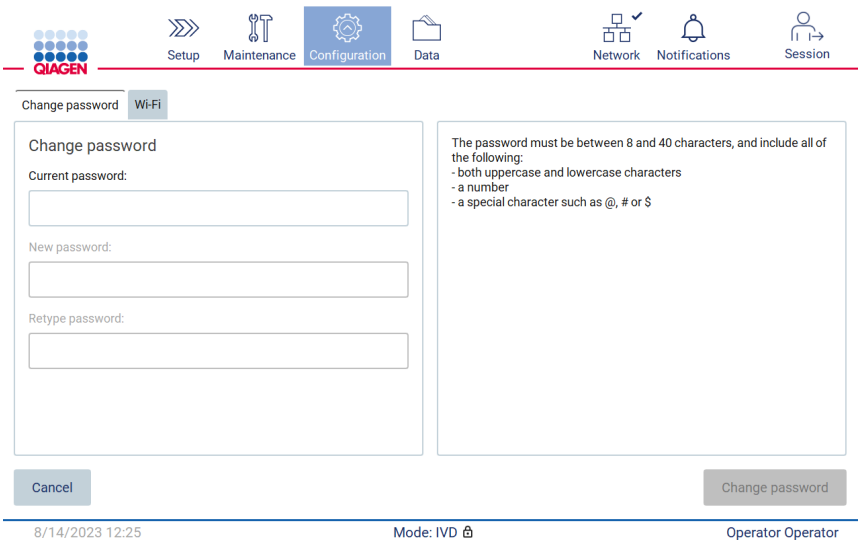


Figure 56. Configuration screen for Operator role.

8. If you are logged in with an Operator role, you can change your password directly in the Configuration screen.
9. If the current Admin password is unknown, the password can be changed via the help center (see Section 4.3.5).

5.3.5. Managing user security

Only Administrators can change the settings for password expiration and limit incorrect login attempts.

To modify settings related to user security, follow the steps below:

1. Tap the **Configuration** icon on the toolbar.

Figure 57. The Configuration button on the toolbar.

2. Tap the **User security** tab.

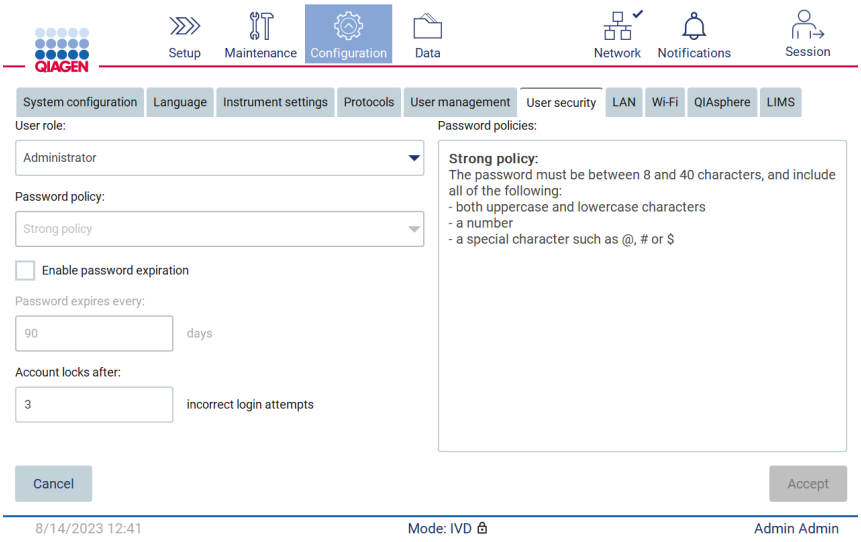


Figure 58. User security tab.

3. To look up the password policy, select the user role whose policy you want to see from the User role drop-down list.
4. To enable password expiration, select the "Enable password expiration" checkbox.
5. To specify the number of days after which user passwords expire, enter a value in the Days field within the acceptable range of 1 to 360.
6. To specify the number of incorrect login attempts after which a user account is locked, enter a value in the Incorrect login attempts field within the acceptable range of 1 to 360. It is recommended to set to at least two incorrect attempts. Otherwise, one typographical error will lock your account. Only Administrators can unlock locked accounts.
7. Tap **Accept** to save all changes or tap **Cancel** to restore previously saved settings.

5.3.6. Installing new protocols

Note: Only Administrators can install new protocol packages.

Note: The Protocols tab is only available to users with Administrator role.

The protocols are integrated in the EZ2 Connect software. However, QIAGEN can provide protocol packs independently from the software to update current or provide new protocols. If there is an updated version of the protocols available, it can be found on the EZ2 Connect product page (**www.qiagen.com**). We recommend checking for the latest protocol package version. Protocols can be installed by using a USB stick or by using the QIAsphere. The QIAsphere will automatically check for the latest version and notify if there is a new package available. During installation via the USB stick, the EZ2 Connect will inform the user if the latest version is already installed or if the package contains newer versions or even new protocols. The system will also show the current installed protocol versions and the new protocol versions.

Installing protocols by using a USB stick

Note: To ensure that your EZ2 Connect has the latest protocol versions installed, please visit the EZ2 Connect webpage (**www.qiagen.com**). Protocol versions can be found during the setup wizard, step 2 of 7.

Note: The installation of a new protocol package will overwrite all existing protocols. Please make sure you have all previously installed protocols available on a USB stick to allow rollback if required.

Important: Use only EZ2 Connect-related files downloaded from **www.qiagen.com** or provided by QIAGEN Technical Services.

Note: Checksum confirmation is required to secure software integrity after web download was successfully completed and before subsequent handling of the software. For detailed information on confirmation of software integrity during download and file transfer, please check the "QIAGEN software integrity verification process" description document, which is provided on the QIAGEN webpage.

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Do not remove the USB drive while downloading or transferring data or software to or from the instrument.

1. Plug in a USB stick with a protocol package.
2. Tap **Configuration** on the toolbar.

Figure 59. Configuration button on the toolbar.

3. Tap **Protocols**.

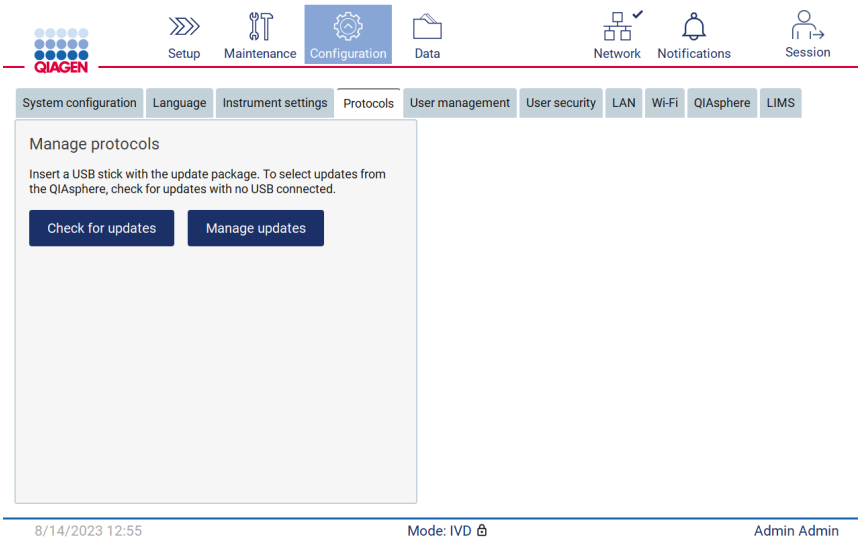


Figure 60. Protocols tab.

4. Tap **Check for updates**.
5. If protocol upload packages are detected on the USB stick, a pop-up window appears.

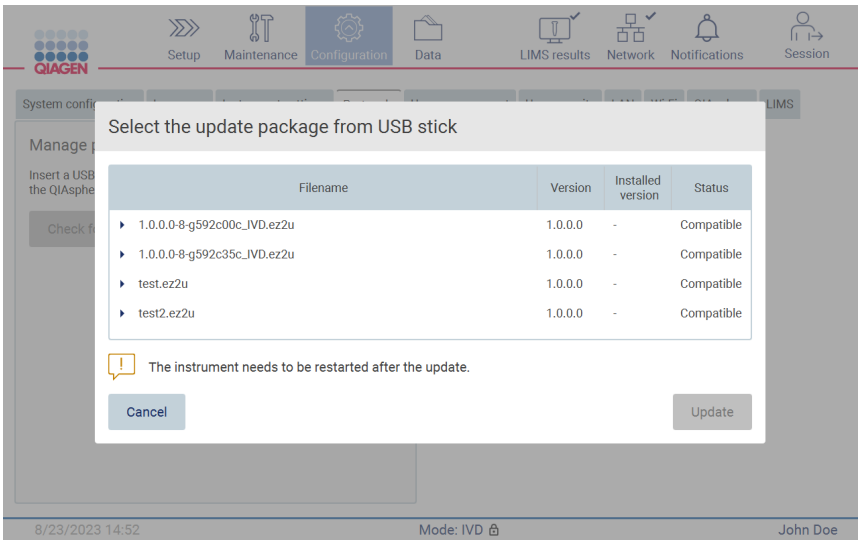


Figure 61. Update package pop-up window.

6. Start the installation by choosing the desired protocol package and tap **Update**.
7. After the installation is finished, a message box appears. Restart the device to make the new protocols available.

Note: Not all protocols are installable at all instrument variants. Those protocols will be marked as not available on this instrument type if they are included in the protocol update package. The package can still be installed, just the marked protocols will not be installed.

Installing protocols by using QIAsphere

1. Ensure that QIAsphere connection is established (see Section 5.3.9).
2. If there is an update available, the QIAsphere will automatically inform the user about an available update.

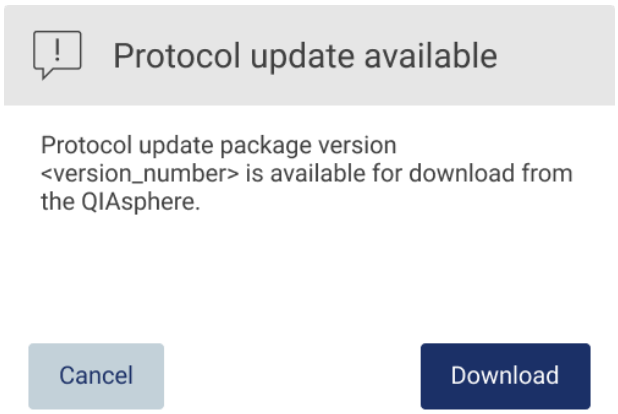


Figure 62. Protocol update available pop-up window.

3. Tap on **Download**. The download process will start.

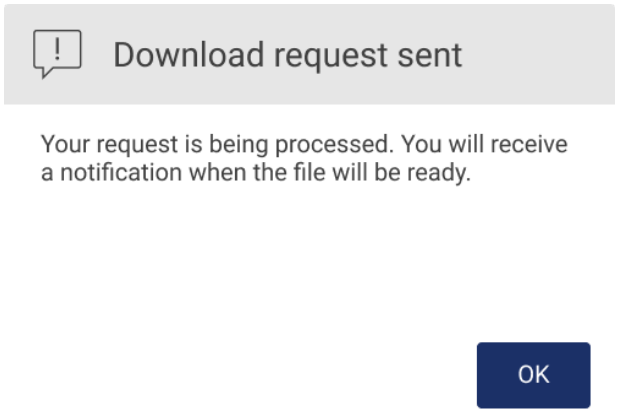


Figure 63. Download request notification pop-up window.

4. Tap **OK**. A notification will be sent when the download is finished.
5. Tap **Configuration** on the toolbar.
6. Tap **Check for updates**.
7. If protocol upload packages were downloaded, a pop-up window appears.

8. Start the installation by choosing the desired protocol package and tap **Update**.

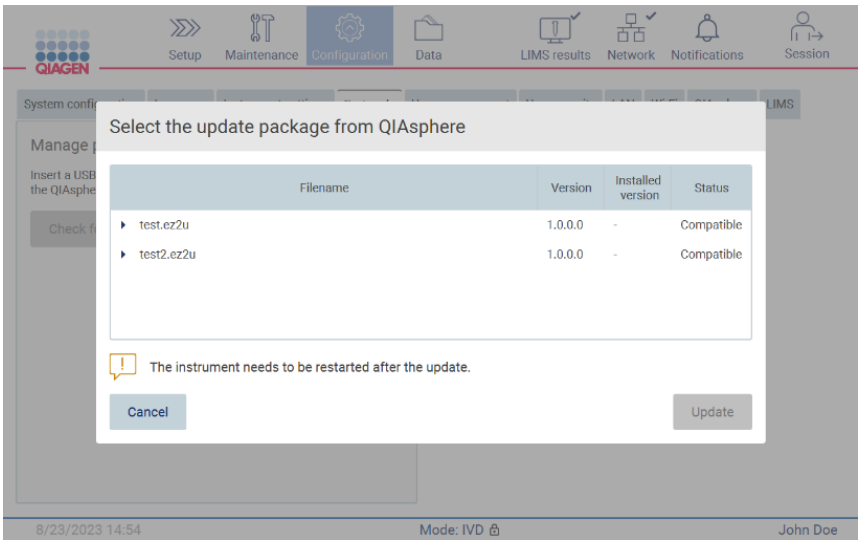


Figure 64. QIAsphere pop-up window for protocol updates.

9. After installation is finished, a message box appears. Restart the device to make the new protocols available.

Note: Downloaded protocol packages (via QIAsphere) can be deleted by tapping the Manage updates button (under Protocols tab) and selecting the protocol package to delete. Subsequently, tap Delete.

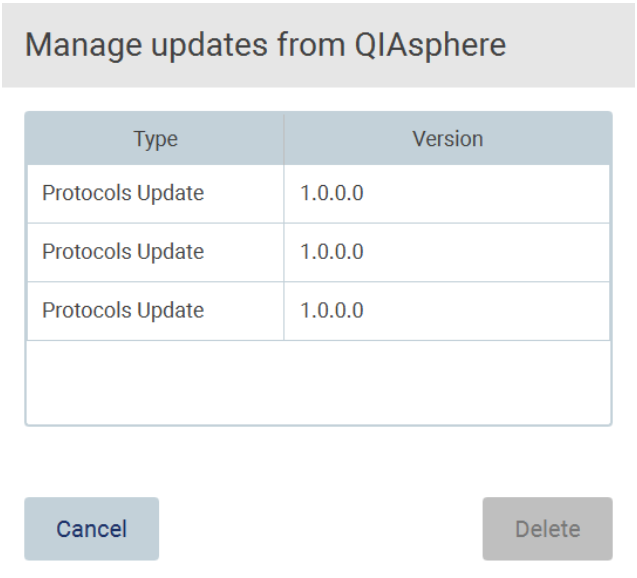


Figure 65. Manage updates from QIAsphere dialog box.

5.3.7. Installing language packages

Note: Only Administrators can change language and install new language packages.

Note: The Language tab is only available to users with Administrator role.

Important: Use only EZ2 Connect-related files downloaded from **www.qiagen.com** or provided by QIAGEN Technical Services.

Note: It might be that the text of the protocol loading and description screens are not translated and stay in English.

Note: Checksum confirmation is recommended to secure software integrity after web download was successfully completed and before subsequent handling of the software. For detailed information on confirmation of software integrity during download and file transfer, please check the "QIAGEN software integrity verification process" description document, which is provided on the QIAGEN webpage.

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Do not remove the USB drive while downloading or transferring data or software to or from the instrument.

1. The language packs are integrated in the EZ2 Connect software. However, QIAGEN can provide language packs independently from the software to update current or provide new languages. If there is an updated version of the language pack available, it can be found on the EZ2 Connect product page (**www.qiagen.com**). Plug in a USB stick with a language package.
2. Tap **Configuration** on the toolbar.

Figure 66. Configuration button on the toolbar.

3. Tap **Language**.

4. You have the choice of either uploading a new Language package to make a new language available, or to change the language settings.

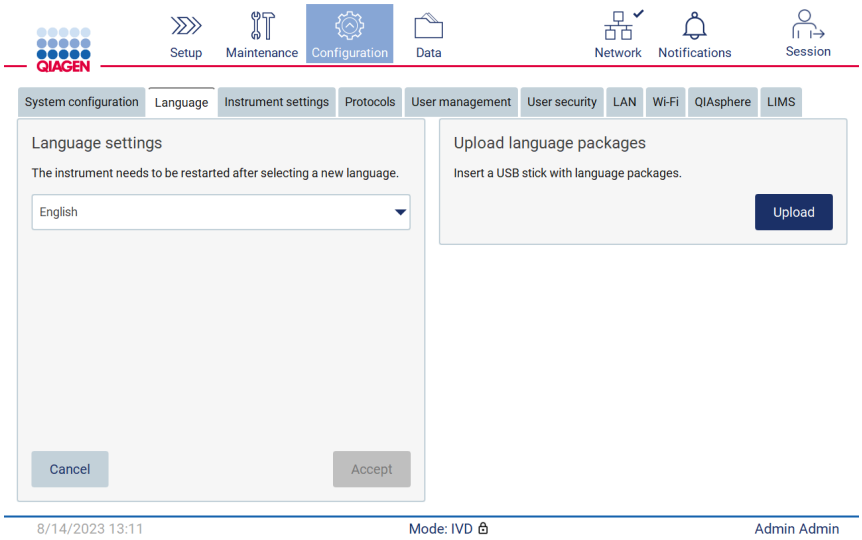


Figure 67. Language tab.

5. Tap **Upload** in the Upload language packages window.
6. If language upload packages are detected on the USB stick, a pop-up window appears.

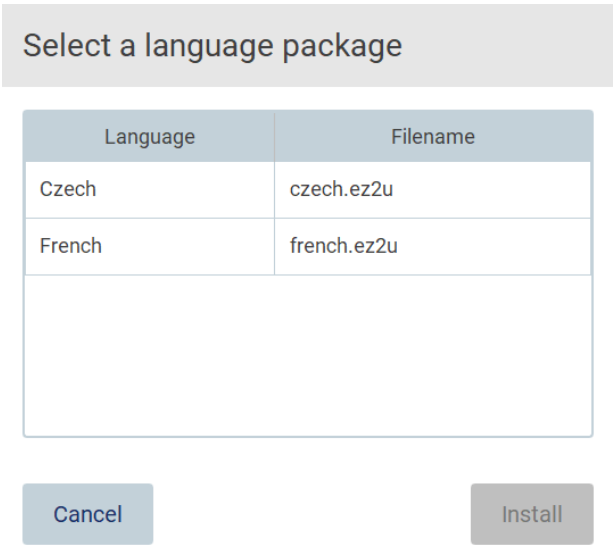


Figure 68. Language package pop-up window.

7. Select the desired language package, and tap **Install**. Only one language package at a time can be uploaded.
8. From the Language screen, tap the **Language settings** dropdown.
9. Select the required language.
10. Tap **Accept**.

Note: The EZ2 Connect will need to be restarted to set the selected language.

5.3.8. Updating software

Note: Only Administrators can update the software.

Note: System configuration is only available to users with Administrator role.

Note: To ensure that your EZ2 Connect has the latest software versions installed, please visit the EZ2 Connect webpage at **www.qiagen.com**. Currently installed software version can be found from the Configuration menu, under the System configuration tab.

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Use only EZ2 Connect-related files downloaded from **www.qiagen.com** or provided by QIAGEN Technical Services.

Note: Checksum confirmation is required to secure software integrity after web download was successfully completed and before subsequent handling of the software. For detailed information on confirmation of software integrity during download and file transfer, please check the "QIAGEN software integrity verification process" description document, which is provided on the QIAGEN webpage.

Important: Do not remove the USB drive while downloading or transferring data or software to or from the instrument.

The latest version of the software can be found on the EZ2 Connect product page (**www.qiagen.com**). We recommend checking for the latest version. Software updates can be installed by using an USB stick or by using the QIAsphere. The QIAsphere will automatically check for the latest version and notify the user if there is a new version available. Current installed software version can be seen in the **Configuration** tab.

Installing newest software version by using an USB stick

1. Plug in a USB stick with the newest software version.
2. Tap the **Configuration** icon on the toolbar.

Figure 69. Configuration button on the toolbar.

3. Tap the **System configuration** tab.

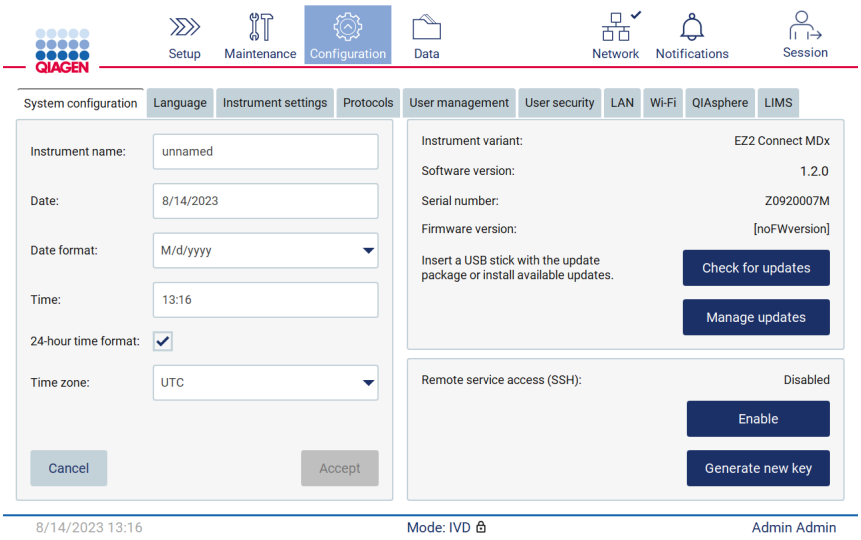


Figure 70. System Configuration tab.

4. Tap **Check for updates** to check the attached USB drive.
5. If a software update package has been detected on the USB stick, a pop-up window appears.

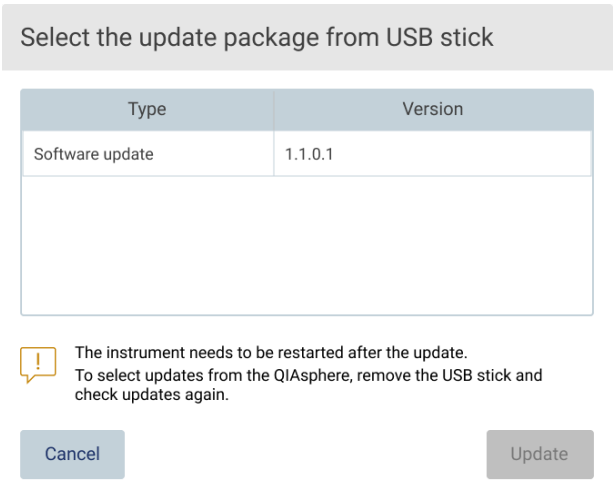


Figure 71. Update package pop-up window.

6. Start the installation by choosing the desired software package and tap **Update**.
7. After the installation is finished, restart the device.

Installing software updates by using QIAsphere

1. Ensure that the QIAsphere connection is established (see Section 5.3.9).
2. If there is an update available, the QIAsphere will automatically inform the user about an available update.

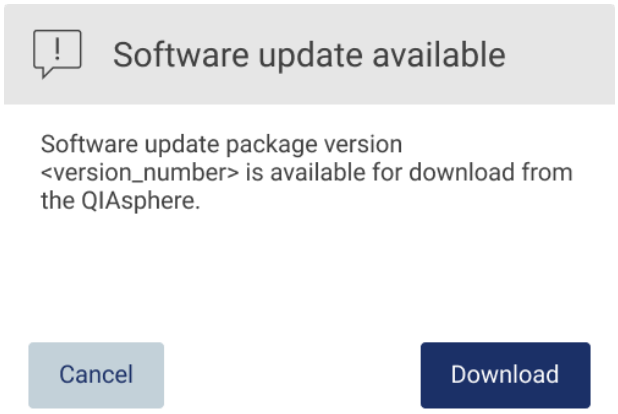


Figure 72. Software update pop-up window.

3. Tap on **Download**. The download process will start.

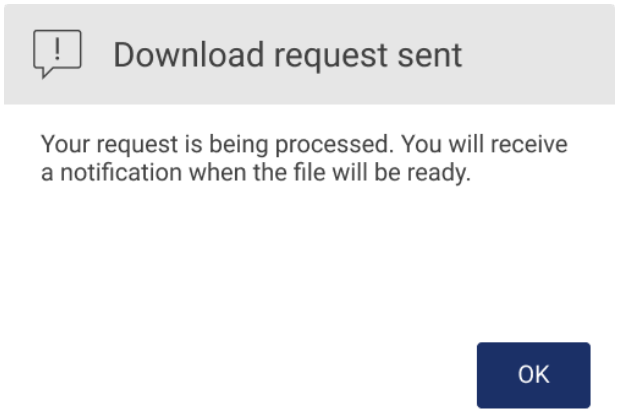
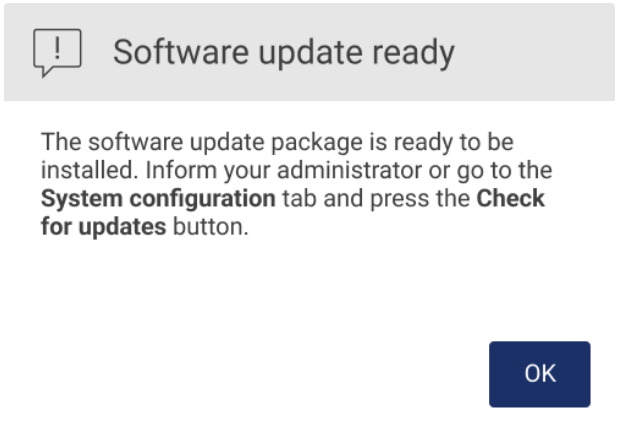


Figure 73. Download request notification pop-up window.

4. Tap **OK**. A notification will be sent when the download is finished.



5. Tap the **System configuration** tab.
6. Tap **Check for updates**.
7. If a software update package was downloaded, a pop-up window appears.

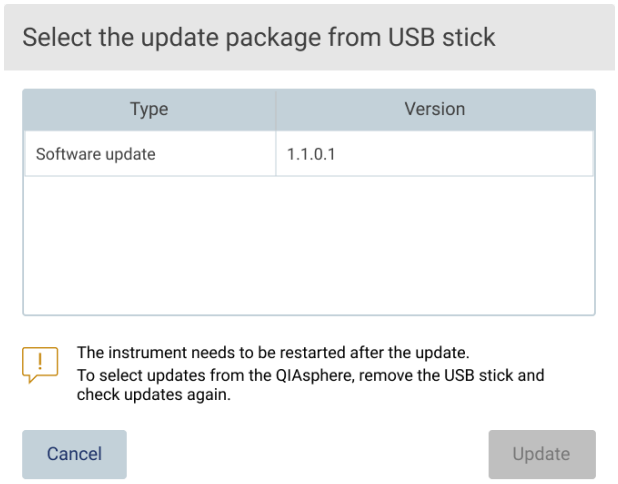


Figure 74. Update selection pop-up window.

8. Start the installation by choosing the desired software package, and tap **Update**.
9. As instructed by the user interface, restart the device one or several times during the update process.

5.3.9. Configuring network and QIAsphere Base connections

Configuring a LAN connection

Note: The LAN tab is only available to users with Administrator role.

1. Tap the **Configuration** icon on the toolbar.

Figure 75. Configuration button on the toolbar.

2. Tap the **LAN** tab.

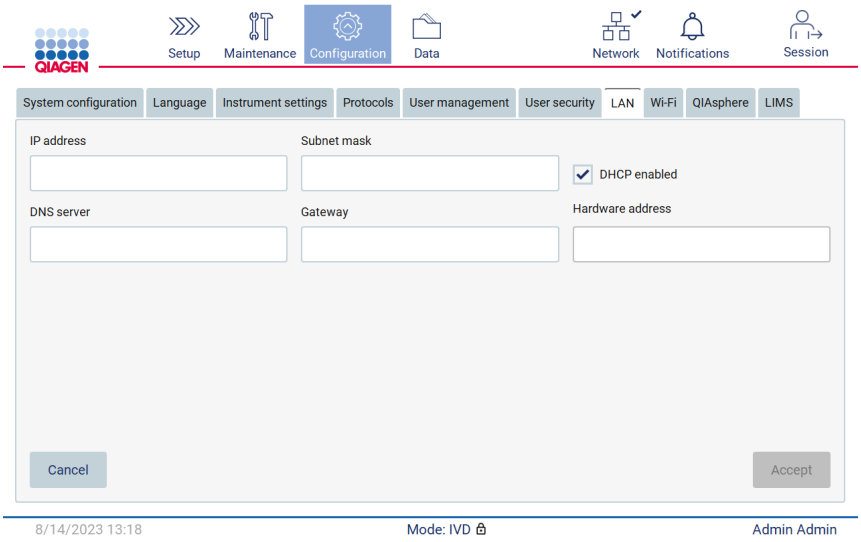


Figure 76. The LAN tab.

3. Enter the appropriate network setting, as provided by your IT department.
4. Tap **Accept**.

   Note: Configure the department network in a way that makes the EZ2 Connect not visible outside the network of your organization.

   Note: Hardware address = MAC address

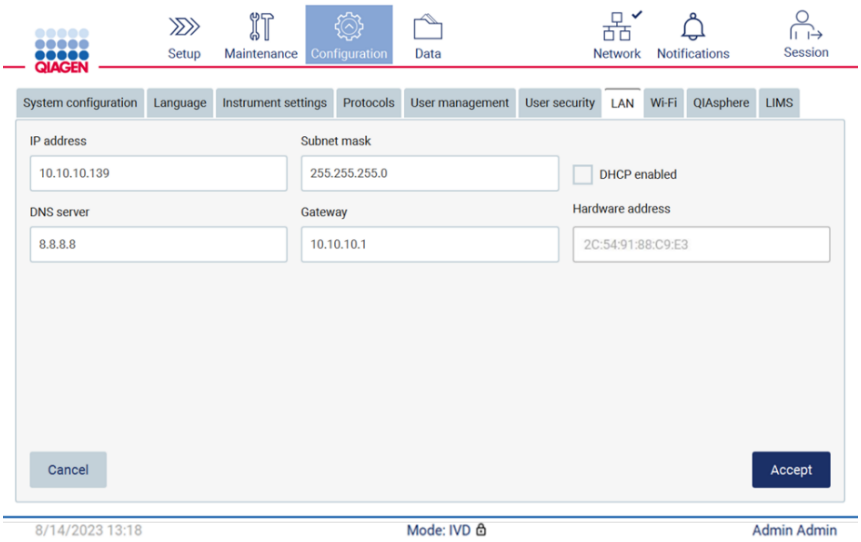


Figure 77. Configured LAN tab.

Configuring a Wi-Fi connection

Note: Only Administrators can configure the Wi-Fi settings.

Note: Make sure the Wi-Fi USB device was plugged-in before the machine was started.

Note: For ordering information of the Wi-Fi USB device (Connectivity Package B), please contact your QIAGEN Sales Representative.

The EZ2 Connect can be connected to a Wi-Fi network using the Wi-Fi adapter inserted into one of the USB ports. The Wi-Fi adapter supports the 802.11b, 802.11g, and 802.11n Wi-Fi standards, and WEP, WPA-PSK, and WPA2-PSK encryption.

The SSID of the network must be visible. It is not possible to connect to a network with a hidden SSID.

To configure the Wi-Fi connection, follow the steps below:

1. Tap the **Configuration** icon on the toolbar.

Figure 78. Configuration button on the toolbar.

2. Tap the **Wi-Fi** tab.

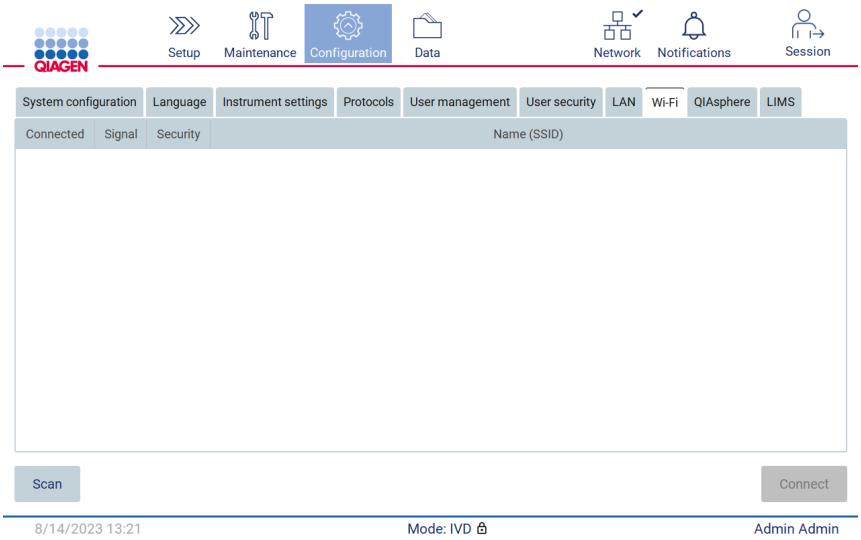


Figure 79. The Wi-Fi tab.

3. To search for available networks, tap **Scan**. The signal strength, encryption type, and name of each network are shown.

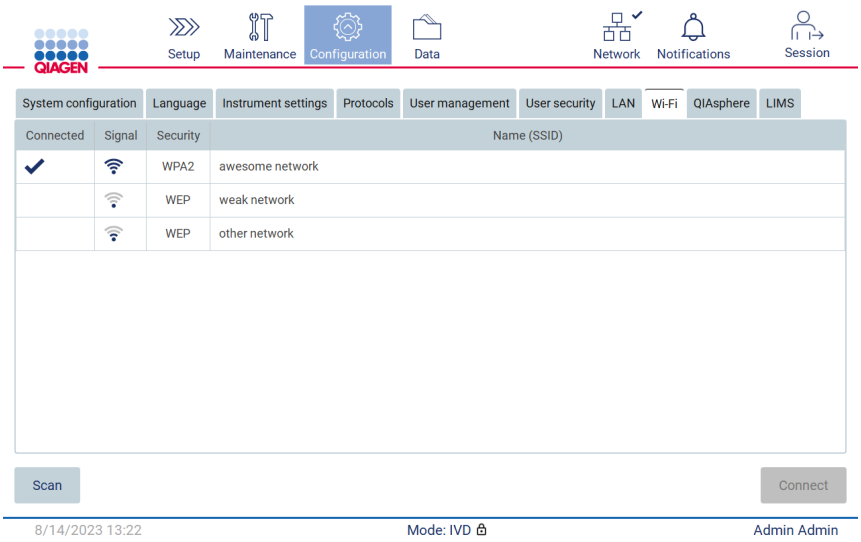


Figure 80. List of available Wi-Fi networks.

4. To select a network, tap the row that corresponds to the network you want to select.
5. To connect to the selected network, tap **Connect**.

6. Enter the network password using the on-screen keyboard and tap **Connect**. The instrument connects to the network, and the connection status is updated on the screen.

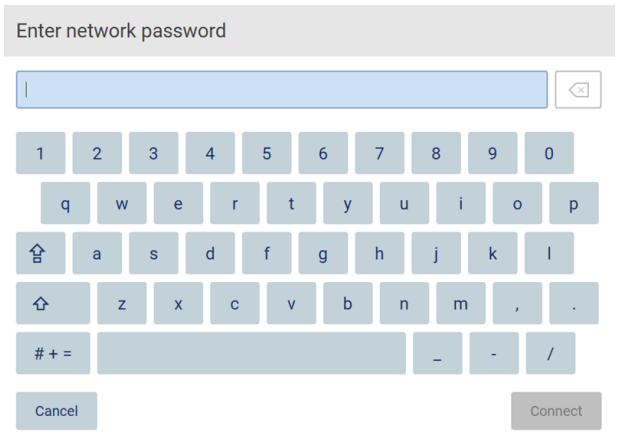


Figure 81. On-screen keyboard.

Note: If you failed to connect to the network several times despite entering the correct password, it is recommended to restart the instrument.

Note: In case of errors, refer to Section 7 (page 151) for more information.

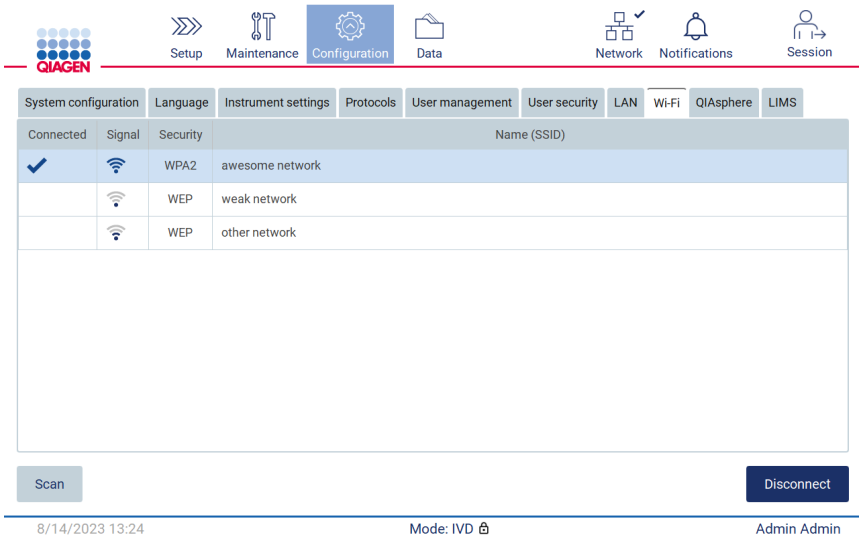


Figure 82. Successful connection to a Wi-Fi network.

7. To disconnect from a network, tap the row that represents the network that the instrument is connected to. Then, tap **Disconnect**.

Note: Configure the department network in a way that makes the EZ2 Connect not visible outside the network of your organization.

Configuring QIAsphere Base connection

For information on how to configure QIAsphere Base for connection to the QIAsphere App, refer to the *QIAsphere User Manual*.

For more details on the QIAsphere Base network configuration and how to connect the EZ2 Connect, refer to the QIAsphere User Manual that is available at **www.qiagen.com/qiasphere**

Only users assigned the role Administrator can change the network configuration. It is recommended to consult your network Administrator when configuring the network. For communication with QIAsphere Base, the outbound TCP port 443 (https) is used; ping is supported.

1. Tap the **Configuration** icon on the toolbar.

Figure 83. Configuration button on the toolbar.

2. Tap the **QIAsphere** tab.

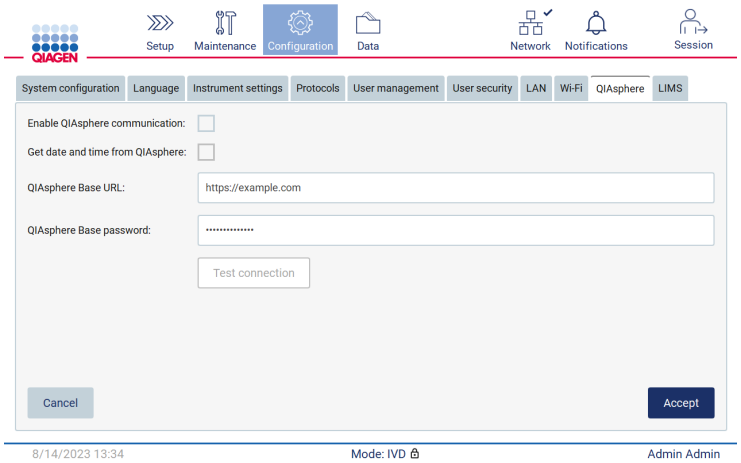


Figure 84. The QIAsphere tab.

3. Enter the QIAsphere Base URL.
4. Enter the QIAsphere Base password.
5. Tick the Enable QIAsphere communication box.
6. **Optional**: For time and date synchronization with QIAsphere tick the Get date and time from QIAsphere synchronization box.

   Note: The time synchronization will just be executed if the EZ2 Connect is connected with the QIAsphere.
7. Tap **Accept**.
8. Tap **Test connection**.

Note: If you have any trouble regarding the QIAsphere, please refer to the *QIAsphere User Manual* or contact QIAGEN Technical Support.

Configuring LIMS connection

Note: Only Administrators can configure the LIMS connection.

Note: System Configuration is only available to users with Administrator role.

Note: QIAGEN offers a dedicated service to establish the communication between the EZ2 Connect and your LIMS system. If you wish QIAGEN to set up such a connection, contact your QIAGEN Sales Representative to request a quotation.

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Do not remove the USB drive while downloading or transferring data or software to or from the instrument.

The EZ2 Connect can be connected with a LIMS system, the connection can be configured from the Configuration menu under the LIMS tab and by completing the following steps:

- Upload the LIMS Connector certificate
- Generate new instrument certificate
- Enter the LIMS Connector URL
- Register the instrument in the LIMS Connector

QIAGEN LIMS Connector is a connectivity component which enables the data transfer between the EZ2 Connect and Laboratory Information Systems (LIS), Laboratory Information Management Systems (LIMS), Laboratory Automation System (LAS), Workflow Management Systems, or Middleware Systems.

Important: The installation of QIAGEN LIMS Connector must be performed by a QIAGEN representative. A person who is familiar with your laboratory and computer equipment should be present during the installation of the QIAGEN LIMS Connector.

In some rare cases, you might need to re-upload the QIAGEN LIMS Connector certificate. This certificate was originally generated by the QIAGEN Service Team during the LIMS Connector set up and was saved on a USB drive. The certificate can only be created locally and cannot be provided remotely. If you need support with a QIAGEN LIMS Connector certificate, contact your local Technical Service team.

1. Plug in a USB stick with the **QIAGEN LIMS Connector** certificate.
2. Tap **Configuration** on the toolbar.

Figure 85. Configuration button on the toolbar.

3. Tap the **LIMS** tab.

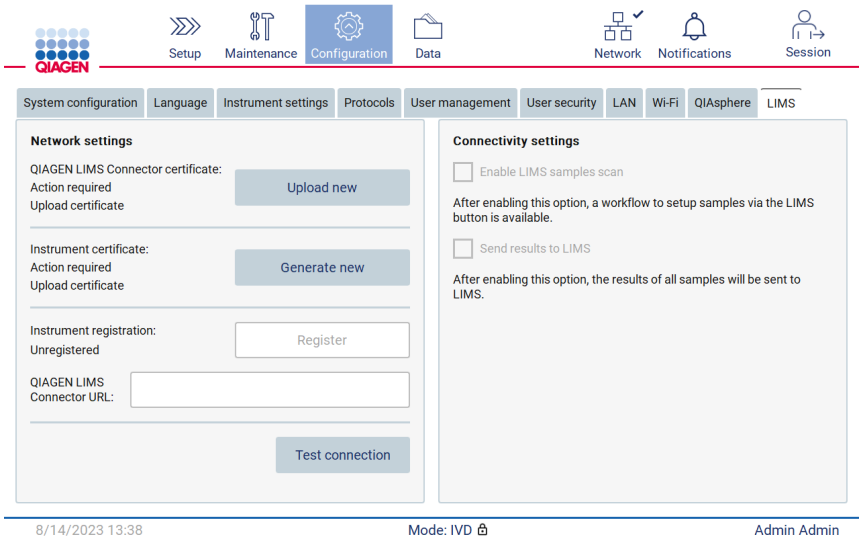


Figure 86. LIMS configuration tab.

4. Tap **Upload new**.

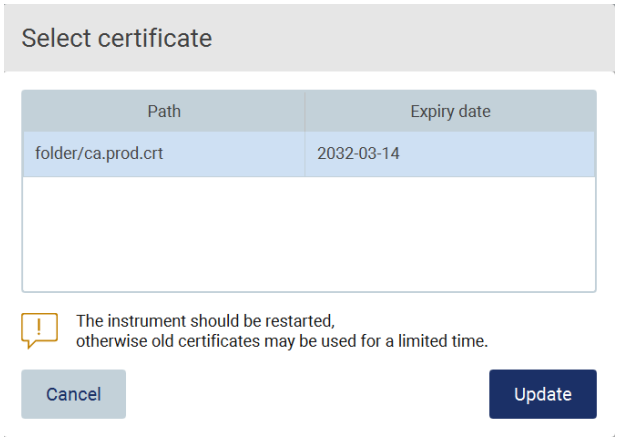


Figure 87. Select certificate screen.

5. Select the certificate and tap **Update**.

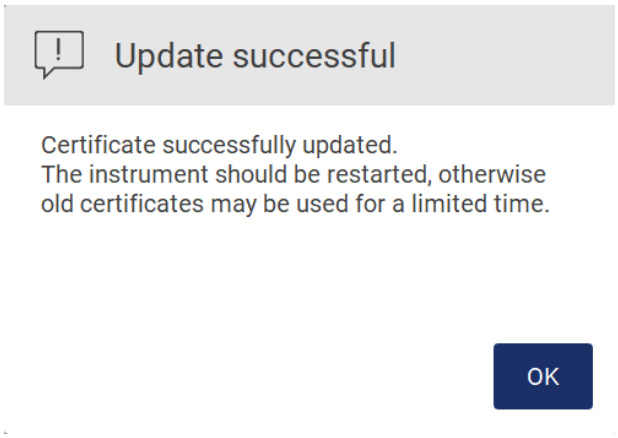


Figure 88. Successful certificate update.

6. Tap **OK** and restart theEZ2 Connect.
7. From the **LIMS configuration** tab, tap **Generate new**. Certificate will be stored on attached USB stick.

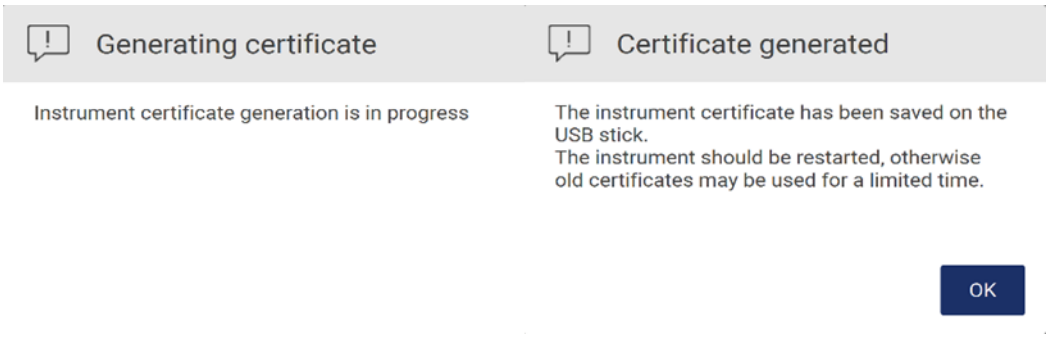


Figure 89. Generation of Instrument certificate.

8. Tap **OK**.
9. Install the generated certificate from the USB stick on the QIAGEN LIMS Connector.

10. Tap the QIAGEN LIMS Connector URL box to enter the URL using the on-screen keyboard.

Figure 90. Enter QIAGEN LIMS Connector URL.

11. Tap **Accept**.

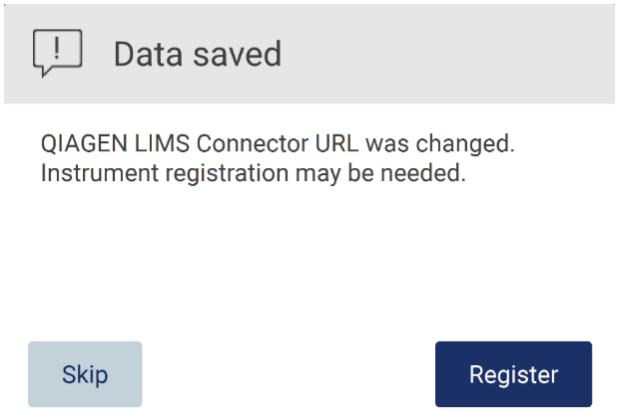


Figure 91. URL accepted.

12. Tap **Register** to register the instrument and select a configuration.

    If the instrument is registered, and only LIMS Connector address was changed, you can enter a new URL and tap **Skip**.

13. If you want to select a new configuration, you can also tap **Register** in the **LIMS configuration** tab.

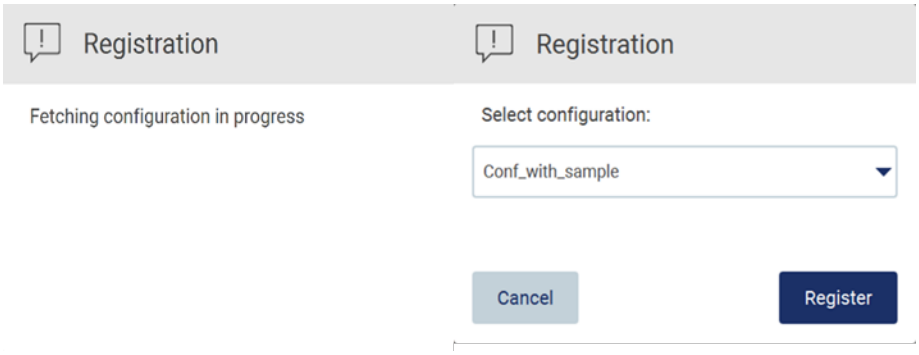


Figure 92. LIMS registration.

14. Select configuration from the drop-down list and tap **Register**.

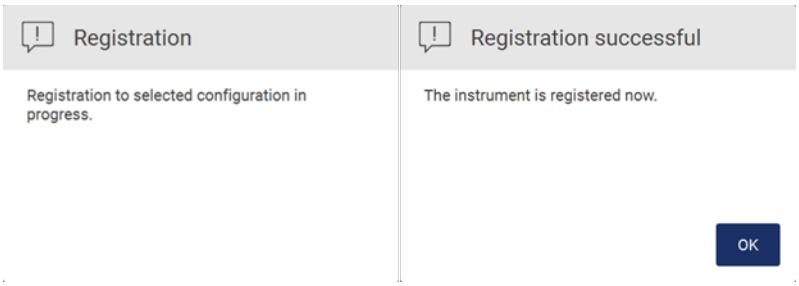


Figure 93. LIMS registration successful.

15. Tap **OK**, then tap **Test connection**.

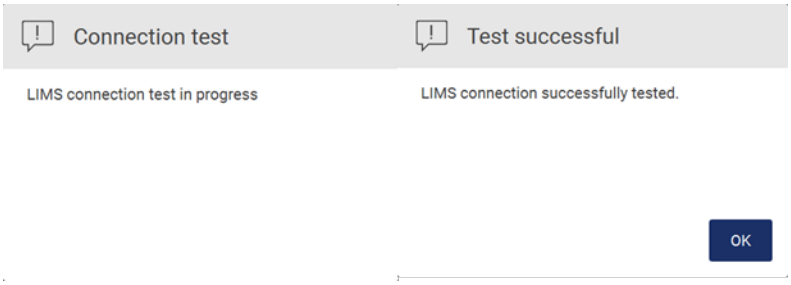


Figure 94. LIMS connection test.

16. If the "Enable LIMS sample scan" checkbox is active, the **LIMS** button is available on the Setup screen.

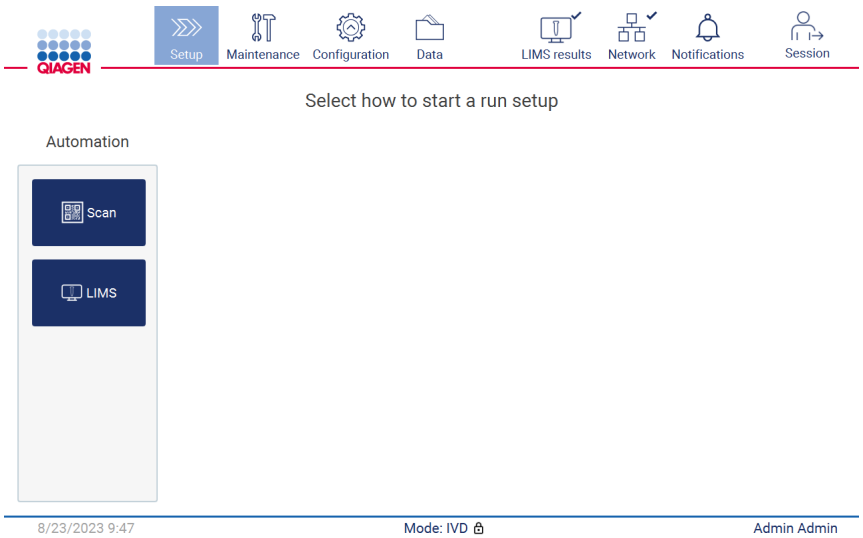


Figure 95. LIMS button available on the Setup screen.

Note: If the user checks the "Send results to LIMS" checkbox, the LIMS results status will be displayed, and the results for each sample will be sent to LIMS after the run. This setting does not change after the instrument restart.

Note: If the user disables the "Send results to LIMS" checkbox the following warning is displayed.

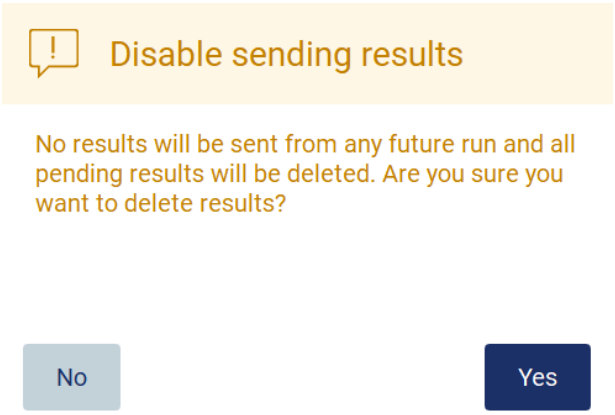


Figure 96. Disable sending results warning.

The LIMS results status is shown by an icon in the upper right corner of the screen. This icon has three states:

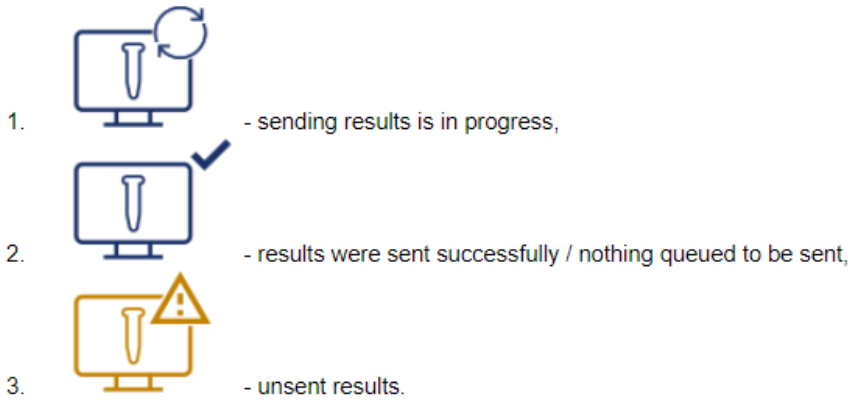


Figure 97. LIMS icon status.

17. Tapping on the icon directs the user to the Results sending status screen. The information in the table on the Results sending status screen depends on the status of the results currently being sent.

    - Status icon:

      The results sending status table is empty when all results have been successfully sent and nothing is queued to be sent. The user sees the LIMS results status icon with a checkmark.

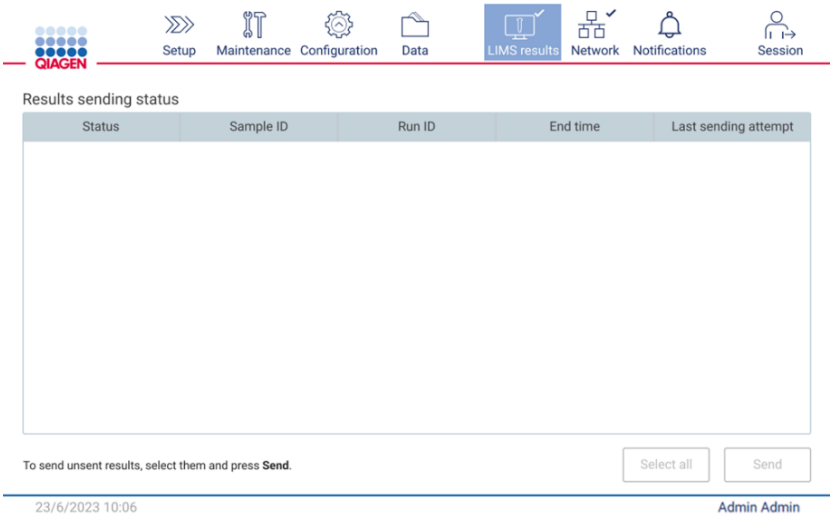


Figure 98. Results sending status Empty.

- Status icon:

If the user selects unsent results and taps **Send** button, selected unsent samples will be sent to the configured LIMS. If the sending results is in progress, the Results sending status table informs the user about sending and pending results. Results with the Sending status are currently being sent to the LIMS system. Results with Pending status are queued and waiting to be sent. The user also sees the LIMS results status icon with the cached symbol.

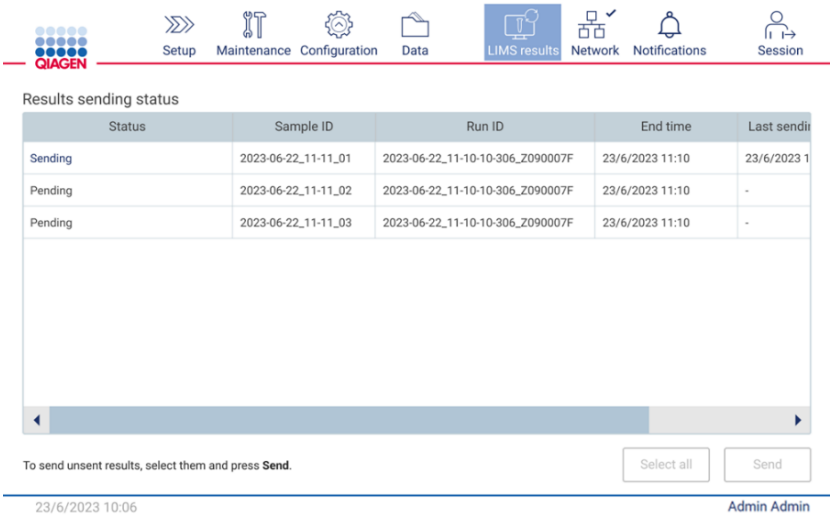


Figure 99. Results sending status in progress.

- Status icon:

If the results cannot be sent, sending status table informs the user about the unsent status and occurred error. The Unsent status is displayed with an error ID and detailed description. The user also sees the LIMS results status icon with the warning symbol. Unsent results are not resent automatically after the failure. The user can select unsent results and tap the Send button to resent results to a configured LIMS. Unsent results will be sent automatically only after the instrument restart.

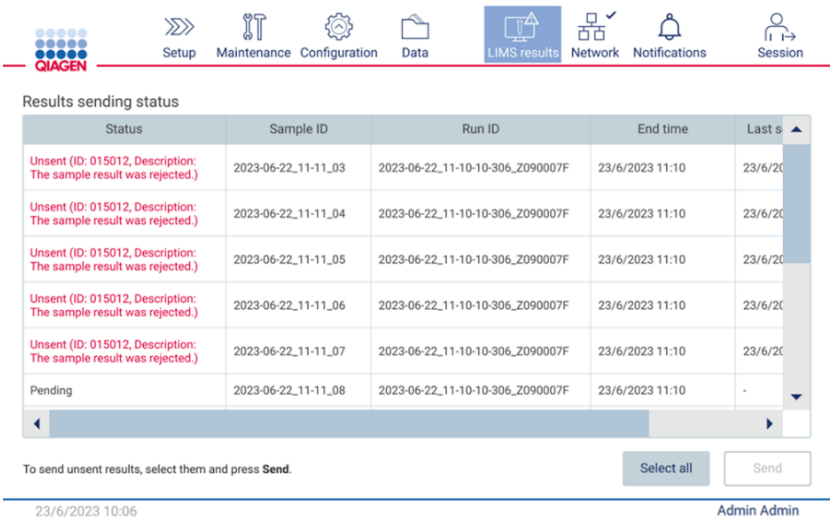


Figure 100. Results sending status error.

5.4. Setting up a protocol run

To setup a protocol run, press the **Setup** tab on the Home screen.

All available QIAGEN protocols are pre-installed on the EZ2 Connect upon delivery. You can download all available QIAGEN protocols from the QIAGEN website (**www.qiagen.com**).

Note: TheEZ2 Connect does not support protocols obtained from sources other than QIAGEN.

Note: The protocol run set up can be aborted at any time by pressing the **Abort** button (see Section 5.7).

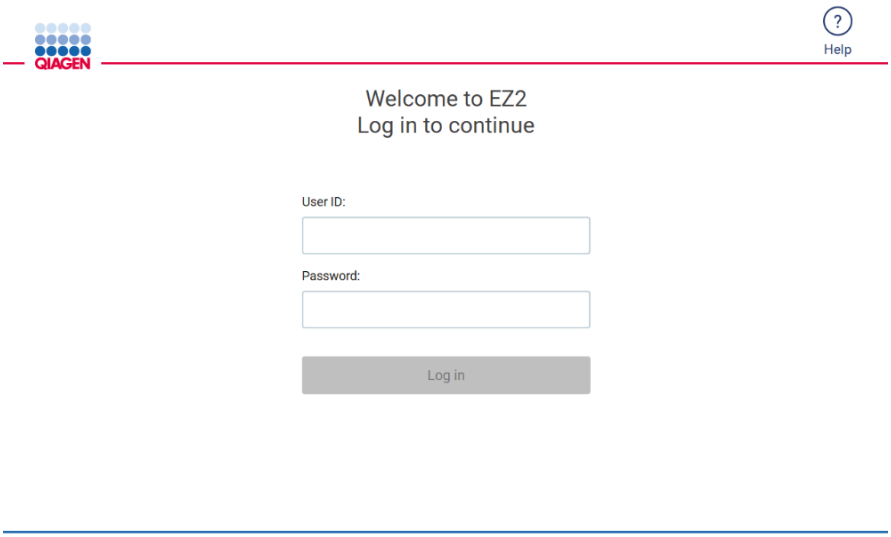


Figure 101. The log in screen.

The EZ2 Connect software will guide you through the protocol run setup process. The steps of the protocol wizard vary, depending on the selected protocol and may differ from the figures included in this section. Some descriptions shown on the touchscreen may only be visible by using a scrollbar. Please ensure to read the entire instruction. The process is started by tapping either the **SCAN** or **LIMS** button on the **Set Up** tab. The **LIMS** button only is available if LIMS was configured before.

Important: Before starting a protocol run, read the relevant QIAGEN kit handbook and follow the instructions (e.g., sample handling and preparation) provided in the handbook.

After login in, the Setup screen will appear (Figure 105).

5.4.1. Selecting application type

To begin set up of a protocol run, start at the Setup tab, then tap the Scan button or choose an application type in the "Applications" pane. The EZ2 Connect Fx also supports a shortcut function that can be used if a shortcut was created during the run setup. Additionally, a LIMS button will appear if LIMS is activated. It can be used to start the LIMS workflow, which is described in a later section (5.13).

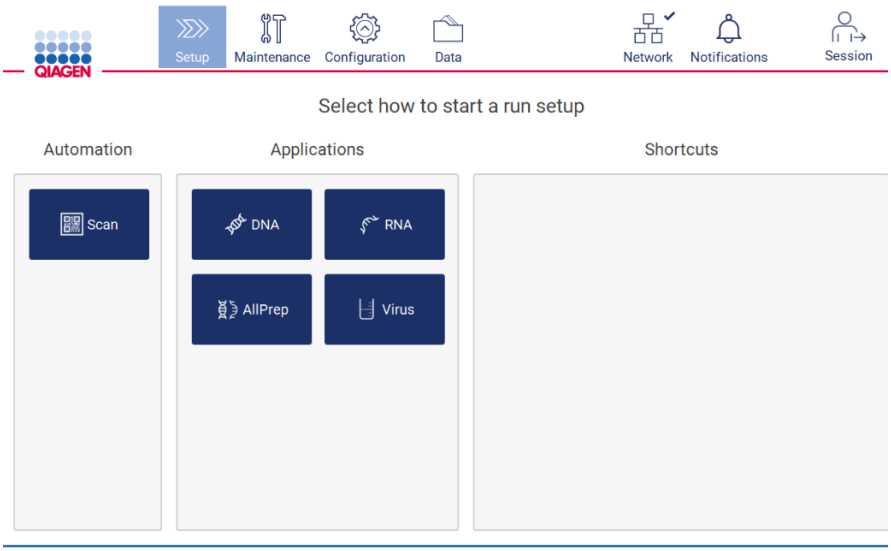


Figure 102. Setup screen.

5.4.2. Selecting a kit

To select a kit that is to be used during the protocol run, tap a kit name in the "Select kit" pane.

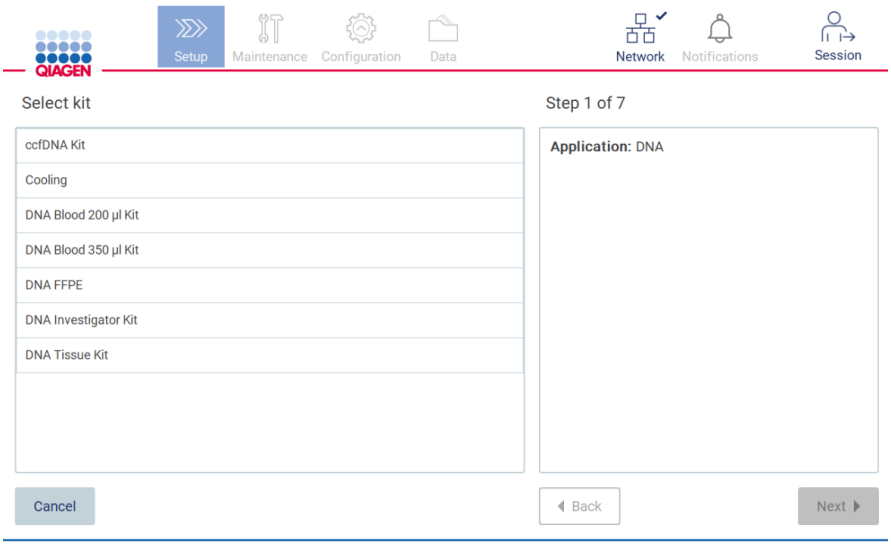


Figure 103. Select kit step.

After you select a kit, the **Next** button is enabled. To proceed to the Select protocol step, tap **Next**.

To cancel the protocol, tap **Cancel**.

5.4.3. Using the barcode scanner (alternative)

There is the possibility to use an optional 2D handheld barcode scanner which can be used to scan the following barcodes during Protocol setup:

- Kit Q-Cards
- Sample barcodes

Details of readable barcode types can be found in Section 9.5 Barcode reader specifications and in the manual supplied with the barcode scanner.

Direct the handheld scanner at the required Q-Card/Barcode or sample barcode to scan the information into the Instrument when prompted by the User Interface.

Note: Barcode information may also be entered manually.

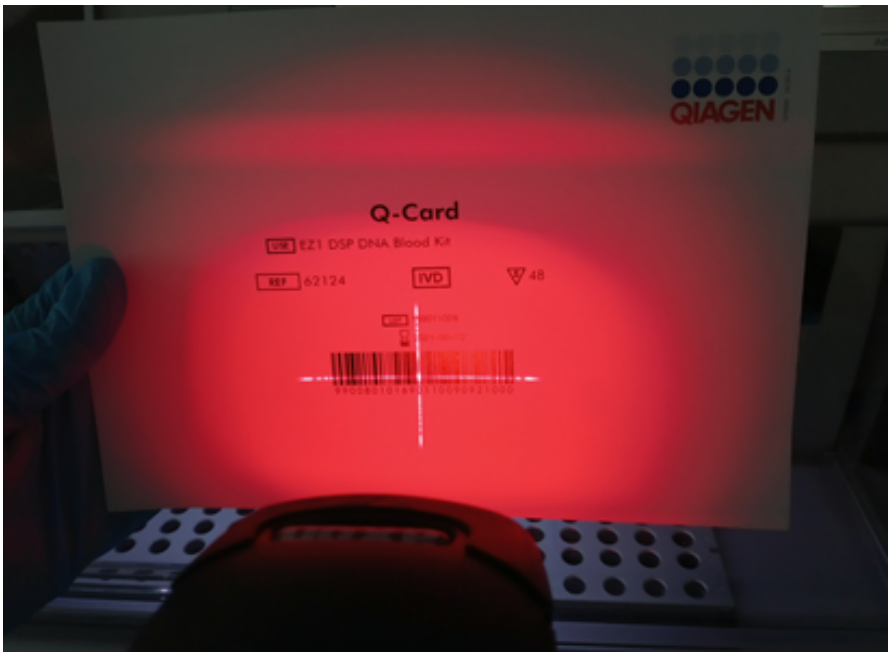


Figure 104. Scanning the information into the instrument.

WARNING **Risk of personal injury**

Hazard Level 2 laser light: Do not stare into the light beam when using handheld barcode scanner.

5.4.4. Scanning Q-Card barcode (alternative)

This section describes how to start the protocol run by using the Q-Card. This section can be skipped if the protocol will be started by the application buttons.

1. To begin set up of a protocol run, start at the **Setup** tab, then tap the scan button in the "Applications" pane.

   Note: The application will check in the background if there is enough disc space. A warning will appear if the disc space is lower than required for five runs. Previous run reports should be downloaded and deleted to free up disk space. Please check Section 5.14.1 about how to delete run reports if this message appears.

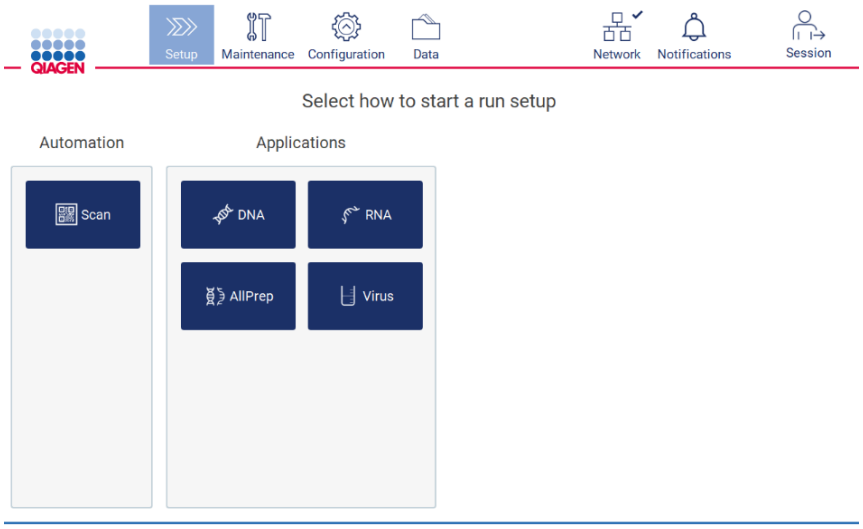


Figure 105. Setup screen.

2. Tap into the field showing up in the next screen and scan the 1D barcode on the Q-Card provided with the kit.

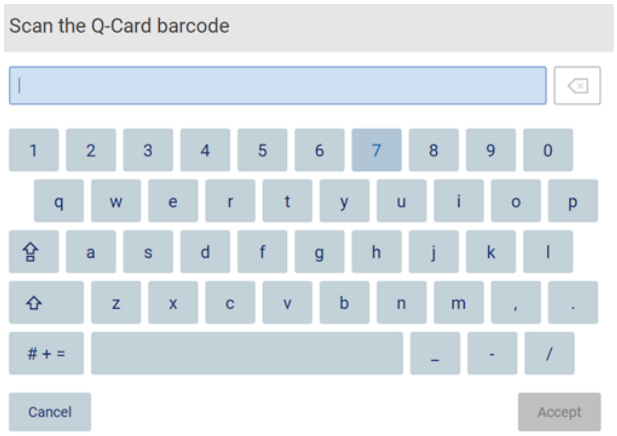


Figure 106. Scan the Q-Card barcode screen.

3. By scanning the 1D barcode on the Q-Card provided with the kit, the application type is selected and information on protocol options is given. See Section 5.13 (see page 113).

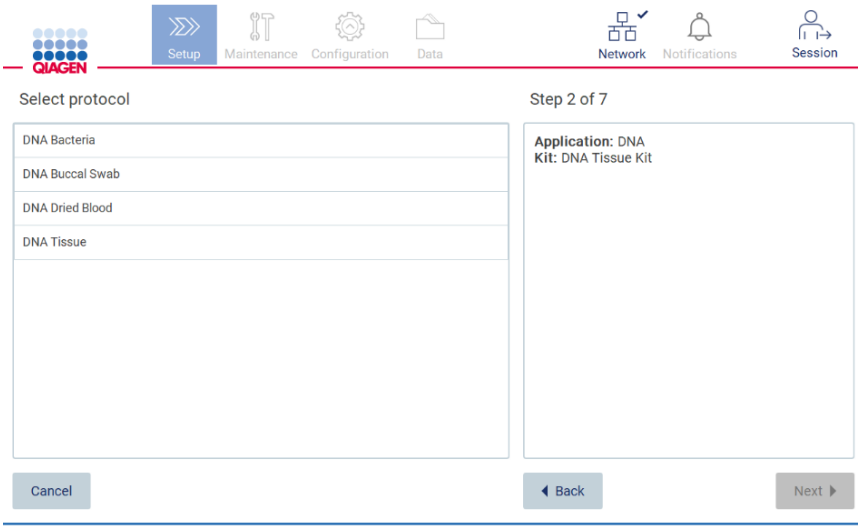


Figure 107. Select protocol screen.

4. Tap **Next** to continue. Tap **Back** or **Cancel** to return to the Setup screen.

5.4.5. Selecting a protocol

To select a protocol that is compatible with the kit selected in the "Select kit" step, tap a protocol in the "Select protocol" pane.

Note: If there is only one available option, it is selected automatically.

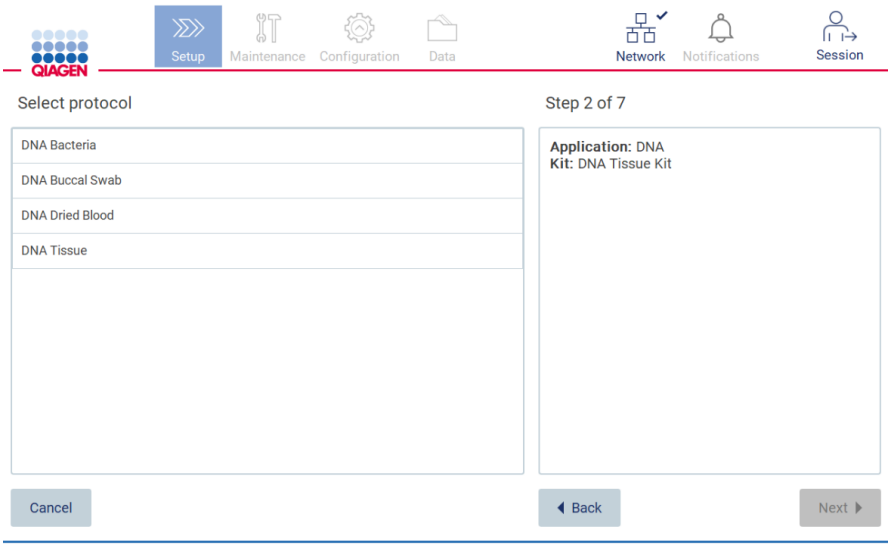


Figure 108. Select protocol step.

- After selecting a protocol, the **Next** button is enabled. To proceed to the "Define parameters" step, tap **Next**. If there are no parameters to define, you will be taken to the "Select sample positions" step.
- To return to the previous screen, tap **Back**.
- To cancel the protocol, tap **Cancel**.

5.4.6. Defining parameters

To set values for protocol parameters, tap the box next to each parameter in the “Define parameters” pane and select from the drop-down lists.

Note: Available protocol parameter options, such as sample volume, depend on the selected protocol.

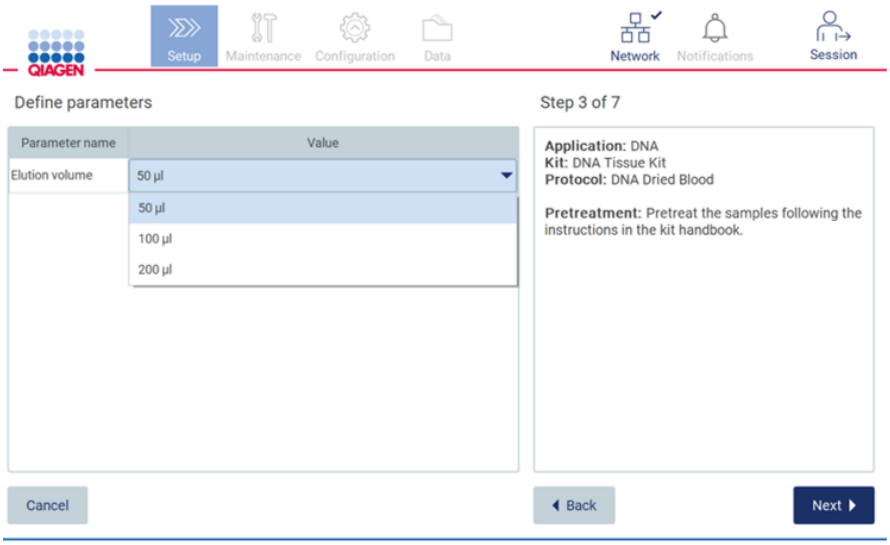


Figure 109. Define parameters step with open drop-down list.

Additional information about the protocol is also displayed on the screen, for example, references into the respective kit handbook with respect to sample storage, handling, and pretreatment (if required). Please ensure to read the entire instruction using the scroll buttons (if applicable).

Note: The description on the GUI is supportive only. Please ensure you to read the respective information in the kit handbook.

- To proceed to the “Select sample positions” step, tap **Next**.
- To return to the previous screen, tap **Back**.
- To cancel the protocol, tap **Cancel**.

5.4.7. Selecting sample positions

To select the positions of your samples, tap the relevant rows on the worktable diagram or tap the corresponding row numbers underneath the diagram. The selected positions are highlighted. To select or deselect all positions, tap the **Select all** toggle.

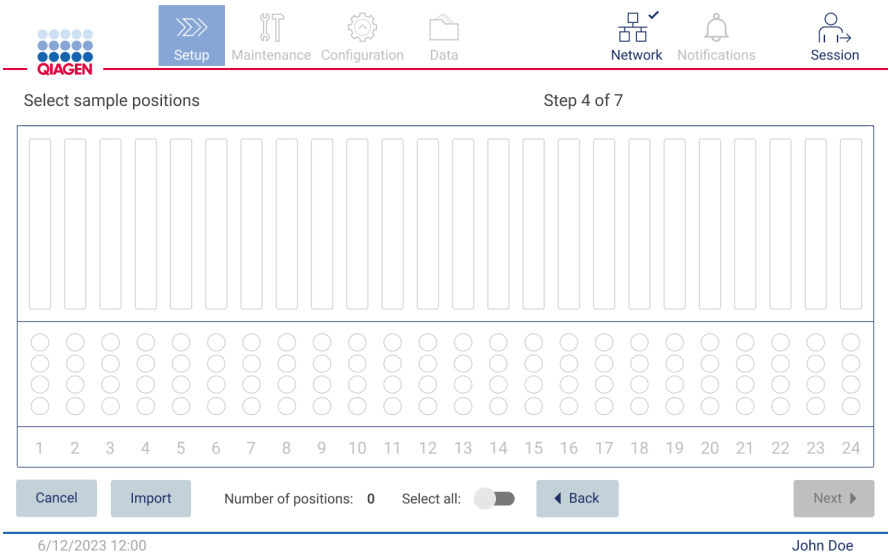


Figure 110. Select sample positions screen.

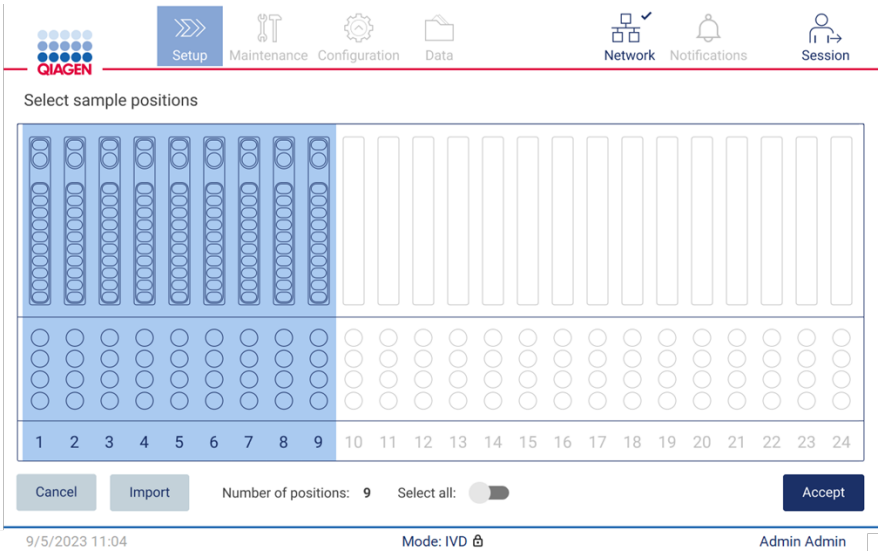


Figure 111. Select sample positions step.

After you select at least one sample position, the **Next** button is enabled. To proceed to the "Enter sample IDs" step, tap **Next**.

5.4.8. Import sample list

Alternative option: Instead of manually defining the sample positions via the touchscreen, a pre-filled sample list file can be uploaded to the EZ2 Connect. The sample list can assign the sample positions, sample IDs, and optional sample notes, and can be filled-in using an external PC and the sample list template, which can be downloaded from the EZ2 Connect. Instructions to download a sample list template can be found in Section 5.14.4. When using a pre-filled sample list, insert a USB stick with the sample list and tap Import on the select sample position screen.

Note: The EZ2 Connect will detect and show all ***.xlsx** files on the USB stick. To avoid confusion it is recommended to just have one *.**xlsx** file with a meaningful title on the USB stick for sample list upload.

- To return to the previous screen, tap **Back**.
- To cancel the protocol, tap **Cancel**.
- To import sample list in ***.xlsx** format from the USB stick tap **Import**.

Note: After importing the sample list, verify on the touchscreen if all information is correct.

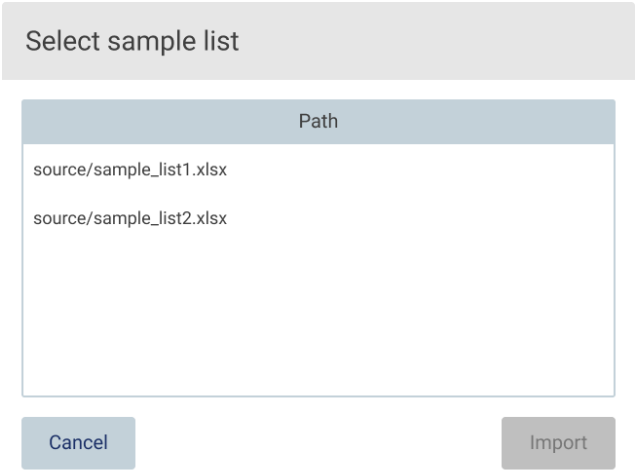


Figure 112. Select sample list dialog box.

5.4.9. Entering sample IDs

Tap **Generate missing sample IDs** to automatically generate IDs in the format of YYYY-MM-DD_HH-MM_XX, where the first 16 characters represent the current date and time, and the XX is the sample number.

Note: Sample IDs can also be entered manually, by use of the on-screen keyboard, by use of the handheld barcode scanner or by using a sample list. Ensure that the entered sample ID accurately corresponds to the ID of the sample in the respective position.

Note: Sample list upload is described in Section 5.4.7. Sample list template download is described in Section 5.14.4.

Note: When using the handheld barcode scanner to input the sample IDs, the Operator must ensure that the barcode used is of appropriate type and quality to be read by the scanner.

Note: The user can enter/edit all sample IDs or notes without the need to manually select the next sample cell from the table. When the user edits the sample ID, and scans the barcode, the input is saved and the new keyboard appears for the next sample ID.

Note: The EZ2 Connect Fx user with Administrator or Advanced user role can create a shortcut at this stage.

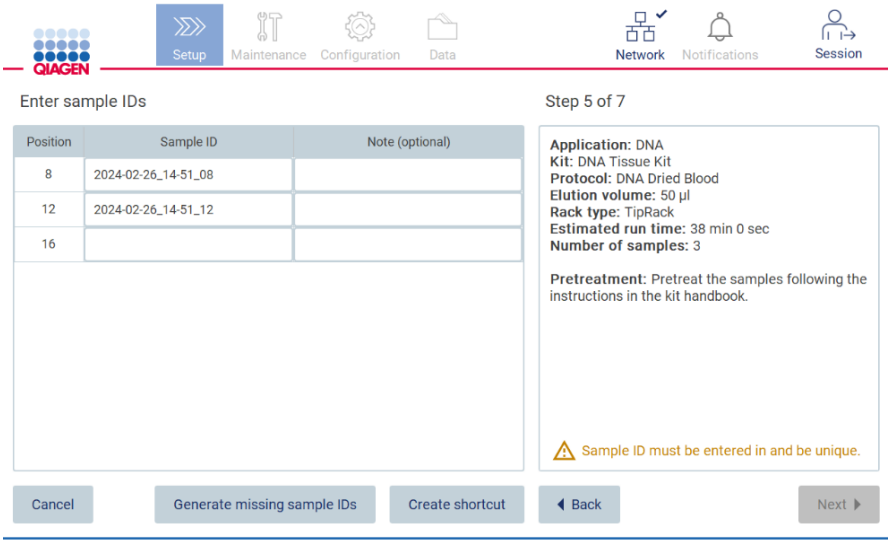


Figure 113. Enter sample IDs step (two IDs autogenerated).

Modifying a sample ID

To modify a sample ID, tap it and use the on-screen keyboard to change the text.

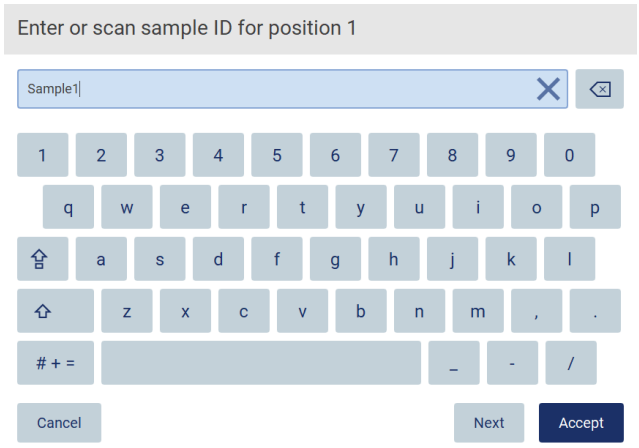


Figure 114. Changing the sample ID.

There is an 80-character limit for the sample ID field. Tap Accept to save the changes, or tap **Cancel** to go back to the Enter sample IDs screen.

Note: Samples IDs must be unique. The **Next** button is not active until unique sample IDs have been entered for all samples.

Adding a note to a sample

Optionally, you can add a note to each sample. Tap the Note (optional) box next to the relevant sample ID, and use the on-screen keyboard to enter the note.

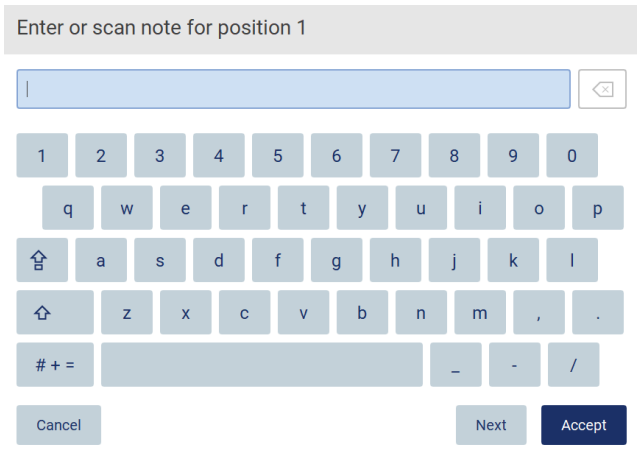


Figure 115. Adding a note to a sample.

There is an 80-character limit for the Note (optional) field. Tap **Accept** to save the changes, or tap **Cancel** to go back to the Enter sample IDs screen.

- To proceed to the "Load the cartridge rack" step, tap **Next**.
- To return to the previous screen, tap **Back**.
- To cancel the protocol, tap **Cancel**.

5.5. Shortcuts (EZ2 Connect Fx only)

The EZ2 Connect Fx software can create shortcuts, which are pre-setting the kit, protocol, protocol settings (e.g., elution volume, rack, etc.) and sample positions. Sample IDs are filled out automatically but can be changed. The shortcut will also skip all loading instruction screens to speed up the process. However, because the displayed instructions are skipped, this functionality is only available for users with Administrator or Advanced User role and not available for the Operator user role.

5.5.1. Creating a shortcut

1. Tab the **Create shortcut** button in the Enter Sample IDs screen.

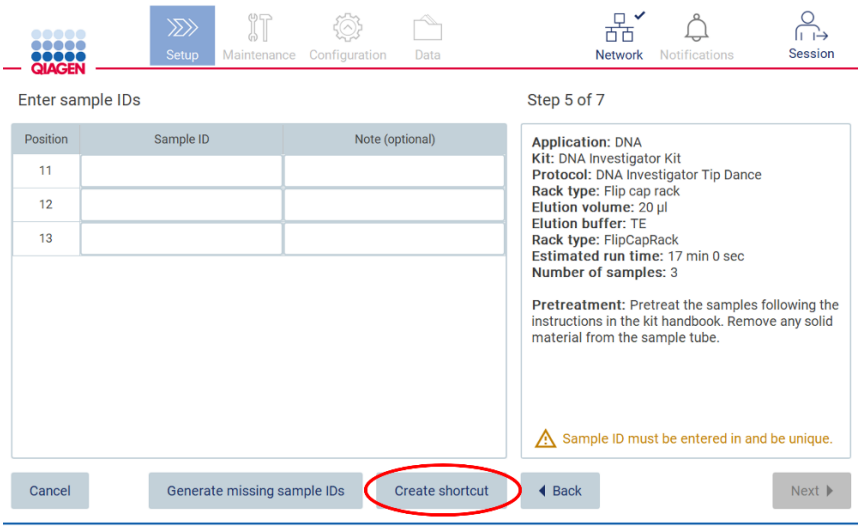


Figure 116. Enter Sample IDs window with Create shortcut Icon (red circle).

2. Enter the shortcut name in the pop-up window.

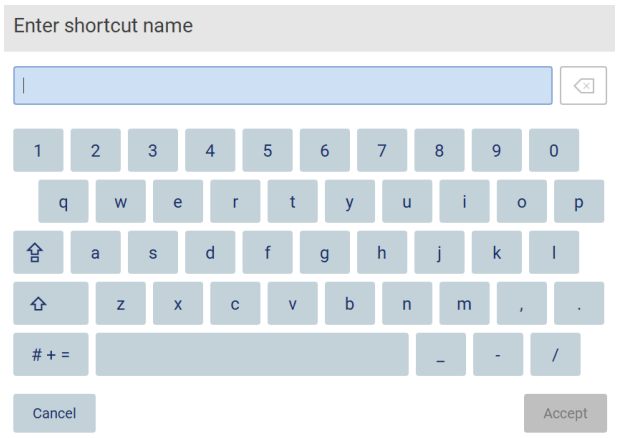


Figure 117. Enter shortcut name screen.

Note: The shortcut is now created and can be found in the Setup screen.

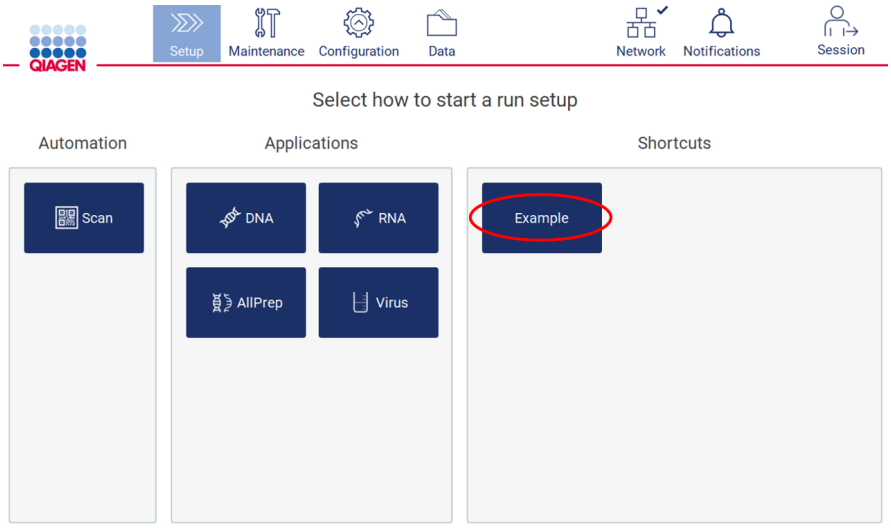


Figure 118. Setup screen with a shortcut (red circle).

5.5.2. Starting a protocol with a saved shortcut

1. Tap on the saved shortcut icon in the Setup screen (Figure 118). The shortcut icon has the name that was chosen during creation of the shortcut (Section 5.5.1).
2. The Review samples screen will open (Figure 119).

   Note: The sample IDs are prefilled with current date and time.
3. **Optional**: Edit the sample positions by tapping on the **Edit sample positions** button (option 1 in Figure 119).
4. **Optional**: Edit sample ID and notes by tapping on the sample IDs or corresponding notes (option 2 in Figure 119).
5. **Optional**: Import a sample list by tapping the import button (option 3 in Figure 119; further described in Section 5.4.8).
6. Proceed by tapping the **Next** button (option 4 in Figure 119).
7. An overview window will appear where you can check the settings.
8. Start the protocol run with load check by tapping the **Start** button or skip the load check by tapping the **Skip load check** button.

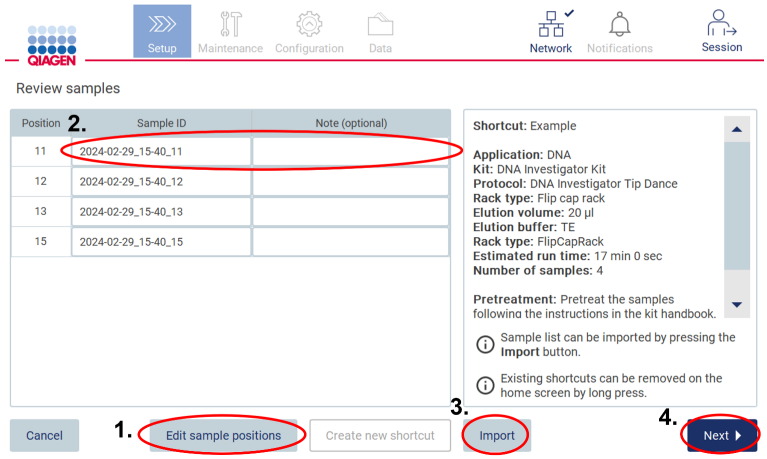


Figure 119. Review samples screen. (1) Edit sample positions, **(2)** Edit Sample IDs and add notes, **(3)** Import sample list, and **(4) Next** button to proceed.

5.5.3. Editing sample positions and deleting shortcuts

Shortcuts can be **deleted** by long pressing an existing shortcut button. A pop-up window will appear and confirmation will be needed to delete the shortcut.

It is possible to create a new shortcut after changing the sample positions:

1. Open a created shortcut in the setup screen.
2. Tap **Edit sample positions**.
3. After changing the sample positions, tap **Accept**.
4. Tap **Create new shortcut**.

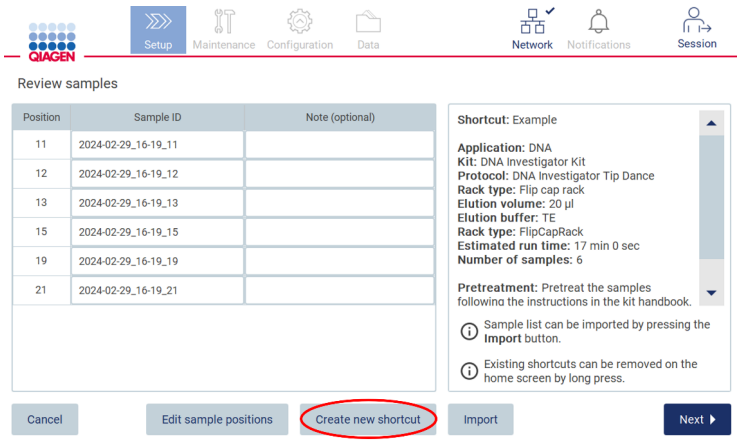


Figure 120. Create new shortcut (red circle).

5. Enter the shortcut name in the pop-up window.
6. The new shortcut button is now available in the setup screen.

   Note: All other settings of the previous shortcut are copied to the new shortcut. Just the sample positions have changed.

5.6. Setting up the worktable

This section is about setting up the EZ2 Connect worktable that consists of removing the empty tip rack(s) and the cartridge rack(s) from the instrument, prepare them with respective cartridge(s), consumables and sample(s) and reload them onto the instrument.

1. Remove one or both sections of the tip rack from the worktable, depending on which positions you chose in the "Select sample positions" step of the protocol run setup. To remove a tip rack section, grab both sides of the section and gently pull up.
2. Remove one or both sections (left or right) of the cartridge rack from the worktable, depending on which positions you chose in the "Select sample positions" step of the protocol run setup. To remove the cartridge rack sections, grab their handles and gently pull the rack up.

Note: First remove the tip racks, then the cartridge racks.

5.6.1. Loading the cartridge rack(s)

To load the cartridge rack(s), follow the steps below (also displayed on the GUI). To highlight the well on the diagram and the corresponding row in the table of the GUI, tap the well or the table row.

Important: Read the following instructions (as well displayed on the GUI) carefully before loading the rack:

1. Follow the instructions of the respective kit handbook on how to treat the reagent cartridges before loading onto the cartridge rack.

   Note: Remember to prepare the same number of reagent cartridges as the number of positions you chose in the "Select sample positions" step of the protocol run setup.
2. Invert each cartridge three times to ensure the magnetic beads are resuspended.
3. Tap each reagent cartridge until the reagents are deposited at the bottom of the wells. No droplets should remain on the walls and ceiling of the cartridge.
4. If required for the script, add the extra tube(s) into the empty "heater" position of the cartridge(s)
5. Slide the reagent cartridges, with the orientation depicted in the user interface, into the cartridge rack in the direction of the arrow that is engraved on each cartridge rack section, until you feel resistance. The cartridge should click into place.
6. Once all the reagent cartridges are loaded, place each cartridge rack section onto the worktable. The rim of the reagent cartridge plastic flag (where the 2D-barcode label is placed on) must sit below the tip rack, but the label itself should not be covered.

   Note: Ensure the cartridge racks are placed in the correct position.

   Note: Place the cartridges in the positions chosen during sample loading, numbers are engraved onto the rack. Numbering reads 1 to 24 from left to right.

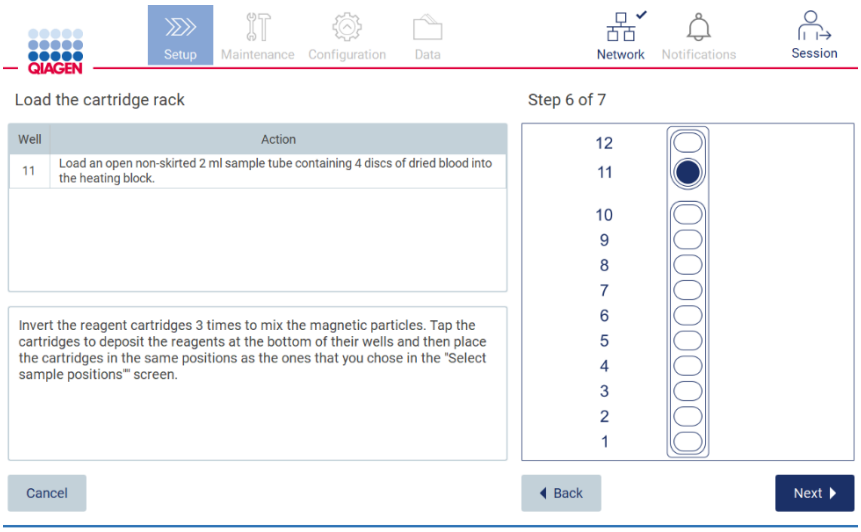


Figure 121. Load the cartridge rack step.

7. To proceed to the "Load the tip rack" step, tap **Next**. To return to the previous screen, tap **Back**.
8. To cancel the protocol, tap **Cancel**.
9. To proceed to the "Load the tip rack" step, tap **Next**.

5.6.2. Loading the tip rack

To load the tip rack(s), follow the steps below (also displayed on the GUI).To highlight a position on the tip rack diagram and the corresponding row in the table, tap the position or the table row.

Important: Read the instructions carefully before loading the rack, and make sure to follow all directions including those in the respective kit handbook. To load the tip rack, follow the steps below:

1. Place the tips into their tip holders.
2. Load the labware according to the instructions on the user interface.
3. Load the sample tubes onto the tip rack.

   Note: Make sure that you follow any protocol-specific directions shown on the screen in the "Load the tip rack" step of the run setup process. You could be required to perform some additional actions. The instructions can also be found in the kit handbooks.

   Note: Remove any caps from the labware and store safely. Make sure not to mix up lids between different samples.
4. Once all the labware is loaded, place the tip rack sections onto the worktable.
5. Place the tip racks always after loading the cartridge racks. The rim of the reagent cartridge plastic flag (where the 2D barcode label is placed on) must sit below the tip rack, but the label itself should not be covered.

Important: Ensure that the tubes are inserted as far as possible into the rack, that is, push them all the way down into the respective position. Do not use thick tube labels, as the tube may get stuck at an elevated position, which may interfere with subsequent pipetting steps.

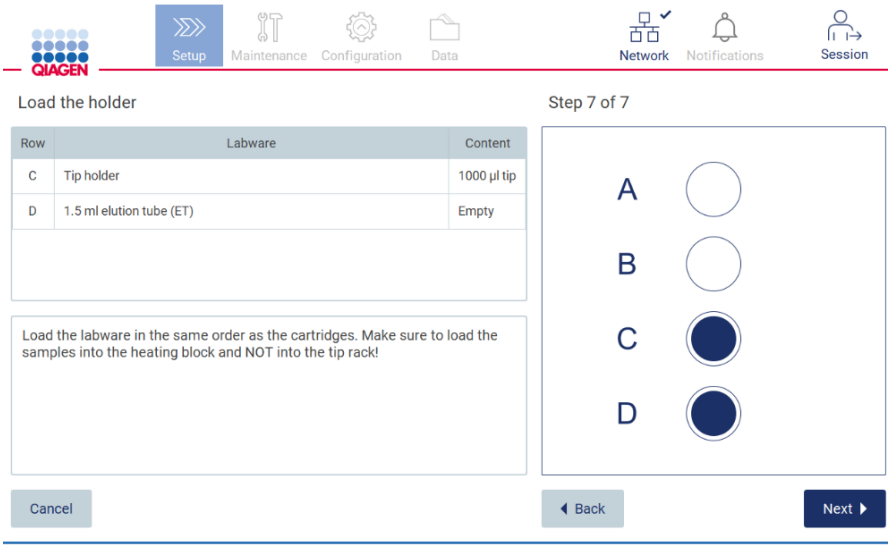


Figure 122. Load the tip rack step.

Note: In some applications, not all positions of the tip rack are to be used. This is indicated by the lack of this position on the left-hand side and a white circle on the right-hand side.

Important: Both tip racks should be inserted even if just one is used.

To proceed to the start of the protocol, tap **Next**. Before the run starts, you will see an overview of the selections you made during the run setup process.

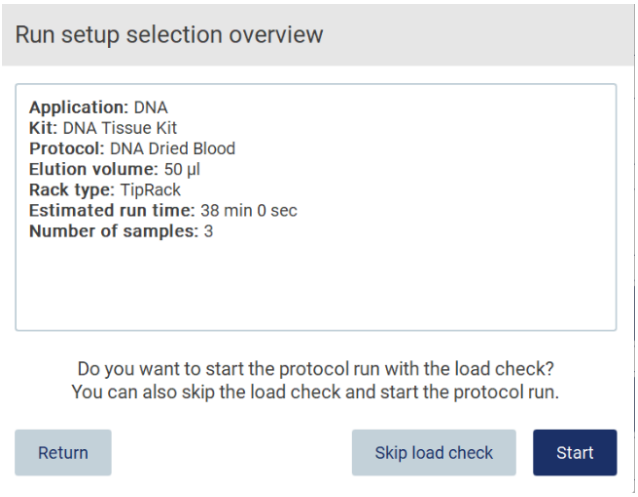


Figure 123. Run set up overview.

To return to the previous screen, tap **Return**.

To start the protocol run, tap **Start**.

EZ2 Connect Fx users have the additional option to skip the load check. By tapping **Skip load check**, the run will start without a load check being performed.

5.7. Starting the protocol run and monitoring its progress

After successfully completing all the steps of the protocol run setup, you can start the run. During the protocol run, you can monitor its progress. Ongoing steps, an estimated run time, and the elapsed run time are displayed on the screen.

To start the run and view its progress, follow the steps below:

1. Tap **Next** in the "Load the tip rack" step. The Run setup selection overview dialog box is shown.

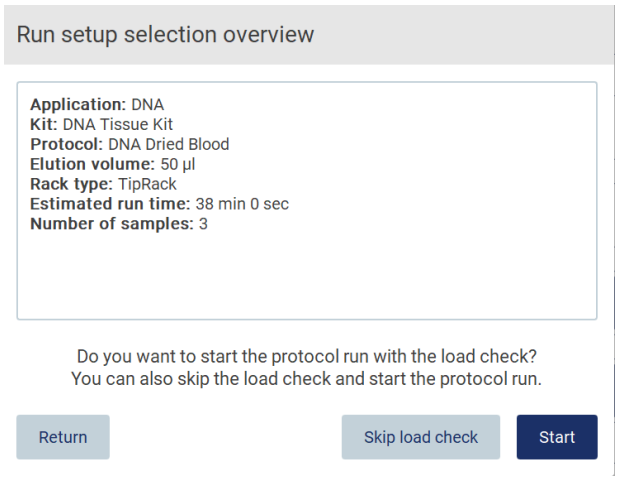


Figure 124. Run setup selection overview dialog box.

2. If all the information in the overview is correct, tap **Start** to immediately proceed with the protocol run. To make modifications to any of the selections, tap **Return** to go back to the run setup.

   Note: The Estimated run time does not include the time to complete the Load Check, which is approximately 6 min.

3. If the hood of the instrument is open, close it and the run will start.

Figure 125. Close the hood dialog box.

4. The **Load Check** might start (for EZ2 Connect Fx user when started with load check). For more information about the load check, refer to Section 5.7.1 (see page 103). The run will start after the check is successfully completed. To stop the load check, tap **Abort**.

Important: Wait until the **Load Check** has successfully completed before leaving the instrument unattended. Upon a failure of the load check (e.g., due to operator errors during worktable setup), the run will not start, and operator action will be required. If the instrument is left unattended for an extended time period, stability of samples and reagents may be impaired.

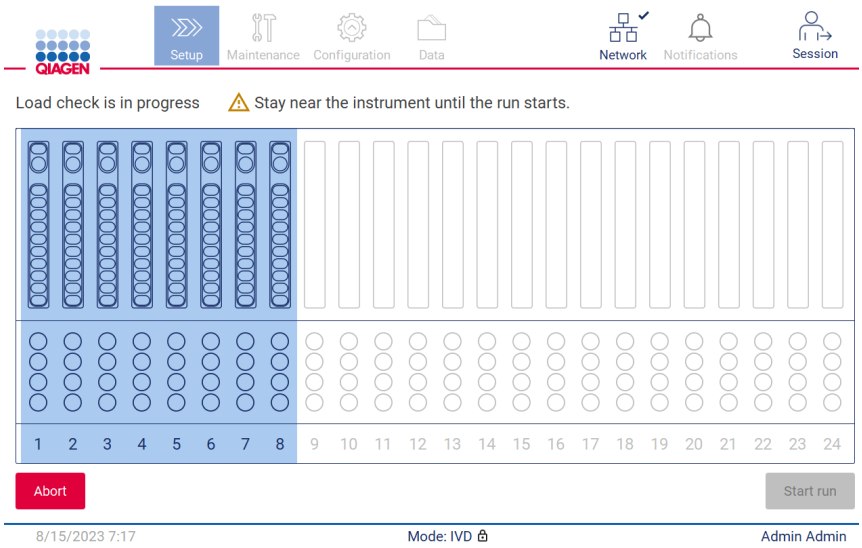


Figure 126. Load check in progress screen.

5. After successful completion of the **Load Check** progress of the run and the elapsed run time are displayed on the Protocol run in progress screen.

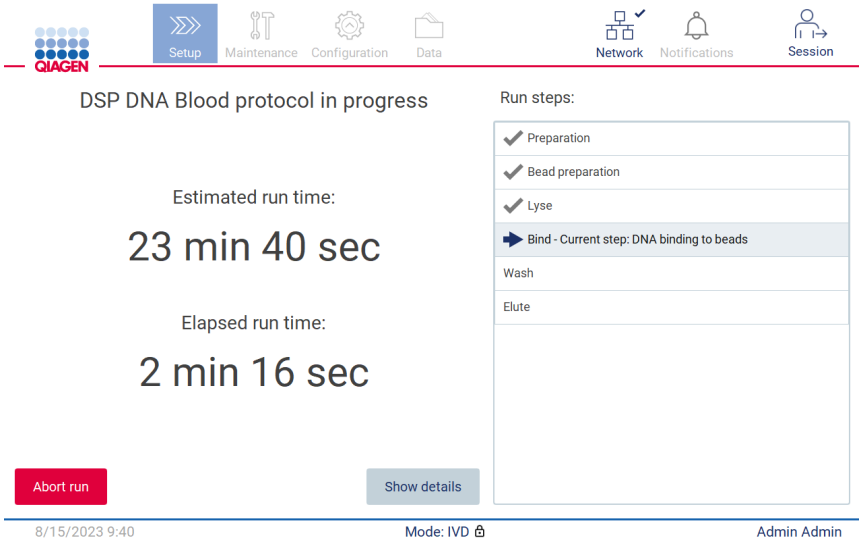


Figure 127. Run progress screen.

6. Tap the **Show details** button to displayed the protocol parameters during the run.

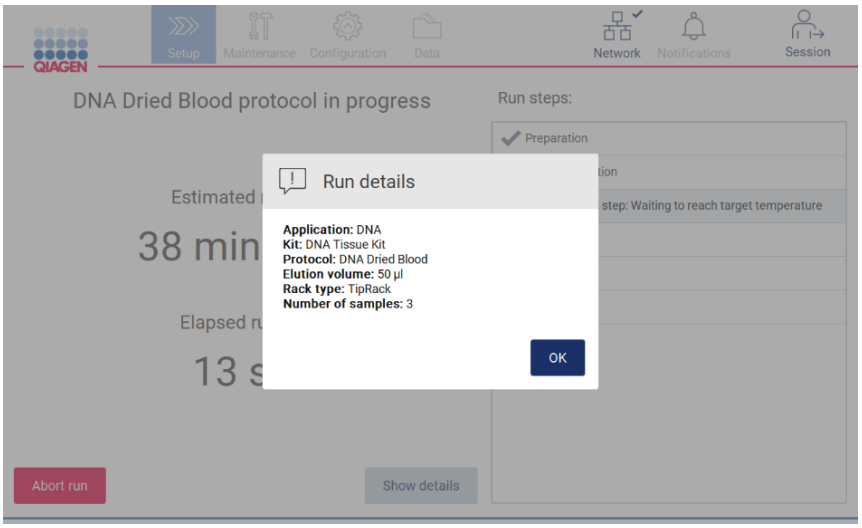


Figure 128. Run details dialog window.

5.7.1. Load check (for EZ2 Connect Fx only)

The EZ2 Connect Fx comes with a built-in camera, which is designed as an aid to ensure the operator has loaded all of the cartridges and labware into the correct positions on the worktable. However, the contents of the labware (e.g., liquid levels) in the tip rack are not checked, so the operators must make sure that they have carefully followed the instructions related to the protocol being run.

Note: Follow the instructions on the user interface as well as those given in the respective kit handbook.

The load check is automatically starts after you tap Start in the Run setup selection overview dialog window. For more information on starting a run, refer to the Section 5.7 (page 101).

After the load check starts, the camera moves above the worktable and checks all positions on the cartridge rack and the tip rack, and the Load check is in progress screen is shown on the display. The positions that you chose in the Select sample positions screen are highlighted.

Important: Operator should confirm completion of load check prior to leaving the EZ2 Connect unattended as in the event of failed load check operator intervention may be required. If the instrument is left unattended for an extended time period, stability of samples, and reagents may be impaired.

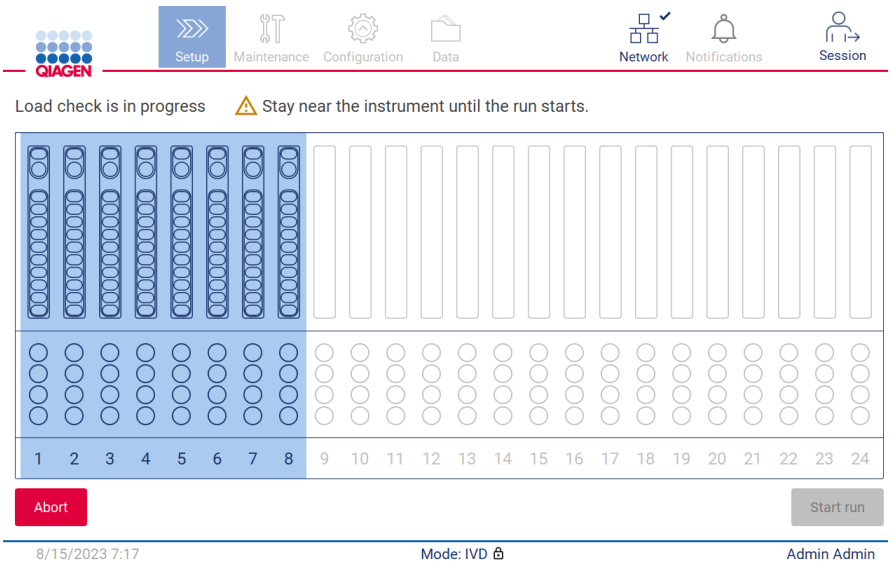


Figure 129. Load check is in progress screen.

Load check limitations

Important: The load check is designed to support the operator in ensuring that the worktable is correctly set up as detailed on the GUI. It is not intended as a replacement for operator diligence in confirming that consumables/reagents/samples are correctly placed on the worktable.

It should be noted that the load check will not detect the following:

- Liquid presence in tubes
- Distinguish between 1.5 and 2.0 mL tubes
- Distinguish between a tip holder (with tip) and a capped tube
- Distinguish between a tip holder (without tip) and tube

Successful load check

If all of the labware is loaded correctly, the load check ends successfully, and the run starts automatically.

Failed load check

If the camera discovers one or more errors during the load check procedure, the Load check failed screen is shown. Incorrect labware placements are marked in red. To get more information about a particular load check error, tap one of the red positions. A dialog window with details about the error appears.

Note: All consumable positions should be visually checked to confirm correct placement in accordance with the instructions detailed in the loading the worktable GUI wizard. Do not repeatedly rerun a failed load check without first completing this visual inspection. Also, stability of samples and reagents may be impaired due to extended time on the instrument during repeated running of the load check.

To return to the loading instructions and start the load check procedure again, tap **Back**. The Load the tip rack screen is shown. If you need the instructions from the previous screen, press **Back** again. Once you have confirmed correct loading of

the worktable, tap **Next** in the Load the tip rack screen. The Run setup selection overview screen will be displayed where a **Skip load check** button will now be available. If you have to correct the loading, the load check must be repeated.

Note: In case of repeated load check failure, after correct worktable setup has been confirmed, please recalibrate the camera (refer to Section 6.6). Contact QIAGEN Technical Support for additional support. During this time samples should be removed from the worktable and held at appropriate storage conditions.

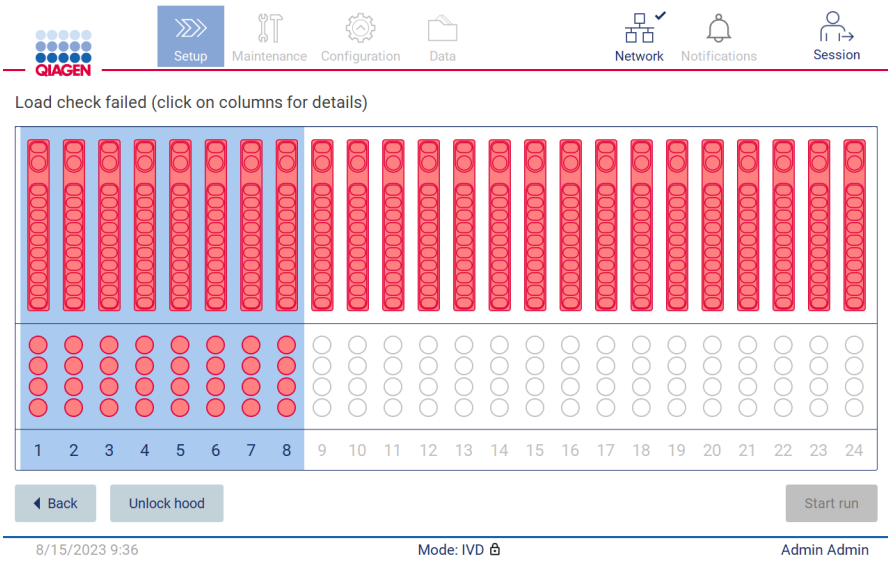


Figure 130. Load check failed screen.

The detailed loading faults can be shown in a pop-up window by tapping affected column.

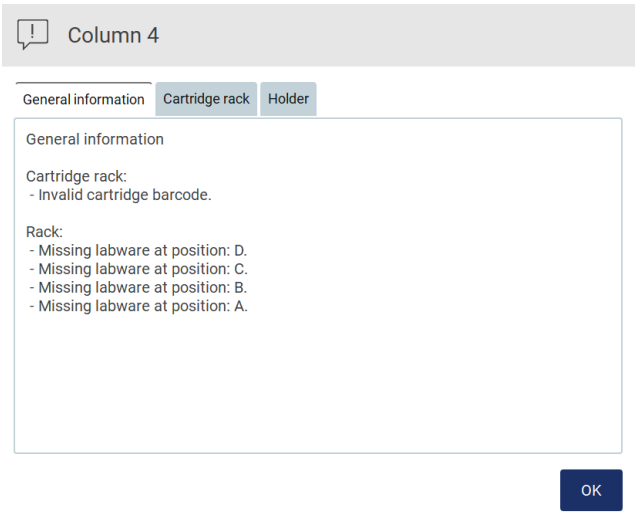


Figure 131. Pop-up window with faults to be corrected.

Tap **Unlock hood** button to correct the loading.

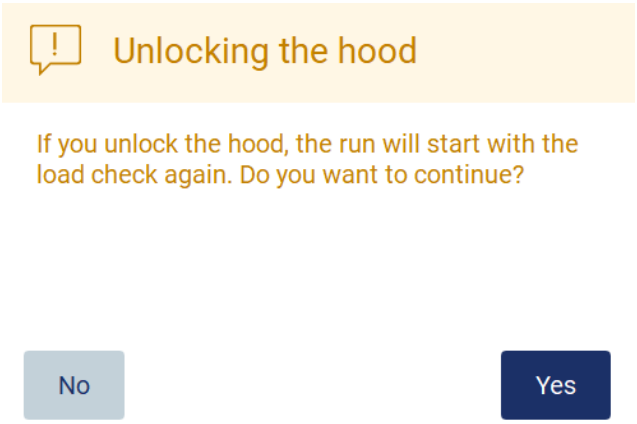


Figure 132. Warning after unlocking the hood.

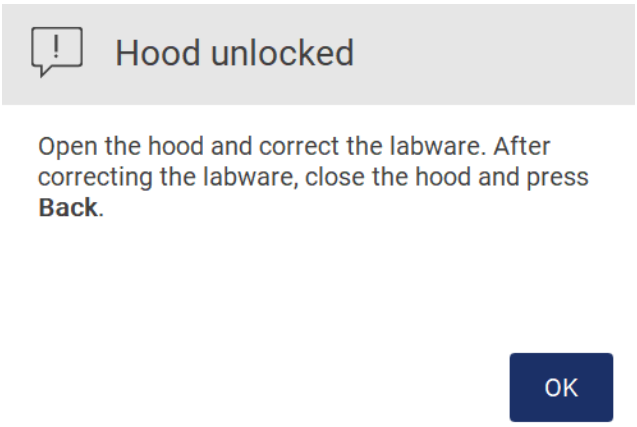


Figure 133. Hood unlocked pop-up window.

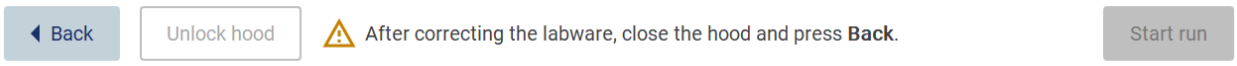


Figure 134. Warning on the Load check failed screen.

5.8. End of the protocol run

When the protocol has successfully finished, the "Protocol run completed" screen is shown. Information about required cleanup/maintenance steps is also displayed.

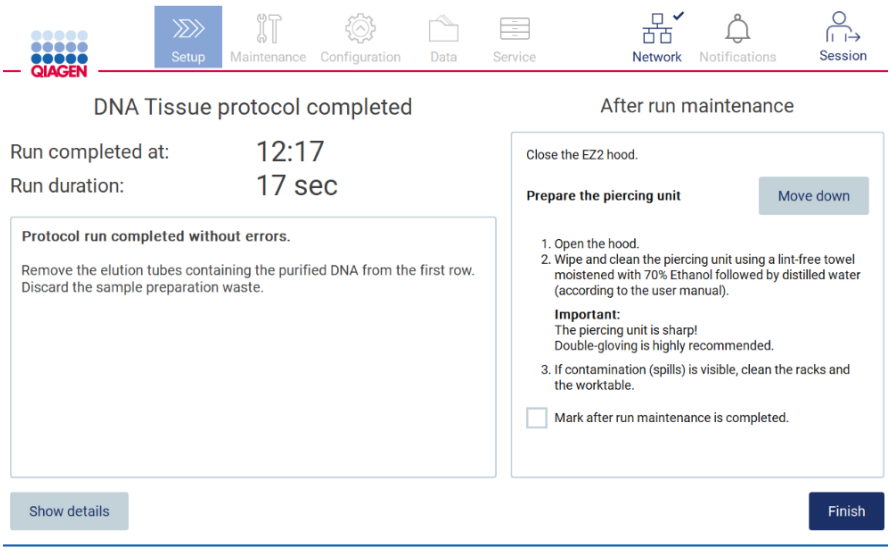


Figure 135. Protocol run competed screen.

Note: Once the **Finish** button is pressed, cooling after run will start.

At the end of a protocol run, you must remove the labware. To do so, follow the steps below:

1. Remove left, right, or both parts of the tip rack from the worktable. To remove a tip rack, grab both sides of the rack, and gently pull up.
2. Cap and remove eluate tubes from the rack and store accordingly.

   Note: Remove the elution tube containing the eluate, close, label, and store it appropriately before removing the used labware from the tip rack. When handling the open elution tubes, take care not to carry over the eluate from one tube to another.

   Important: Make sure to timely remove eluates from the instrument after the run has finished and store as indicated in the corresponding kit handbook. The eluates are exposed to ambient temperature in the EZ2 Connect and extended time before removal may cause nucleic acid degradation.
3. Remove the labware from the tip rack and dispose according to local safety regulations.

   CAUTION **Hazardous chemicals and infectious agents**

   The waste contains samples and reagents. This waste may contain toxic or infectious material and must be disposed of properly. Refer to your local safety regulations for proper disposal procedures.
4. In case of visible spillage, disinfect the tip rack and remove any spilled liquids or potential contamination that is present on the cartridge rack sections. For more information on disinfecting and removing contamination, refer to Sections 6.1, 6.1.1, and 6.1.2.

5. Remove one or both sections (left or right) of the cartridge rack from the worktable. To remove the cartridge rack sections, grab their handles and gently pull the rack up.
6. Slide out the reagent cartridges and dispose of them properly, according to local safety regulations.

   Note: If the additional tube in the heater position was used in the reagent cartridge, these tubes must be wasted according to local safety regulations.

   CAUTION **Hazardous chemicals and infectious agents**

   The waste contains samples and reagents. This waste may contain toxic or infectious material and must be disposed of properly. Refer to your local safety regulations for proper disposal procedures.

7. In case of visible spillage, disinfect the cartridge rack and remove any spilled liquid or potential contamination that is present on the cartridge rack sections. For more information on disinfecting and removing contamination, refer to Sections 6.1, 6.1.1, and 6.1.2.
8. Place the cartridge rack sections back in the instrument, followed by the tip rack.

   Clean the piercing unit, see Section 6.2 (page 135). When after run maintenance is completed, tap the checkbox to transfer the maintenance status into the run report. Tap **Finish** to end the run, to create the report file, and to go back to the Home screen. After a run is finished, a run report is generated. For more information on how to save and download a run report, refer to Section 5.9 (page 109).

   Note: Once the **Finish** button is pressed, the automatic cooling after run will start (see Section 5.17). This procedure will move the worktable to the back of the instrument. The process can be aborted if not required.

   Note: After the last run of the day, the daily maintenance needs to be conducted (see Section 6.3).

5.9. Saving a run report

After a run finishes successfully, fails, or is aborted, a run report will be generated in two formats: PDF and XML.

To automatically save a run report, tap **Finish** in the Protocol run completed, Protocol run failed, or Protocol run aborted screen.

For more information on what the run report contains, refer to Section 5.9.1.

5.9.1. Run report contents

An EZ2 Connect run report is created by the software application after a run is completed, aborted, or if it fails, after the user taps the Finish button on the screen that is shown after a run ends.

Each run report is saved in two formats: PDF and XML. Both formats include the same information, that is:

- The user ID that was logged in when the run was started
- The serial number of the instrument
- The duration of the run
- The time and date when the run was started and when it ended
- Protocol information:
    - Name
    - Version
    - Application
    - Parameters selected
    - Number of samples
- The kit name, material number, lot number, and expiration date (only when load check was performed)
- The lot number(s) of the cartridges (only when load check was performed)
- The title of the run report file, which includes the date when the run ended and the serial number of the instrument
- The status of the run, which indicates if the run was completed successfully, if it failed, or if it was aborted
- Errors (if occurred)
- The status of the cleanup procedure that is required after a run ends
- Information about the samples: their positions, names and any notes that were added by the user
- Information on sample flags
- Maintenance information (due, executed, etc.)
- Validity status of samples

5.10. Canceling the protocol run setup

You can cancel the protocol run setup process at any time. If you cancel the run setup, your progress is not saved, and the worktable does not move. If you have loaded anything onto the worktable, remove the labware.

To cancel the setup, tap **Cancel**. In the Cancel run setup dialog box, tap **Yes** to confirm the cancellation or tap **No** to go back to the run setup.

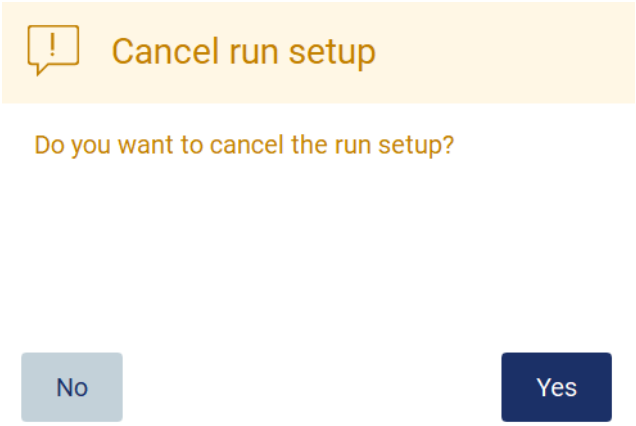


Figure 136. The Cancel run setup dialog box.

5.11. Aborting a protocol run

A protocol run can be stopped at any time. To stop the run, follow the steps below:

1. In the Protocol run in progress screen, tap **Abort run**. A confirmation dialog box appears.
2. Tap **Yes** to stop the run, or tap **No** to go back to the Protocol run in progress screen.

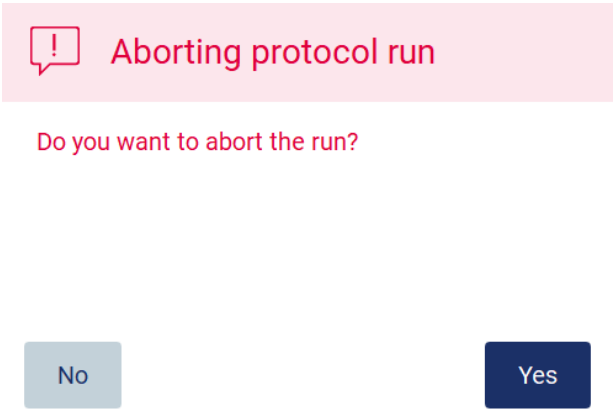


Figure 137. Aborting protocol run dialog box.

3. When the run is aborted, the instrument finishes the current movement and then attempts to dispense the contents of the pipettes into the first available empty tubes, and to release tips into empty tip holders. Then, the worktable returns to its initial position. These actions place the consumables/workdeck in suitable positions to support a safe clean-up procedure. After this is done, a message is shown and the **Proceed to the summary** button is activated. Tap **Proceed to the summary**.

   Note: If you tap **Abort** during a pause or when the machine is waiting to reach a specific temperature, the run is stopped immediately.

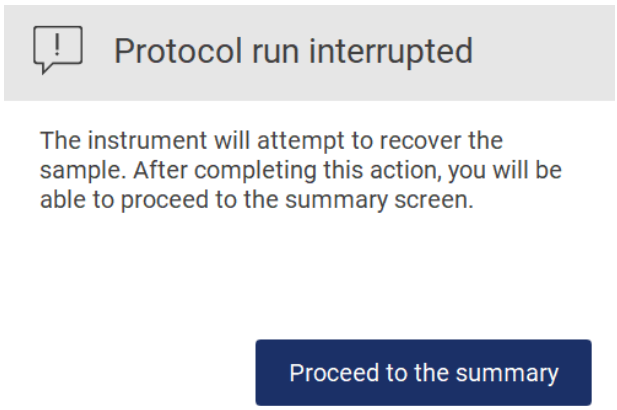


Figure 138. Protocol run interrupted dialog box.

4. Tap **Finish** to end the run and go back to the Home screen. A run report is generated. For more information on how to save a run report, refer to Section 5.9 (page 109).

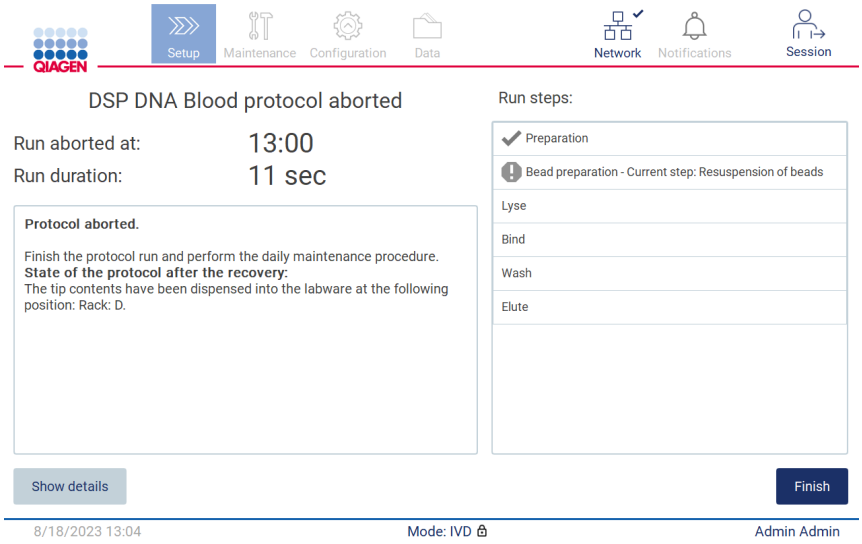


Figure 139. Protocol run aborted screen.

5. Also, for aborted protocol runs, the after run maintenance needs to be performed. Please follow the instructions regarding the cleaning of the piercing unit from Section 6.3 (page 137).

5.12. Sample recovery

In case of a run failure, the EZ2 Connect Fx provides a recovery feature which allows localization and recovery of the sample.

For more information, refer to the *EZ2 Connect Fx Recover Procedure Instruction Manual*, which can be found on the EZ2 Connect Fx product page in the Resource section (**www.qiagen.com**).

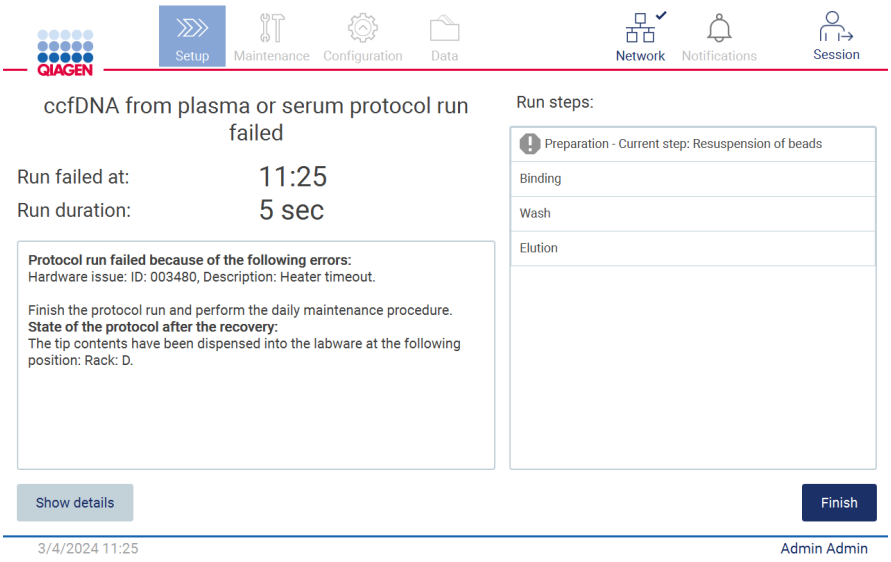


Figure 140. Protocol run failed screen.

5.13. LIMS workflow

Important: Before using the LIMS features of the EZ2 Connect for the first time, it is needed to contact a QIAGEN representative. The EZ2 Connect has to be integrated with existing LIMS, by setting up and configuring external service called LIMS Connector; this can be done with help from QIAGEN Service Team. To begin set up of a protocol run using the LIMS interface, start at the **Setup** tab, then tap the **LIMS** button.

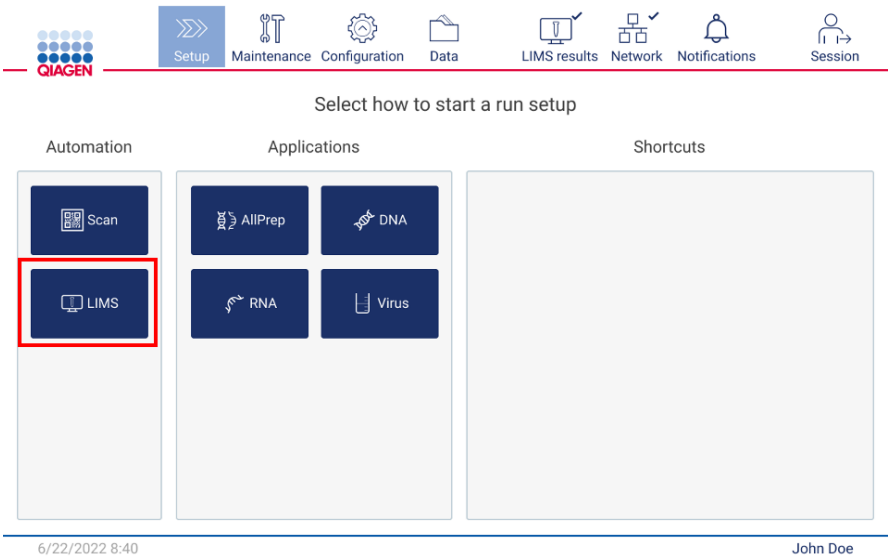


Figure 141. Setup screen.

1. Scan sample ID screen is displayed. Use preselected position and scan sample ID, or select a new position and scan sample ID.

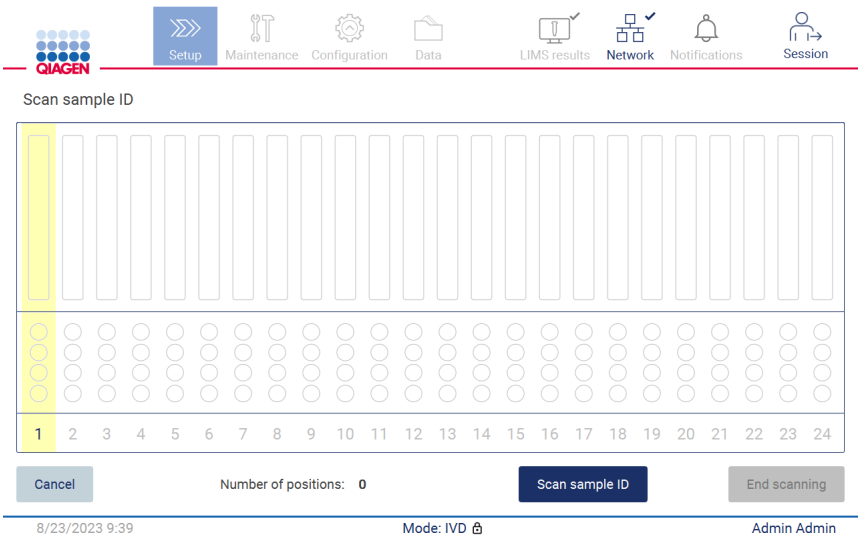


Figure 142. Scan sample ID screen.

2. Tap **Scan sample ID** to scan either using the handheld barcode scanner or using the on-screen keyboard.

Figure 143. Scan or enter sample ID.

3. After scanning the first sample the “Check parameters and load the holder” screen is displayed.

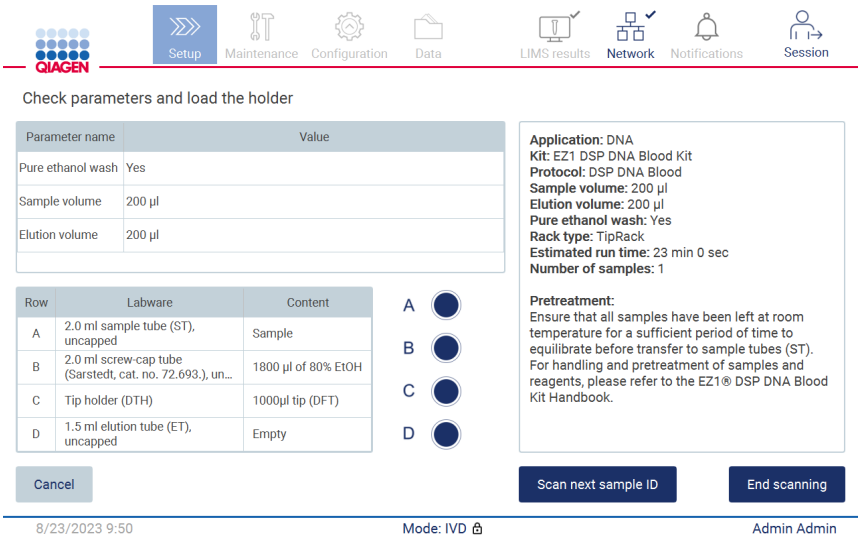


Figure 144. Check parameters and load holder screen.

4. Check the preselected parameters and select the parameters in empty fields. Tap **Scan next sample ID**, or tap **End scanning** if you want to run just one sample.

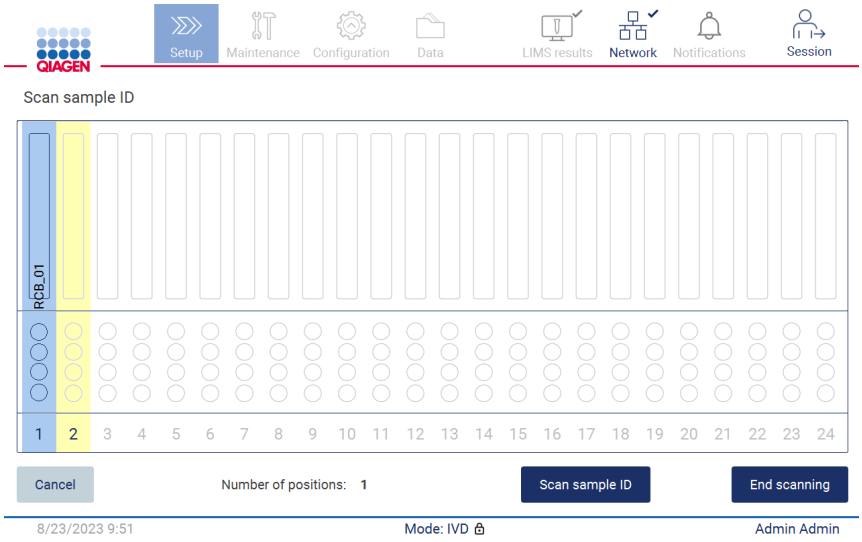


Figure 145. Scan additional samples or proceed to next step.

5. **Important**: Information captured in the note field will not be transmitted/transferred to LIMS. After pressing **End scanning**, the Review collected samples screen appears. Here, you have the option to review your setup and add notes (optional). Also, samples that have not been found in LIMS can be processed.

   Note: If the "Sample ID" fields contain scanned sample IDs found in LIMS, these fields are not editable.

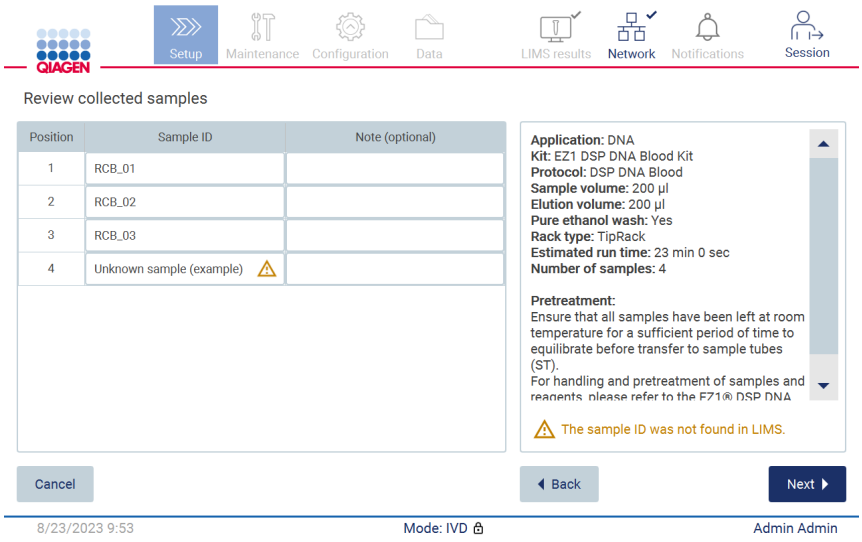


Figure 146. Review collected samples.

6. Tap **Next** to proceed to scan Q-card information. Tap **Scan Q-Card**. Use the handheld barcode scanner to scan the barcode of the Q-Card or enter via the on-screen keyboard. Tap **Next** when complete.

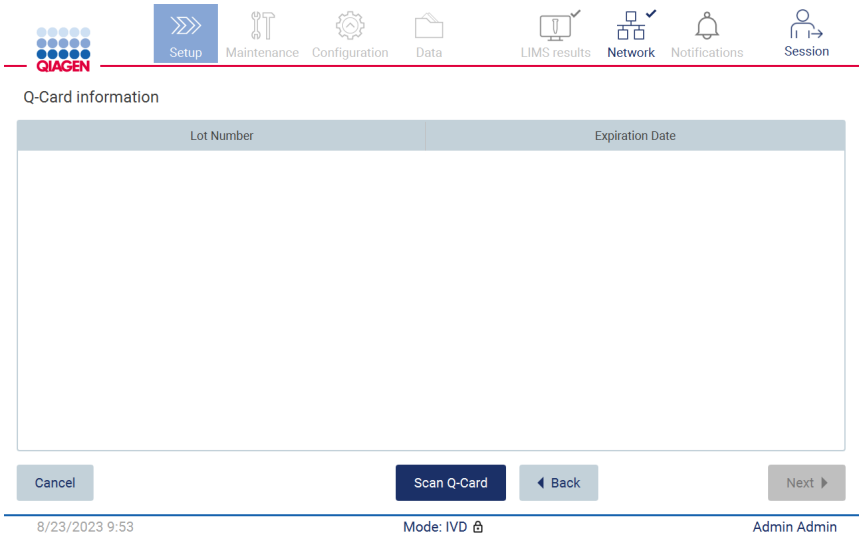


Figure 147. Scan Q-card.

The "Load the cartridge rack" steps feature (page 98) instructions on how to load the cartridge rack. To highlight the well on the diagram and the corresponding row in the table, tap the well or the table row.

Important: Read the instructions carefully before loading the rack, and make sure to follow all directions including those in the respective kit handbook.

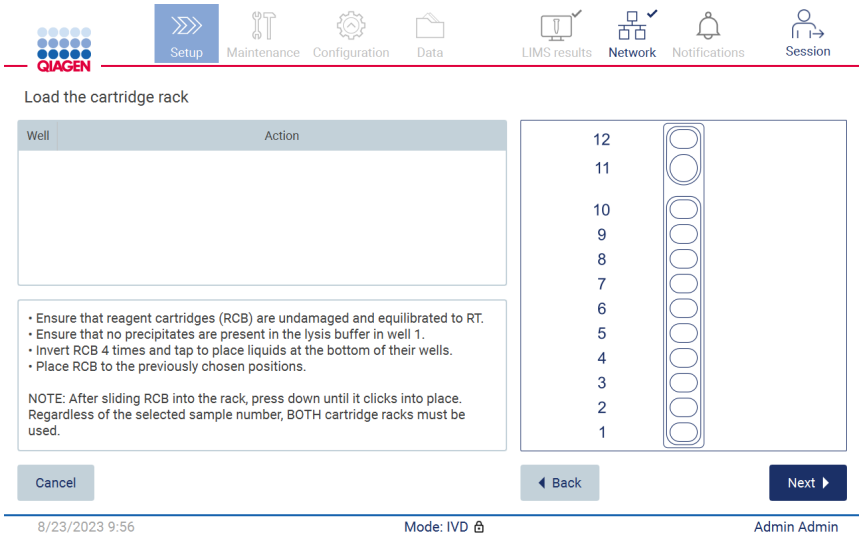


Figure 148. Load the cartridge rack.

7. Tap **Next** to proceed to next step.

   The "Load the holder" step features instructions on how to load the tip rack. To highlight a position on the tip rack diagram and the corresponding row in the table, tap the position or the table row.

   Important: Read the instructions carefully before loading the rack, and make sure to follow all directions including those in the respective kit handbook.

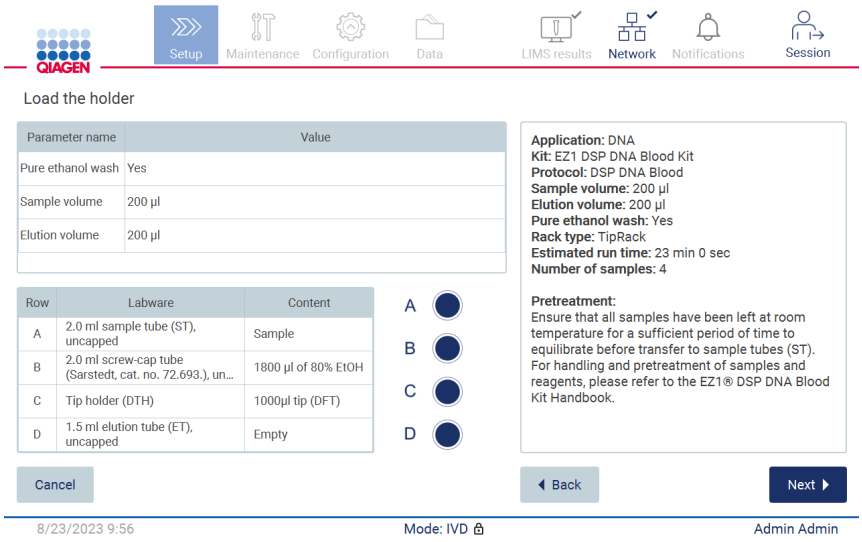


Figure 149. Load the holder.

8. Tap **Next** to proceed to the run overview screen.

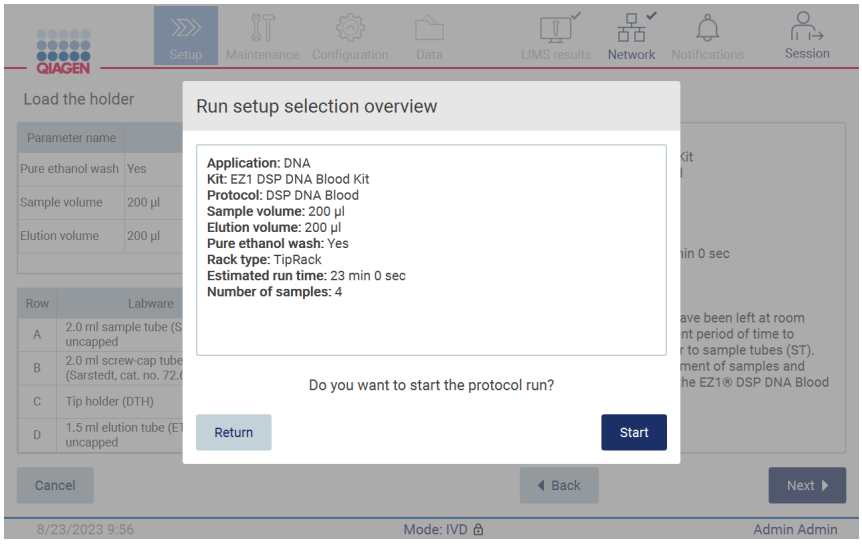


Figure 150. Run setup overview.

9. Tap **Start** to begin the selected protocol run.

   Note: The first scanned sample ID must be known for the LIMS. The next scanned sample IDs can be unknown for the LIMS, and can be used with the preselected protocol and parameters. In this case, this dialog box appears:

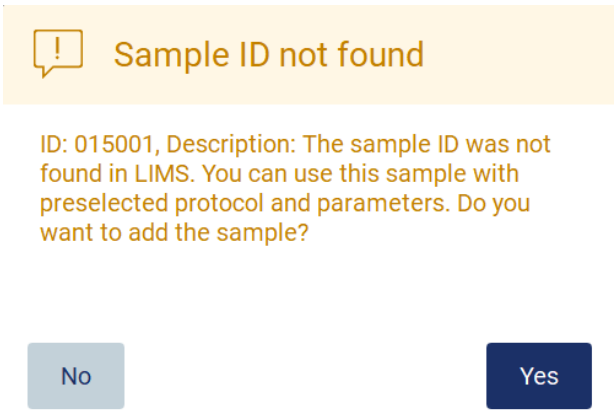


Figure 151. LIMS Sample ID not found dialog box.

10. To process the unknown sample along with the sample IDs found in LIMS, tap **Yes**. Previously scanned ID will be displayed.

    Note: The audit trail and support package will also contain LIMS results sending and LIMS Connector information.

11. The system checks available disk space when the protocol run is started. If the available space is lower than that required for 5 runs, a warning message is displayed.

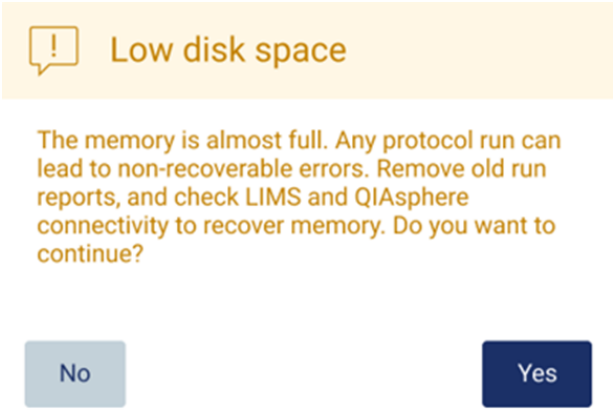


Figure 152. Pop-up window with Low disk space after attempting to start a run.

Previous run reports should be downloaded and deleted to free up disk space.

5.14. Data menu

Important: Use only the USB stick provided by QIAGEN. Do not connect other USB stick devices to USB ports.

Important: Do not remove the USB drive while downloading or transferring data or software to or from the instrument.

The following functions can be completed through the Data menu:

- Download and/or delete run files
- Create and download support package
- Download audit trail
- Download sample list template

Tap **Data** on the toolbar to access the Data screen.

Figure 153. Data button on the toolbar.

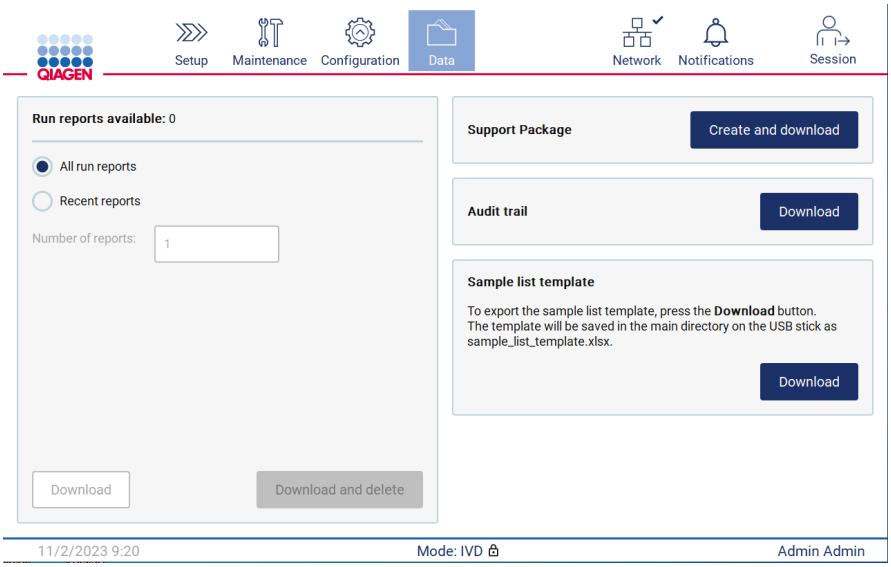


Figure 154. Data screen.

5.14.1. Run reports

If there is currently no run report on the instrument, the **Download** and the **Download and delete** buttons are disabled.

If run reports are available, tap either one of the available options below:

- All run reports
- Recent reports, for this option you should also specify the number of reports

Tap either **Download** or **Download and delete**.

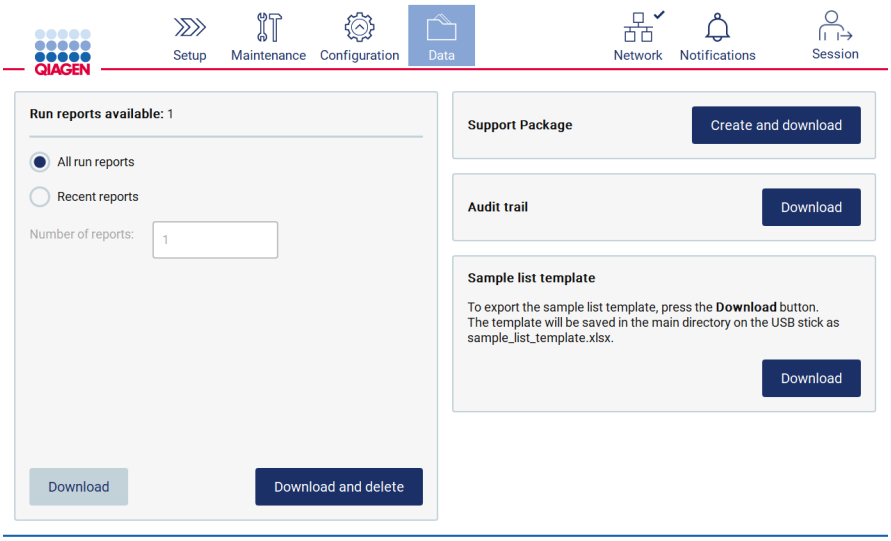


Figure 155. Data tab.

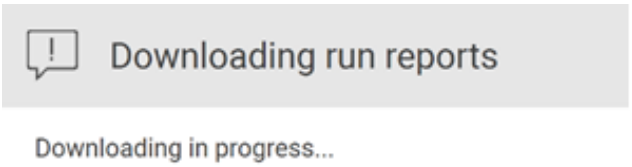


Figure 156. Download reports in progress.

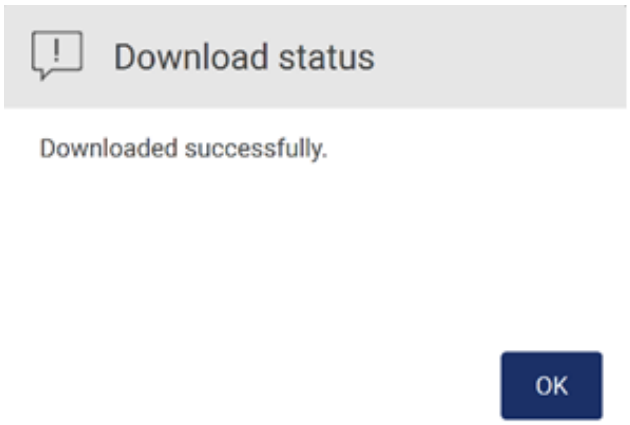


Figure 157. Report download successful.

If **Download and delete** is selected, the following screen is displayed prior to start of the delete process.

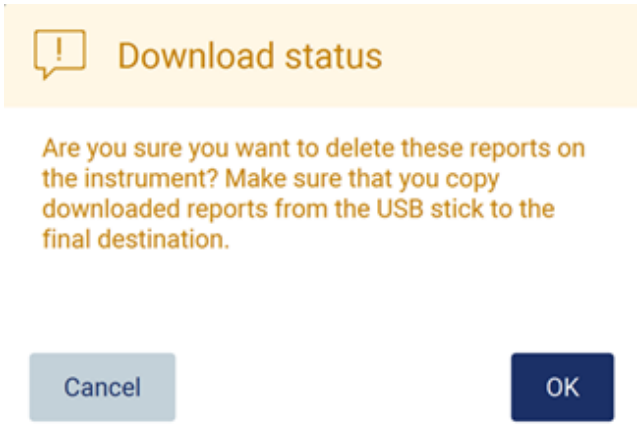


Figure 158. Confirm delete run reports.

Tap **OK** to confirm deletion, or **Cancel** to go back. Downloaded files should be copied from the USB stick to a final destination of the user's choosing.

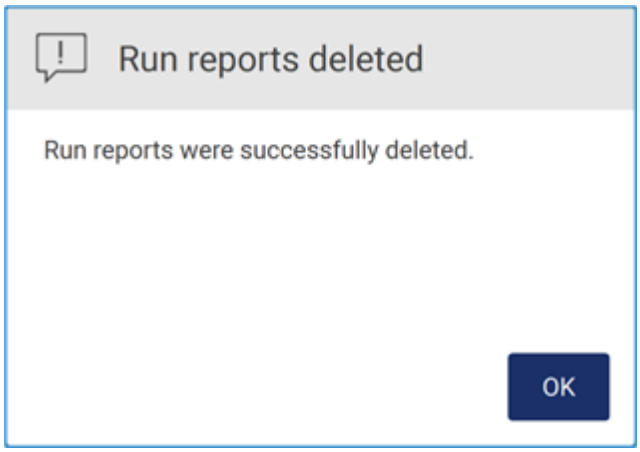


Figure 159. Run reports deleted confirmation.

Tap **OK** to complete process.

If no USB drive is inserted, the following screen is displayed:

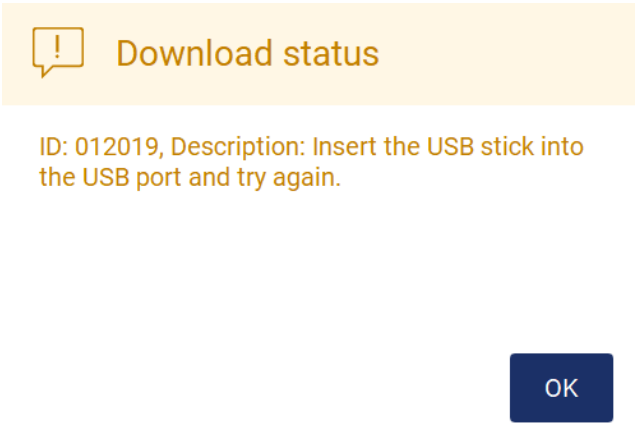


Figure 160. USB drive not inserted.

Insert a USB drive and attempt the process again.

5.14.2. Support package

Detailed instruction can be found in Section 7.1.1.

5.14.3. Audit trail

Note: Download of the Audit trail file(s) is only available to Admin users.

Tap the **Download** button, in the Audit trail section of the Data screen. The following screen is displayed:

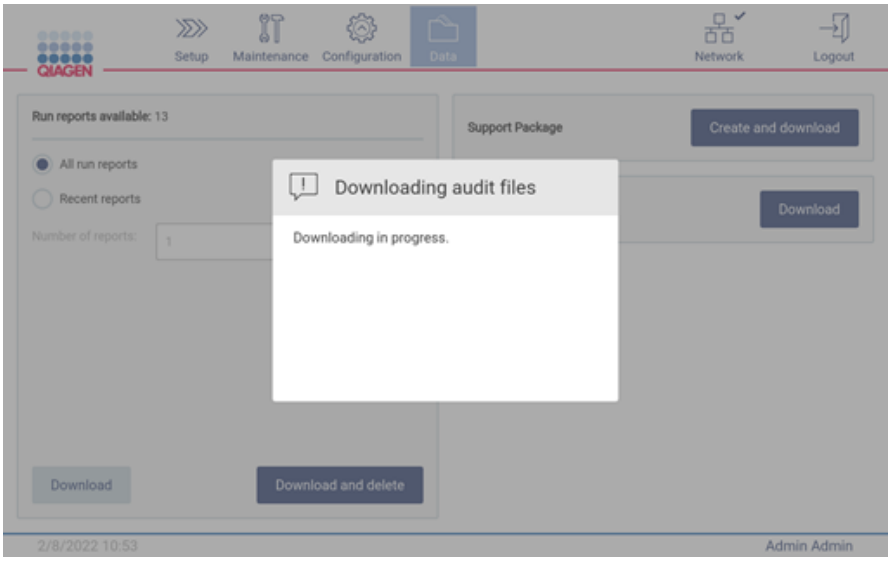


Figure 161. Download audit trail in progress.

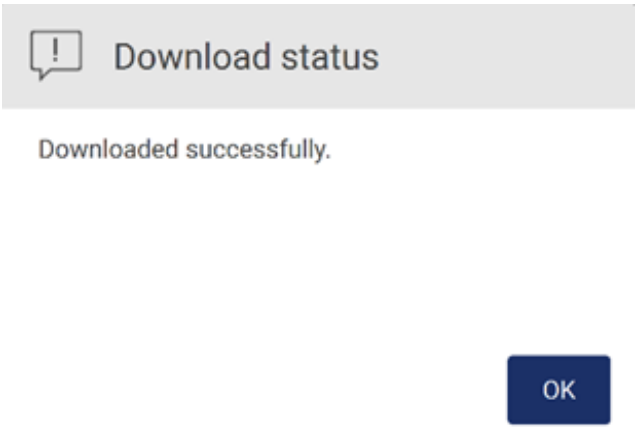


Figure 162. Audit trail download successful.

If no USB drive is inserted the following is displayed:

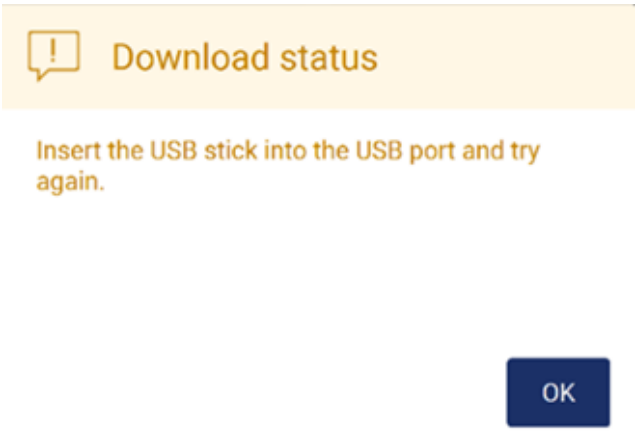


Figure 163. USB drive not inserted.

Insert a USB drive and attempt the process again.

5.14.4. Sample list template

The sample list template is an ***.xlsx** file that can be used to pre-define sample positions, sample IDs and optional sample notes. It can be filled-in on an external PC by using a spreadsheet calculation software and uploaded to the EZ2 Connect during protocol run setup.

Note: Download of a sample list template is only available to Admin users.

1. To download the sample list template tap the **Download** button in the sample list template section of the data screen.

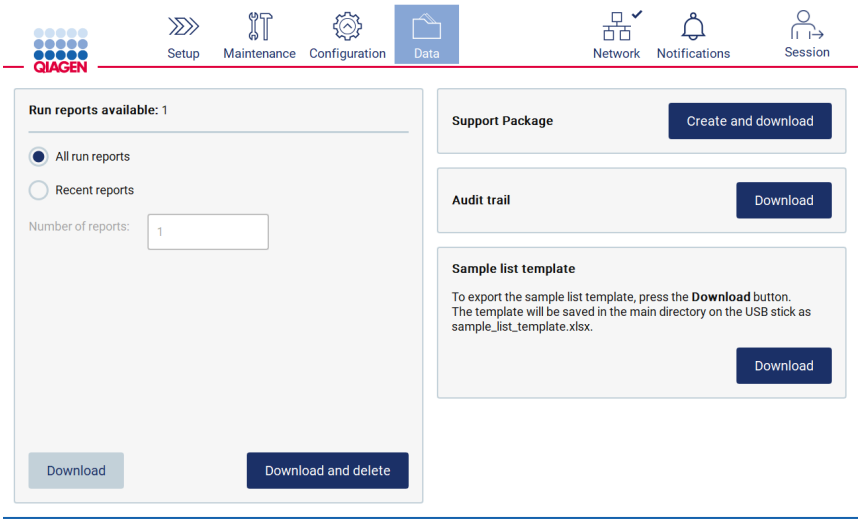


Figure 164. Data screen.

2. Wait until the download is completed and confirm by tapping **OK** on the pop-up window.

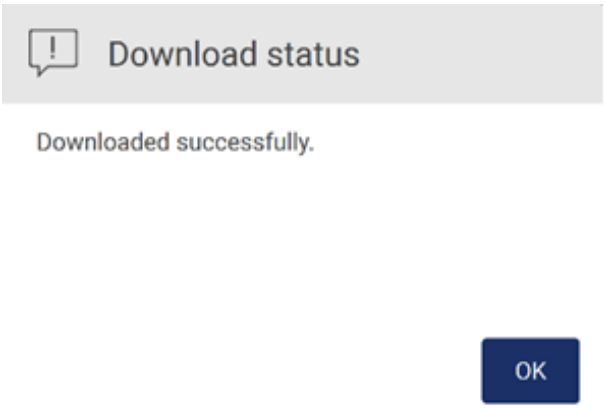


Figure 165. Download successful pop-up window.

3. Use an external PC with a spreadsheet calculation software to open and edit the template.
4. Fill out the sample IDs of the used sample positions in the table. It is possible to leave positions empty. It is optional to add sample notes.

Position	Sample ID	Note
1	Example ID 1	Example Note (Optional)
2	Example ID 2	
3	Example ID 3	
4		
5		
6		

Figure 166. Sample list template.

5.15. Session handling

Tap the **Session** button to open the Session handling window (Figure 167). The Session handling dialog box offers two options: **Screen Lock** and **Logout** (Figure 168).

Screen Lock allows the screen to be locked while the current session remains active, to prevent unauthorized access to the instrument. To unlock the screen, enter the valid user ID and password. It is possible for another user to take over the session if the screen is locked. To take over the session the **Use different account** button needs to be tapped. After entering the user ID and password, the session gets handed over to the user with the corresponding log in data. The handover is logged in the audit trail.

Logout allows to end the current session. To log out of the software, tap the **Logout** button.

To switch the instrument off, press the power button.

Important: Do not switch the instrument off when a protocol run, or maintenance procedure, or file transfer is in progress. This could result in damage to the instrument and samples and/or data may be lost.

Figure 167. Location of the Session button.

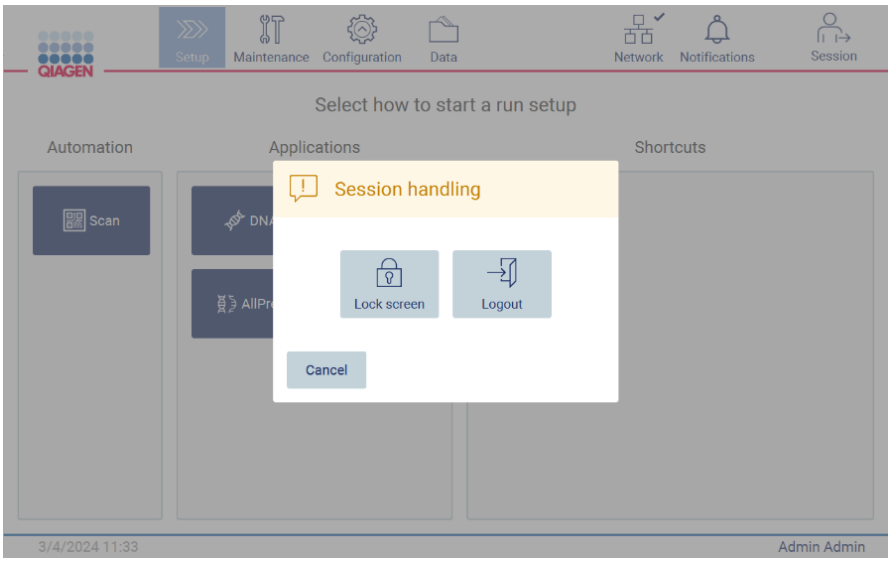


Figure 168. Session handling dialog window.

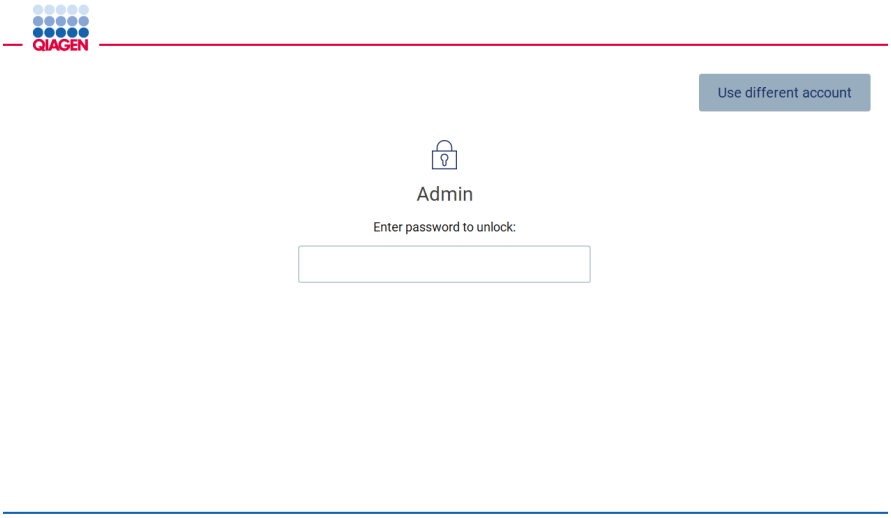


Figure 169. Lock screen.

5.16. Notifications and banners

The **Notifications** icon changes the status, if new warning, errors, and important info notification appears in the system. The Notifications icon has two states:

- — There are no new notifications.
- — There is at least one new notification.

Tap the **Notifications** icon to check the notifications. The notification list is divided into three sections: errors (red), warnings (yellow), information, and notifications (gray) in the particular section are sorted by date.

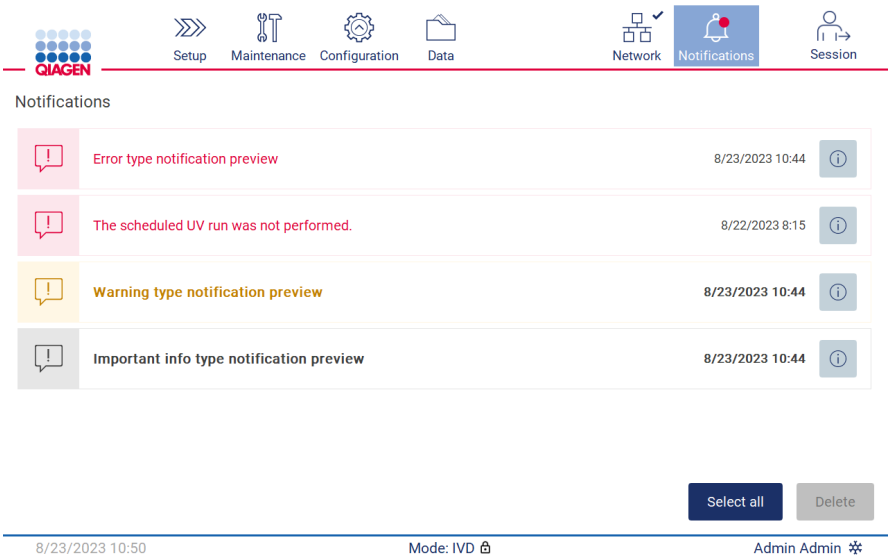


Figure 170. Notification center.

To see detailed description of the info listed in the notification center tap the info icon ( ).

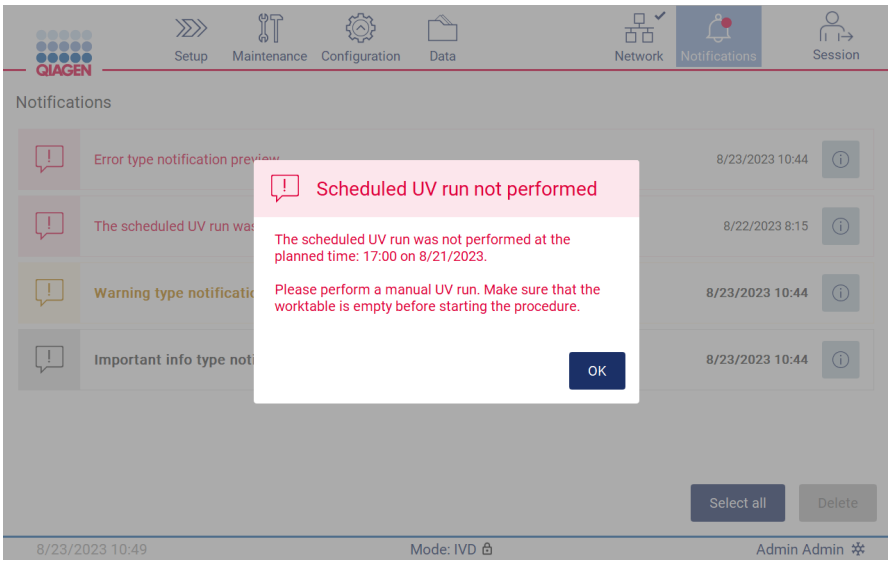


Figure 171. Detailed information in notifications.

Notification banners may also appear in every environment except the run setup workflow (if the setup is started and the run is performing). The newest three notifications are visible on the screen. The latest is always displayed on the top. If multiple notification banners pop out on the screen, only the latest three will be displayed. The screen is blocked until all notifications are closed. To see the rest of the notifications tap the **Notifications** icon on top.

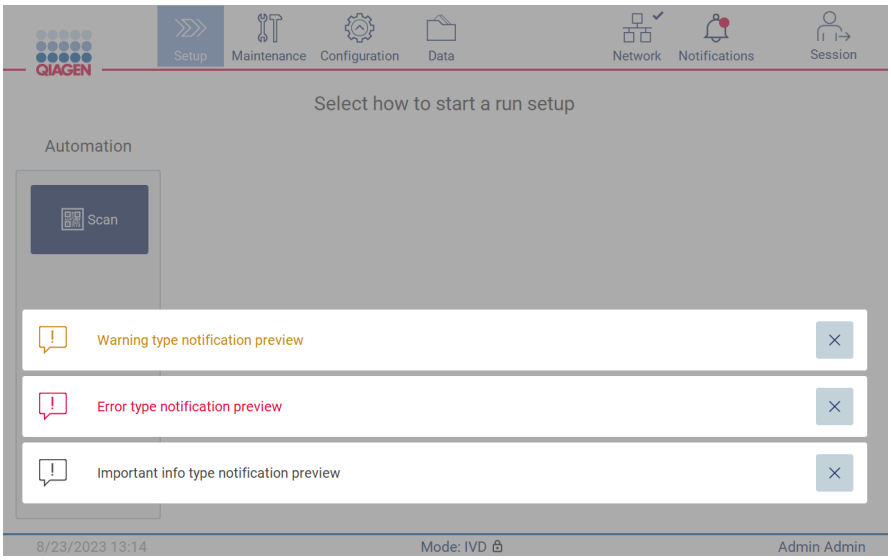


Figure 172. Notification banners on the startup page.

The banners appear on the bottom of the screen when the user starts a background task (e.g., cooling after the run or scheduled UV run). When the banners are displayed, the rest of the screen becomes inactive until all banners have been closed by tapping **X**.

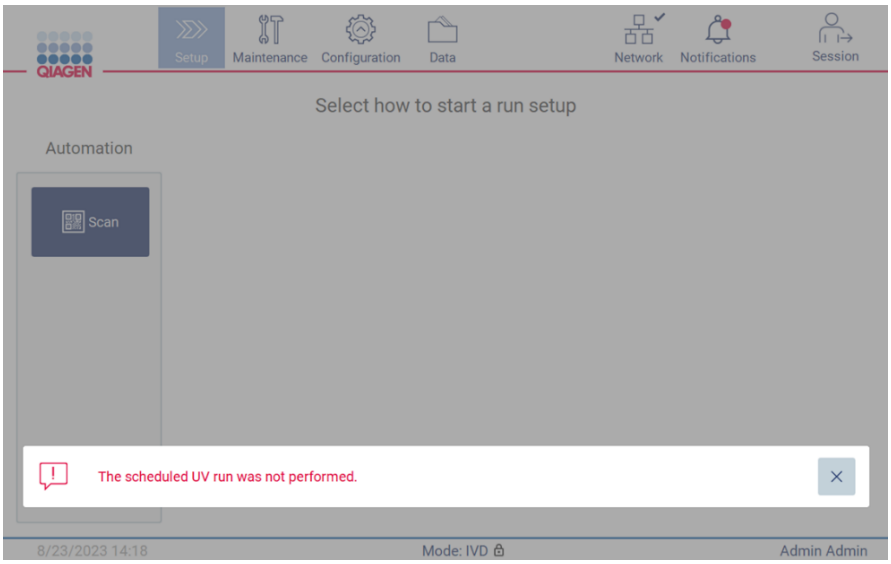


Figure 173. Background task banner.

The background task banner will also appear by tapping on the status icon in the footer (UV or snowflake). The icon appears only when a background task is running.

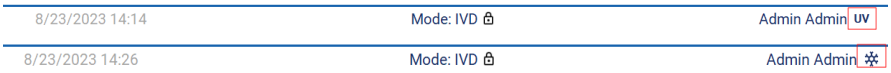


Figure 174. Status icons indicating a specific background task.

5.17. Cooling after run

The software supports cooling of the heating system to 35°C after a finished protocol run, for applications that require a cold instrument at the start of a protocol run (see the respective kit handbook).

The cooling will start if:

- The **Finish** button on the Protocol run completed/aborted/failed screen is activated.
- The heating system temperature is above 35°C.
- The hood is closed.

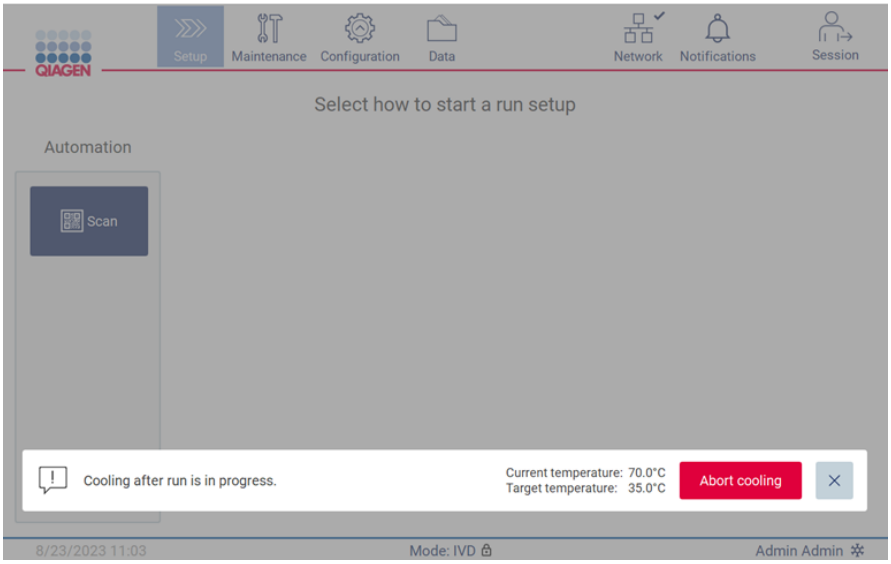


Figure 175. Cooling after run is in progress banner.

Note: Cooling stops when the heater reaches 35°C.

The cooling status can be checked in the **Background Tasks** tab in the **Maintenance** environment. The cooling process is indicated by a banner and a snowflake symbol in the lower right corner. The snowflake can be tapped for further information when the banner is closed.

The cooling can be aborted when there is a timeout or by tapping **Abort cooling**.

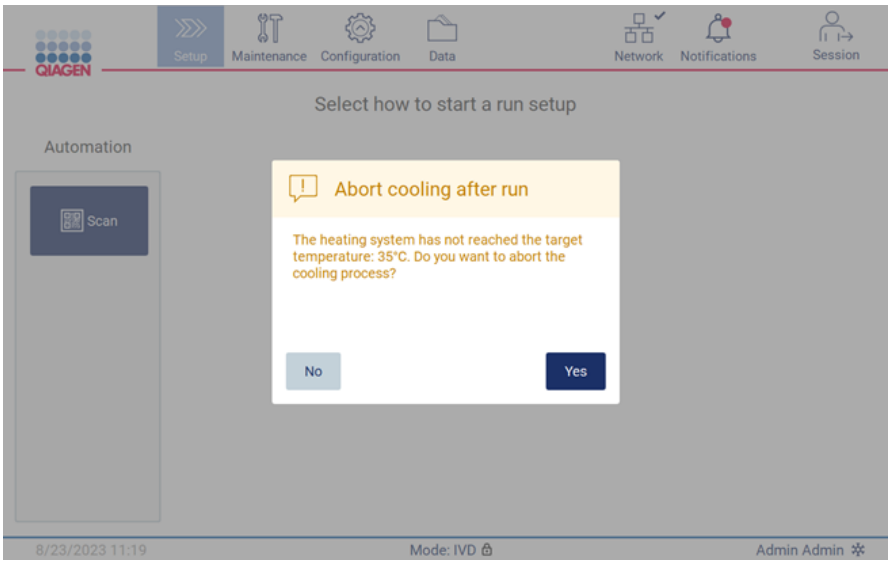


Figure 176. Pop-up window with aborted cooling after run.

6. Maintenance Procedures

WARNING/ CAUTION

Risk of personal injury and material damage

Only perform maintenance that is specifically described in this user manual.

To ensure reliable operation of the EZ2 Connect, maintenance procedures must be performed. The procedures are shown in the table below. Each maintenance procedure must be carried out by appropriate personnel, as specified below.

Table 2. Maintenance schedule

Type of task(s)	Frequency	Personnel
After run maintenance	After each run.	Laboratory technicians or equivalent
Daily maintenance	At the end of each day, if at least one run was performed that day. Note: Perform this procedure after you are done with the after run maintenance.	Laboratory technicians or equivalent
Weekly maintenance	Once a week. Note: Perform this procedure after you are done with the daily maintenance.	Laboratory technicians or equivalent
Annual maintenance and servicing	Annually or semiannually, depending on your requirements (for more information contact QIAGEN Technical Service).	QIAGEN authorized Service Specialists only

Optionally, a UV decontamination procedure may be performed as required to support reducing contaminations (e.g., nucleic acids and *E. coli*). See Section 6.5 (page 143) for further details.

An overview of the status of the maintenance tasks can be found under the **Maintenance** tab. The **Overview** tab displays a table with the tasks listed, when they were last performed, and when they should be performed again. Additionally, the table has a column with an icon that warns of overdue maintenance.

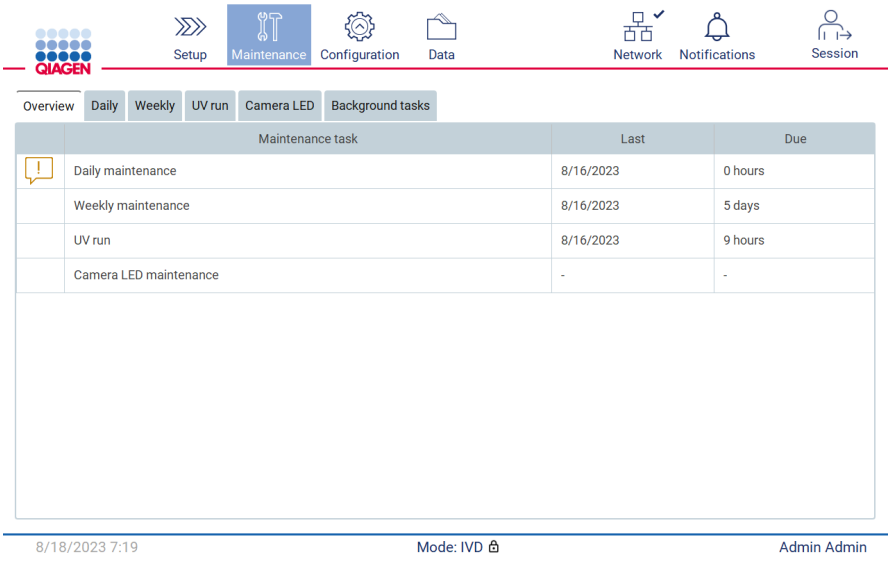


Figure 177. Maintenance overview.

The **Background tasks** tab presents a table with the running or inactive background activities (e.g., cooling after run or scheduled UV run).The background task is indicated by a banner and by a sign in the lower right corner. In case of a running active cooling process, a snowflake is shown (Figure 178). A scheduled UV run is indicated by a UV sign.

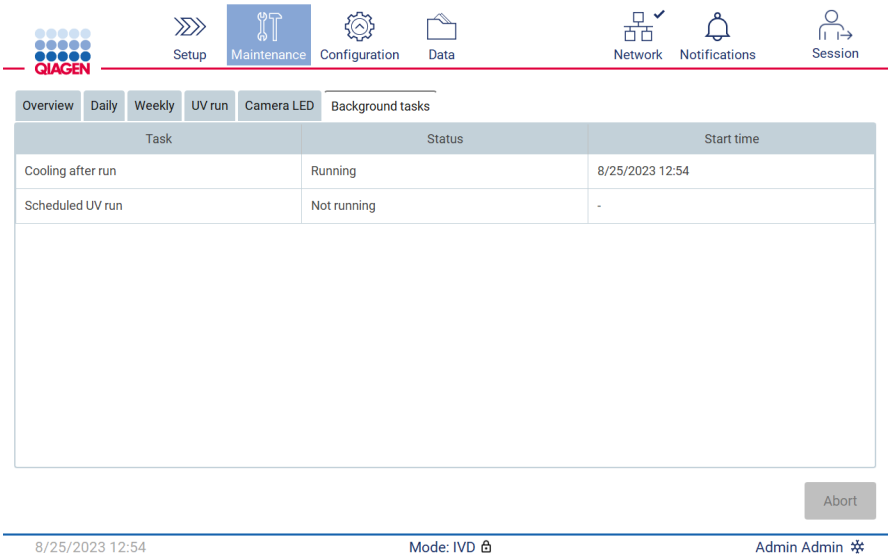


Figure 178. Background tasks tab.

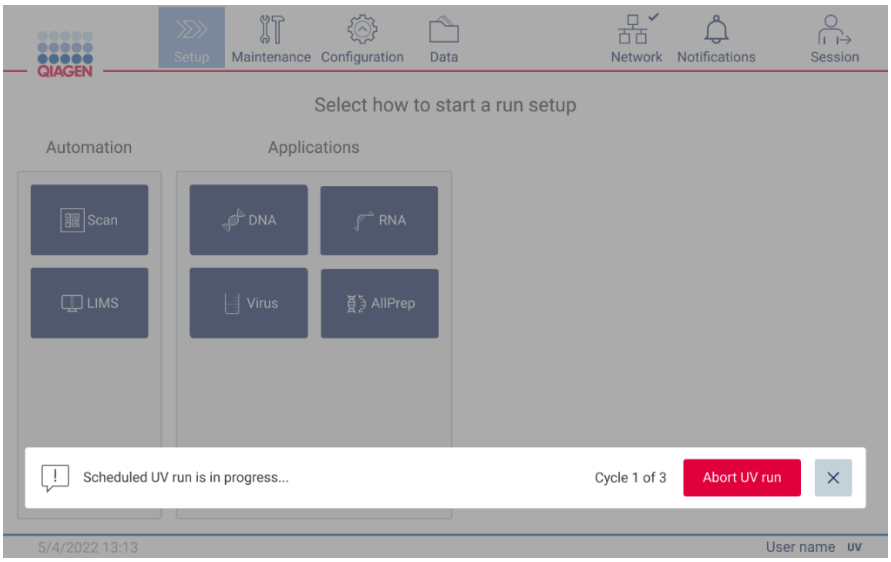


Figure 179. Scheduled UV run is running.

6.1. Cleaning agents

The surfaces and removable parts of the EZ2 Connect must be cleaned and disinfected with compatible detergents and disinfectants. Please follow the instructions provided by the manufacturer of such materials to safely clean the instrument.

Note: If you want to use different disinfectants than the recommended ones, make sure that they have the same composition.

If you are unsure about the suitability of the detergents or disinfectants to be used with the EZ2 Connect, do not use them.

General cleaning of the EZ2 Connect, with the exception of the hood, can be done using mild detergents/disinfectant, such as the Mikrozid® AF (**www.schuelke.com**), or 70% ethanol. The hood should ONLY be cleaned with lint-free tissue moistened with water.

WARNING **Toxic fumes**

Do not use bleach to clean or disinfect the EZ2 Connect or the labware, as bleach in contact with salts from the buffers can produce toxic fumes.

CAUTION **Damage to the instrument**

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the EZ2 Connect. Spray bottles should be used only to clean items that have been removed from the worktable and if permitted by local laboratory operating practices.

WARNING **Risk of fire**

Do not allow cleaning fluid or decontamination agents to come into contact with the electrical parts of the EZ2 Connect.

WARNING **Risk of electric shock**

Do not open any panels on theEZ2 Connect.

Risk of personal injury and material damage

Only perform maintenance that is specifically described in this user manual. Any other maintenance or repair may only be carried out by authorized field service.

WARNING **Risk of fire or explosion**

When using ethanol or ethanol-based liquids on the EZ2 Connect, handle such liquids carefully and in accordance with the required safety regulations. If liquid has been spilled, wipe it off and leave the EZ2 Connect hood open to allow flammable vapors to disperse.

6.1.1. Disinfecting the EZ2 Connect

Ethanol-based disinfectants can be used for disinfecting surfaces such as the worktable. An example of ethanol-based disinfectant are the Mikrozid Liquid (Mikrozid Liquid consists of 25 g ethanol and 35 g 1-propanol per 100 g) or Mikrozid AF wipes. These are available from Schülke & Mayr GmbH, see (e.g., cat. no. 109203 or 109160). For countries where Mikrozid Liquid is not available, 70% ethanol can be used.

Disinfectants based on quaternary ammonium salt can be used for racks, worktable, and the magnet. Example of such disinfectant is the Lysetol® AF/Gigasept® Instru AF (Schülke & Mayr GmbH). These disinfectants consist of around 15 g cocospropylene–diamine–guanidine diacetate, 35 g phenoxypropanols, and 2.5 g benzalkonium chloride per 100 g, with anticorrosion components, fragrance, and 15–30% nonionic surfactants.

Note: If you want to use different disinfectants than the recommended ones, make sure that they have the same composition.

Important: Always follow the manufacturer's instructions when preparing disinfectants.

Note: The hood and touchscreen should ONLY be cleaned with lint-free tissue moistened with water.

CAUTION **Damage to the instrument**

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the EZ2 Connect. Spray bottles should be used only to clean items that have been removed from the worktable and if permitted by local laboratory operating practices.

6.1.2. Removing contamination

The EZ2 Connect could be contaminated during operation. To remove the contamination, use appropriate decontamination solutions.

In case of RNase contamination, the RNaseZap® RNase Decontamination Solution (Ambion, Inc., cat. no AM9780) can be used for cleaning surfaces and submerging worktable items. RNaseZap can also be used to perform decontamination by spraying worktable items if they have been removed from the instrument.

In case of nucleic acid contamination, DNA/RNA-ExitusPlus™ (AppliChem, cat. no. A7089,0100) can be used for cleaning surfaces and submerging worktable items. DNA/RNA-ExitusPlus can also be used to perform decontamination by spraying worktable items if they have been removed from the instrument. Cleaning with DNA/RNA-ExitusPlus can leave a residue on surfaces so for this reason, after cleaning the items with DNA/RNA-ExitusPlus, it is required to clean the items with a wet cloth several times, or rinse them with running water, until the DNA/RNA-ExitusPlus is completely removed.

Note: Always carefully follow the manufacturer's instructions when using decontamination solutions.

6.2. After run maintenance

After run maintenance is required after each run of the EZ2 Connect.

The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained.

Servicing of the EZ2 Connect must only be performed by QIAGEN Field Service specialists.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

WARNING **Moving parts**

Avoid contact with moving parts during operation of the EZ2 Connect. Under no circumstances should hands be placed under the pipetting unit during movement. Do not attempt to remove any plasticware from the worktable while the instrument is operating.

WARNING/ CAUTION **Risk of personal injury and material damage**

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

WARNING **Samples containing infectious agents**

Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Some chemicals used with the EZ2 Connect may be hazardous or may become hazardous after completion of a purification.

Always wear safety glasses, gloves, and a lab coat.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

Materials used on the EZ2 Connect, such as human blood, serum, or plasma, are potentially infectious. Thus, the EZ2 Connect should be decontaminated after use (for more details, see Sections 6.1.1 and 6.1.2).

After running a protocol, perform the after run maintenance as described below. The after run maintenance must be performed to avoid inhibitor carry over to the next run.

Note: Make sure that the eluates have been retrieved, closed and labelled and stored according to the respective kit handbook before performing after run maintenance.

Note: You need to conduct the after run maintenance (as displayed on the GUI) before you press the Finish button. Once pressed, cooling of the instruments starts.

1. Remove all sample preparation waste and discard it according to your local safety regulations.
2. If position 11 of the reagent cartridge has been equipped with a tube, this can either be removed before removing the reagent cartridge, but it is also possible to lift the cartridge rack with the tube inside.
3. Close the hood.

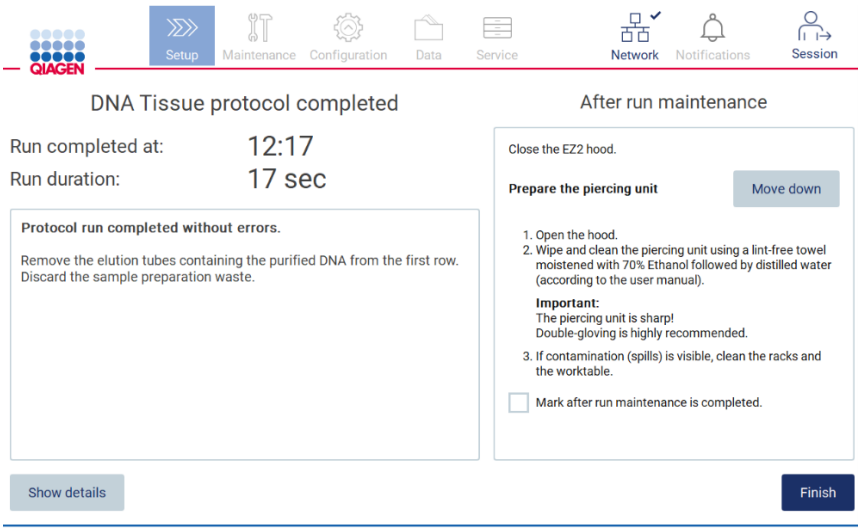


Figure 180. Protocol run completed screen.

4. Put on gloves; two pairs are recommended as the piercing unit is sharp.
5. To prepare the piercing unit, tap **Move down**. The instrument lowers the piercing unit of the pipettor head.
6. Open the hood.
7. Carefully wipe the piercing unit using a lint-free tissue moistened with 70% ethanol. Enclose each individual piercing spike with the tissue, apply firm pressure and twist several times. Repeat for all piercing spikes.

Figure 181. Cleaning the EZ2 Connect piercing unit.

8. Carefully wipe the piercing unit with a lint-free tissue moistened with distilled water. Enclose individual piercing spike with the tissue, apply firm pressure and twist several times. Repeat for all piercing spikes.
9. Close the hood.

10. To document the cleaning procedure in the run report, confirm that the maintenance has been completed by activating the checkbox on the touchscreen.
11. On the touchscreen, tap **Finish**. The "cooling-after-run" procedure starts, and the piercing unit returns to its home position.
12. Open the hood.
13. If contamination is visible on the worktable, clean it with 70% ethanol, and then with distilled water.

6.3. Daily maintenance

Daily maintenance is required after the last run of each day.

WARNING **Moving parts**

To avoid contact with moving parts during the operation of the EZ2 Connect, the instrument must be operated with the hood closed.

If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

WARNING **Moving parts**

Avoid contact with moving parts during operation of the EZ2 Connect. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the worktable while the instrument is operating.

WARNING/ CAUTION **Risk of personal injury and material damage**

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

WARNING **Samples containing infectious agents**

Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Some chemicals used with the EZ2 Connect may be hazardous or may become hazardous after completion of a purification.

Always wear safety glasses, gloves, and a lab coat.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

1. On the touchscreen, tap **Maintenance**.
2. Tap **Daily**. The date of the last finished procedure is shown on the screen.

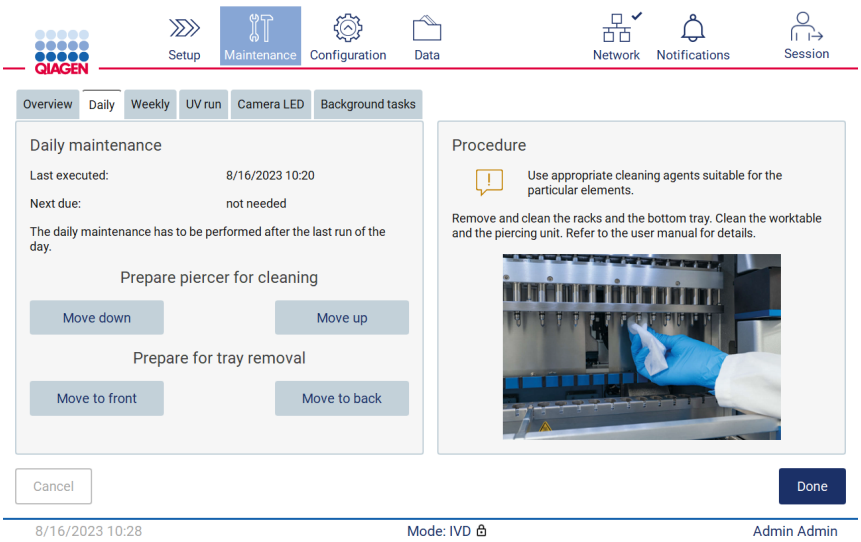


Figure 182. Daily maintenance screen.

3. Put on gloves.
4. Clean the piercing unit (if this is not yet done during after run maintenance).
   a. To prepare the piercing unit for cleaning, tap **Move down**.
   b. Open the hood.
   c. Clean the piercing unit as recommended in Section 6.2 (see page 135).
5. Clean the worktable with 70% ethanol or Mikrozid AF, and then with distilled water (if this is not yet done during after run maintenance).
6. Close the hood.
7. To return the piercing unit to home position, tap **Move up**.
8. To allow bottom tray removal, tap **Move to back**.

   Note: Left bottom tray must be removed first.

9. Clean the bottom tray with 70% ethanol, and then with distilled water.

   Note: After removal of the bottom tray for cleaning purposes, ensure it is correctly reinstalled. The right bottom tray must be inserted first.

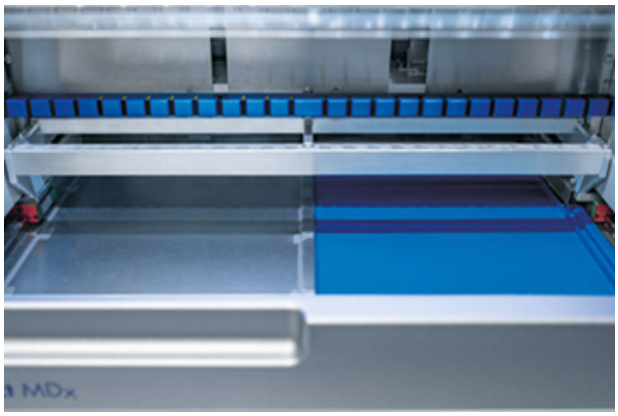


Figure 183. -A. Right side of the bottom tray installed.

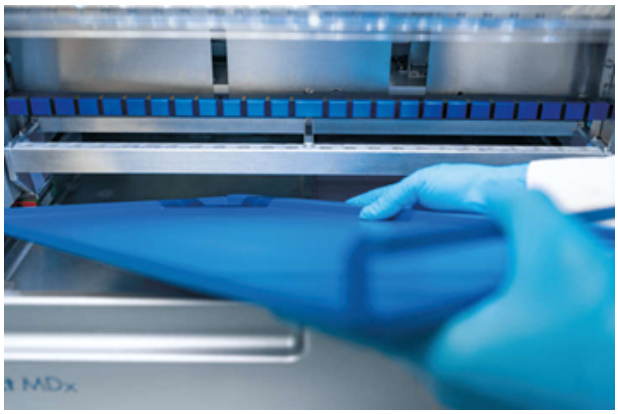


Figure 183-B. Installing left side of the bottom tray.

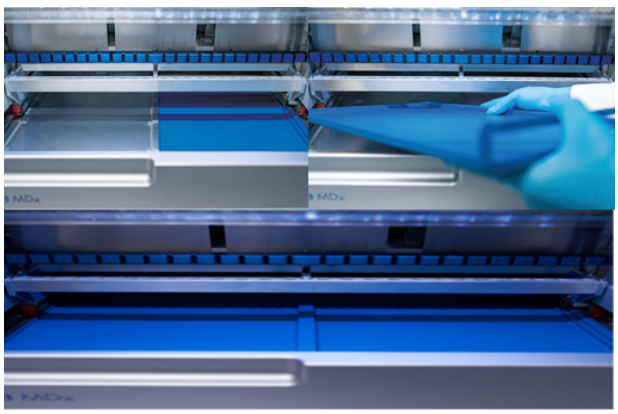


Figure 183-C. Correct installation of the bottom trays.

10. Wipe the cartridge and tip racks with 70% ethanol or Mikrozid AF, and then with distilled water.
11. Wipe the surface of the instrument using a lint-free tissue moistened with 70% ethanol.
12. Tap **Move to front**. Racks can now be inserted into the instrument again.

Note: The hood and touchscreen should ONLY be cleaned with lint-free tissue moistened with water.

6.4. Weekly maintenance

WARNING/ CAUTION

Risk of personal injury and material damage

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

WARNING

Samples containing infectious agents

Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Some chemicals used with the EZ2 Connect may be hazardous or may become hazardous after completion of a purification.

Always wear safety glasses, gloves, and a lab coat.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

Important: Before starting the weekly maintenance procedure, complete the "Daily maintenance".

To maintain good contact between tip adapters and filter-tips, and to prevent liquid leaking from the tips, a light application of grease should be applied to the D-rings (on tip adapter) of the tip adapters every week.

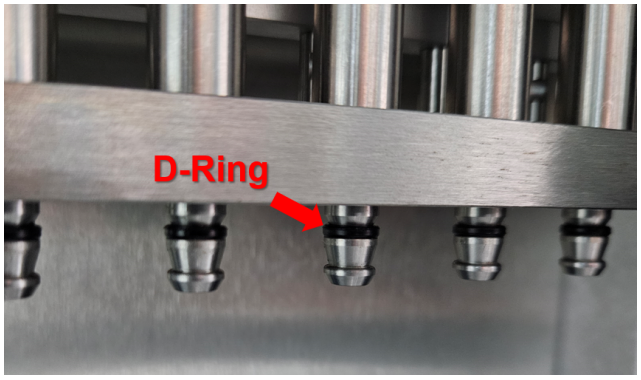


Figure 184. Tip adapter with a highlighted D-Ring.

1. On the touchscreen, tap **Maintenance**.
2. Tap **Weekly maintenance**. The date the weekly maintenance procedure was last completed and the next due date are shown on the screen.

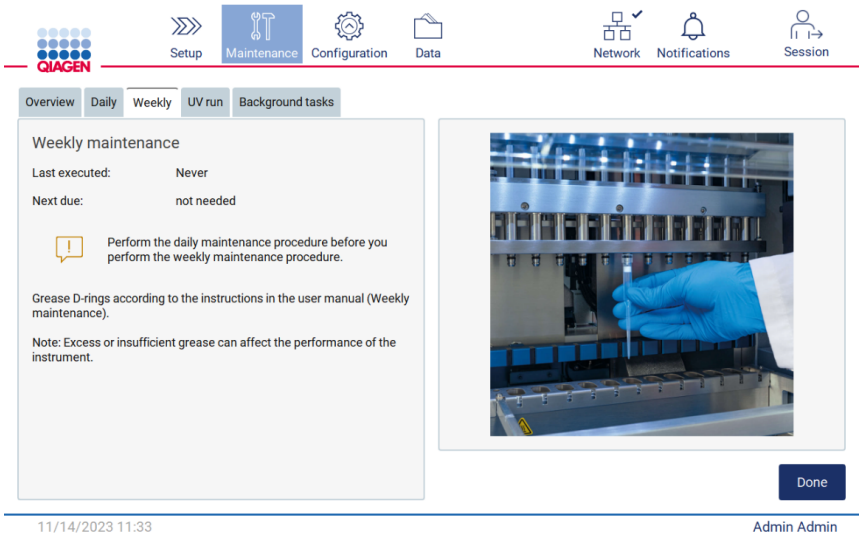


Figure 185. Weekly maintenance screen.

3. Put on gloves.
4. Clean the D-rings (on tip adapter) with a lint-free tissue to remove any previously applied grease.
5. Apply a small amount of silicon grease (see Appendix B – EZ2 Connect Parts and Components/Consumables) onto the inner wall of the large end of a fresh filter-tip by using the fine end of a second fresh tip.

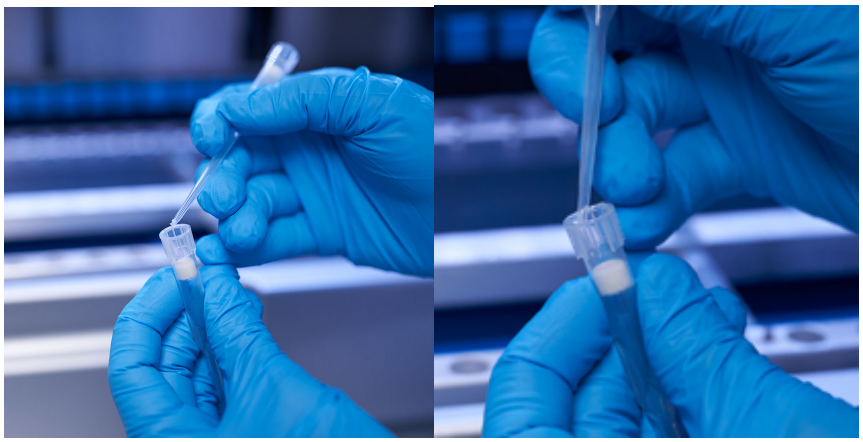


Figure 186. Preparation of filter tips for grease application.

6. Place the previously prepared filter-tip with grease applied to the inner wall at the wide end onto each tip adapter subsequently, and rotate the filter-tip on the tip adapters to distribute the silicon grease evenly. The same tip can be used for the distribution of grease on all D-rings. Apply new grease into the filter tip after every four tip adapters according to the previous step.
7. Make sure that the D-rings are only moistened with grease and that there are no visible grease residues. Residues should be removed with lint-free cloth and greasing restarted.

8. Make sure that there is no grease present on parts other than the D-rings, especially on the bar on top and the opening of the pipettors (see Figure 187).

   Note: Excess or insufficient grease can affect the performance of the EZ2 Connect.

   Note: The opening in the nub of the pipettor should be checked after greasing to ensure no grease is present within the opening.

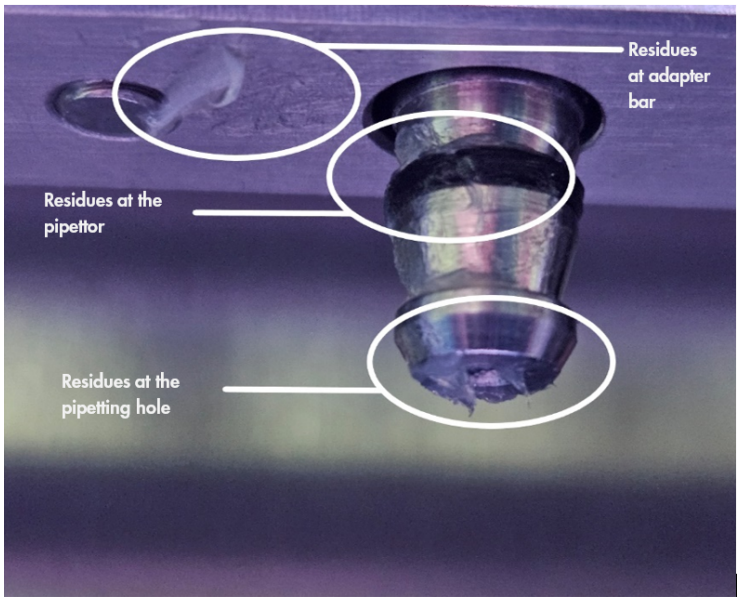


Figure 187. Example of an overgreased tip adapter. All marked spots should be checked and all visible grease residues should be removed.

6.5. UV decontamination

WARNING/ CAUTION

Risk of personal injury and material damage

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

WARNING

Samples containing infectious agents

Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations.

Some chemicals used with the EZ2 Connect may be hazardous or may become hazardous after completion of a purification.

Always wear safety glasses, gloves, and a lab coat.

Venting for fumes and disposal of waste must be in accordance with all national, state, and local health and safety regulations and laws.

WARNING

UV radiation

Avoid looking directly into UV light. Do not expose your skin to UV light.

Important: Before starting the UV decontamination, complete the Daily maintenance (Section 6.3) and ensure that the labware is removed from the instrument. The racks are not affected by the UV light and must be inserted before the UV run.

Note: The bottom trays should be inserted before the UV run is started.

Note: For a proper decontamination of the system, QIAGEN recommends to additionally wiping the surfaces with disinfectants. The procedure is described in Section 6.1.1.

The UV run can be set manually (for all users) or in scheduled mode (only for Administrator and service users).

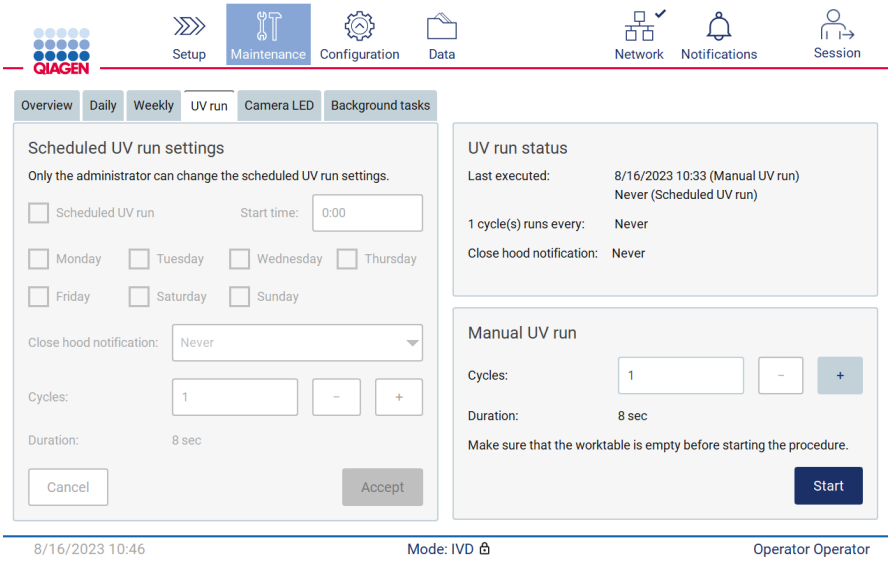


Figure 188. UV run maintenance tab with manual UV run settings (for user roles: Operator and Advanced user).

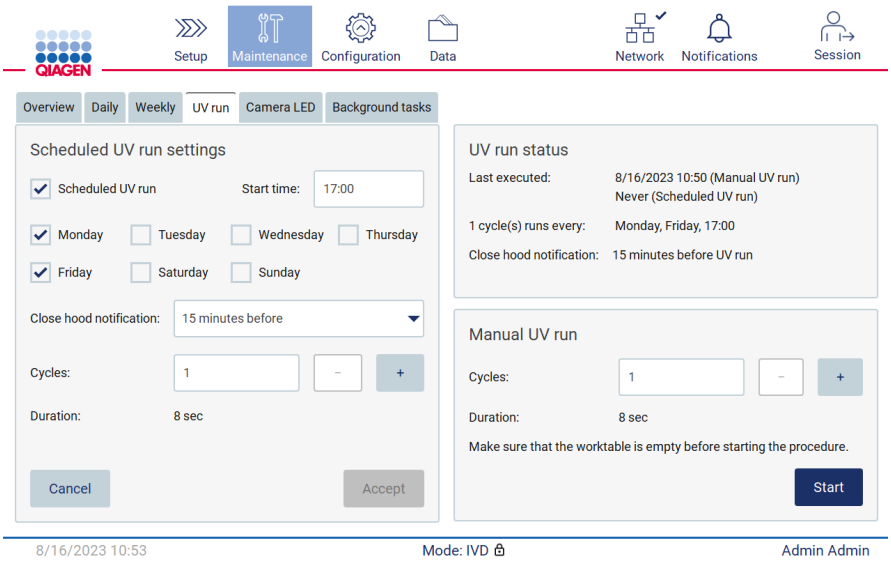


Figure 189. UV run maintenance tab with scheduled UV run turned on (for Administrator).

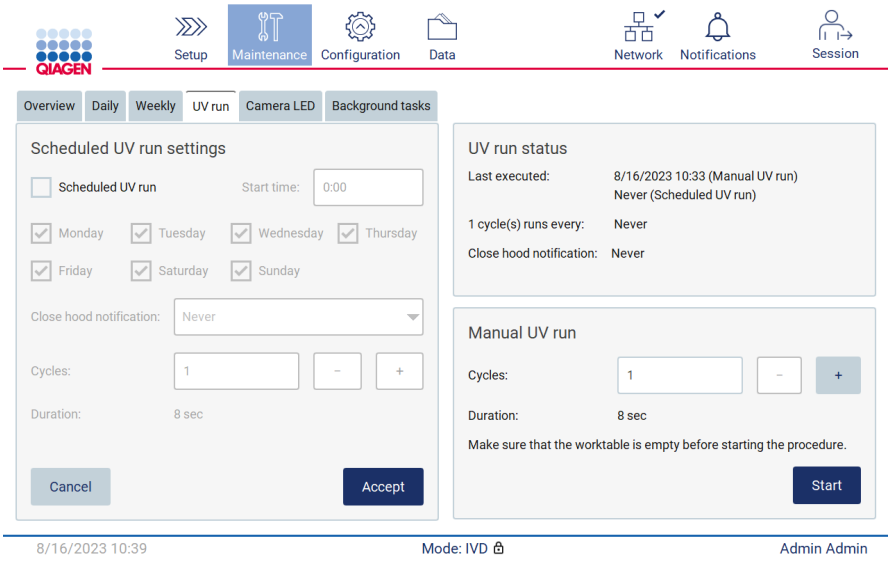


Figure 190. UV run maintenance tab with scheduled UV run turned off (for Administrator).

6.5.1. Manual UV run

1. Close the hood.
2. On the touchscreen, tap **Maintenance**.

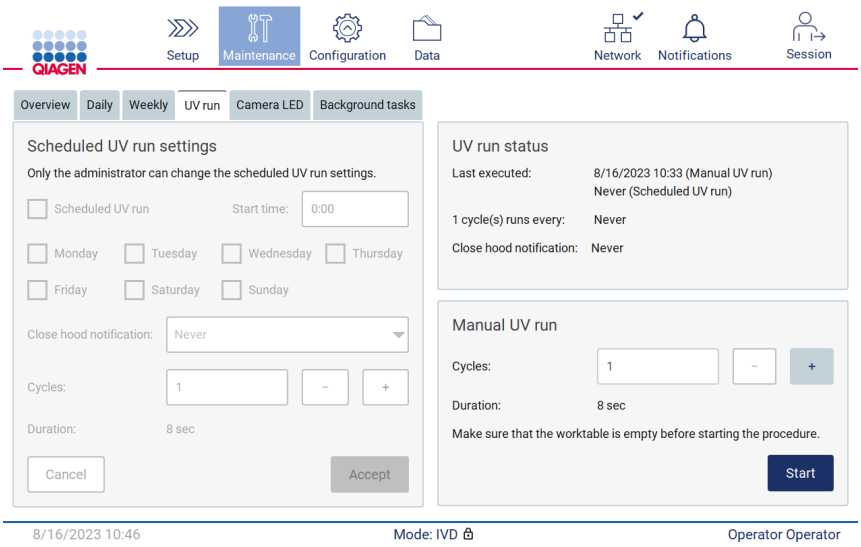


Figure 191. Manual UV run section in the UV run tab (user without Administrator rights view).

3. Tap **UV run**. The date when the procedure was last completed is shown on the screen.
4. Select the number of decontamination cycles. The required decontamination time depends on the biological material processed on the device. One cycle takes around 34 minutes.

5. To begin the procedure, tap **Start**.

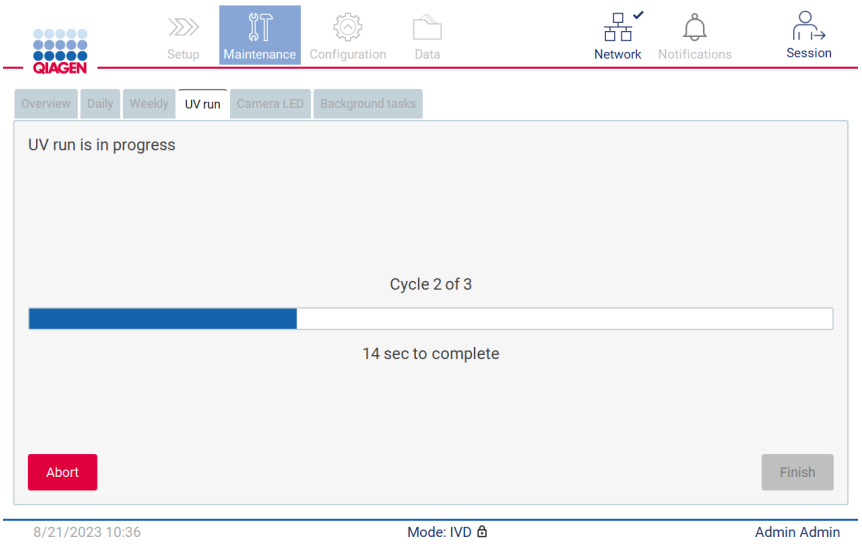


Figure 192. UV run is in progress screen.

6. If there is a need to abort the UV cycle prior to completion, tap the **Abort** button.

   Important: The UV cycle will not stop immediately upon **selecting** Abort; the system will need to complete the currently running step of the cycle, this can take up to 2 minutes.

7. A message (see the Figure 193 below) is displayed after execution of the UV run. Tap **Finish** to complete the UV run.

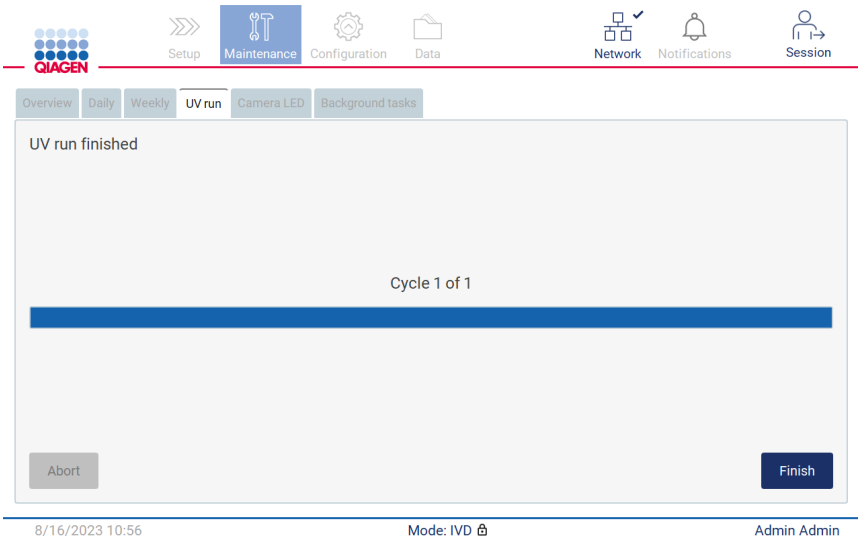


Figure 193. UV run finished screen.

6.5.2. Scheduled UV run

The UV run tab allows the Administrator and service user to set a scheduled UV run on the instrument.

1. On the touchscreen, tap **Maintenance**.
2. Tap UV run. The date of the last procedure is shown on the screen.
3. Enable the “Scheduled UV run” checkbox.
    - Set Start time.
    - Set weekdays by selecting corresponding checkboxes.
    - Set time for the Close hood notification.
    - Set number of cycles.

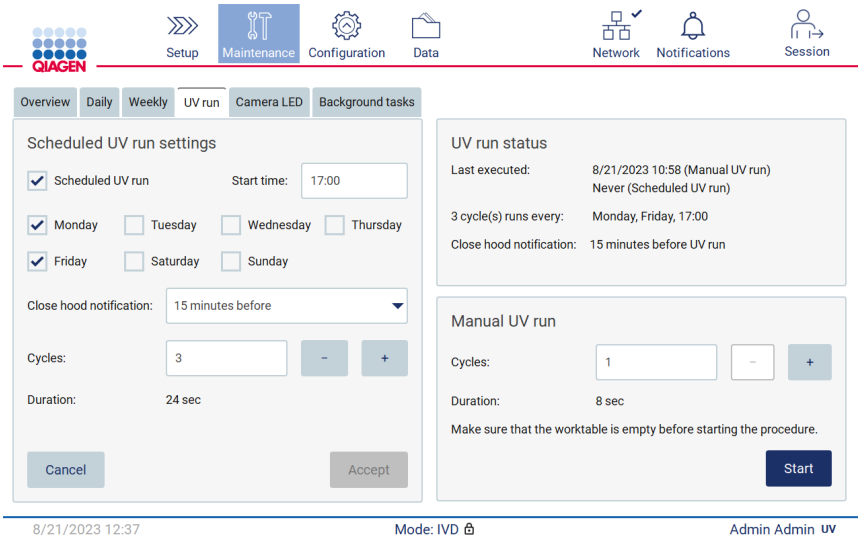


Figure 194. Scheduled UV run settings.

The Close hood notification will inform all users when the scheduled UV run starts and reminds them to remove labware, close the hood, and not turn off the instrument. This notification can be turned off by selecting the **Never** option.

Note: When the instrument is turned off, a protocol run is performed or the hood is open, the scheduled UV run will not be performed. The user will receive a notification that the UV run was not performed.

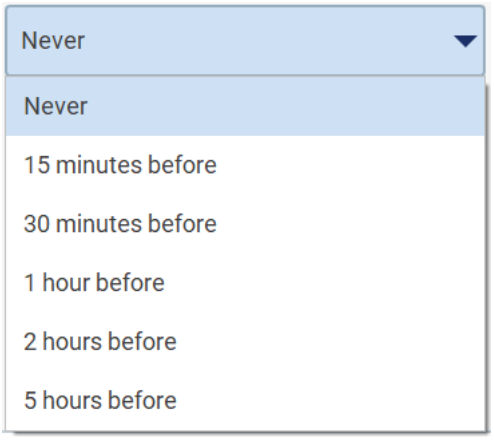


Figure 195. Timeout selection for Close hood notification.

If the Close hood notification is turned on, it will appear before the scheduled UV run:

- At the defined time.
- When the protocol run is finished, aborted, or failed.
- By going back to the home screen from the protocol setup.

The user can go to the **Notification** tab and check details by tapping the **More info** button.

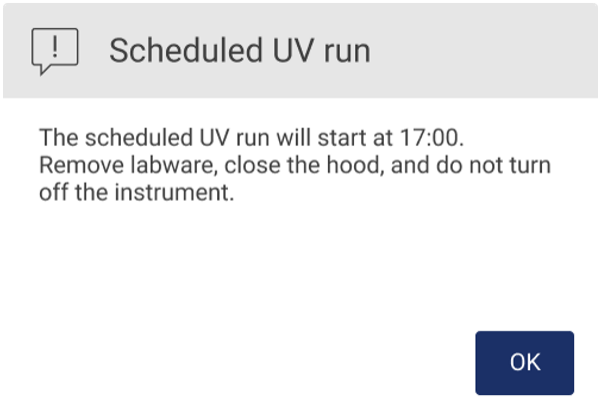


Figure 196. Close the hood notification.

When the UV run starts the scheduled UV run banner appears at the bottom of the screen. Additionally, a UV sign will appear in the lower right corner during the UV run. This sign can be tapped for more information.

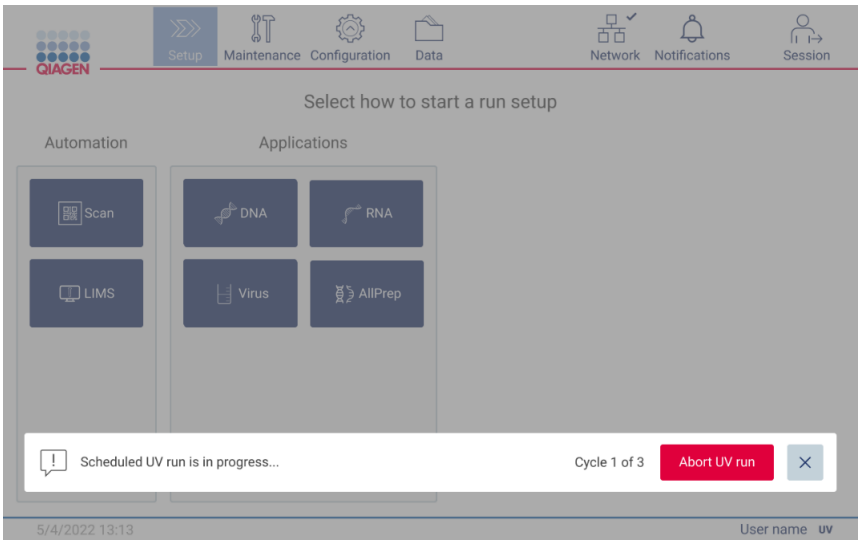


Figure 197. Scheduled UV run is in progress banner.

6.6. Camera calibration

The EZ2 Connect provides an internal camera which performs an inventory scan prior to run execution.

Note: The camera calibration should be performed as part of installation procedure, after moving the instrument, as well as in case of load check issues.

1. On the touchscreen, tap **Maintenance**.
2. Tap **Camera LED**.

Figure 198. Camera exposure calibration screen.

3. Insert empty tip racks (cat. no. 9027009) without the cartridge racks on both sides of the instrument.
4. Close the hood.
5. To begin the procedure, tap **Start**. The camera unit will commence to move across the deck and take a series of exposure images.
6. Press **Finish** after the calibration is completed.

6.7. Servicing

Contact your local QIAGEN Technical Services or your local distributor for more information about flexible Service Support Agreements from QIAGEN.

Note: Before service of the EZ2 Connect can be performed, the instrument must first be decontaminated. Refer to Sections 6.1.1 and 6.1.2 (pages 134 and 134, respectively).

WARNING/ CAUTION

Risk of personal injury and material damage

Improper use of the EZ2 Connect may cause personal injuries or damage to the instrument. The EZ2 Connect must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 Connect must only be performed by a QIAGEN Field Service Specialist.

7. Troubleshooting

This section contains information about what to do if an error occurs when using the EZ2 Connect.

7.1. Contacting QIAGEN Technical Services

Whenever encountering an EZ2 Connect error, be sure to have the following information at hand:

Note: Most of the information listed below can be found in the run report.

- Protocol name and version
- Software version
- Serial number of the instrument, this can be found on the type plate at the rear of the instrument, in the **Configuration** tab in the software or in each run report
- Sample input material, sample volume and sample pre-treatment
- Elution volume
- Detailed description of the error situation
- Support package (Section 7.1.1)
- Kit name and lot number
- Photos of the error conditions (if appropriate)

This information will help you and your QIAGEN Technical Service Specialist to deal most efficiently with your issue.

Note: Information about the latest software and protocol versions can be found at **www.qiagen.com**. In some cases, updates may be available for addressing specific problems.

7.1.1. Creating a support package

The EZ2 Connect can create a support package containing information about the device and the device status. This information will help QIAGEN Technical Services troubleshoot the issue.

1. Log into the EZ2 Connect, if not already logged in.
2. Insert a USB stick into an available USB port.
3. Tap **Data** on the toolbar.

Figure 199. Data button on the toolbar.

4. Tap **Create and download** in the Support Package section.

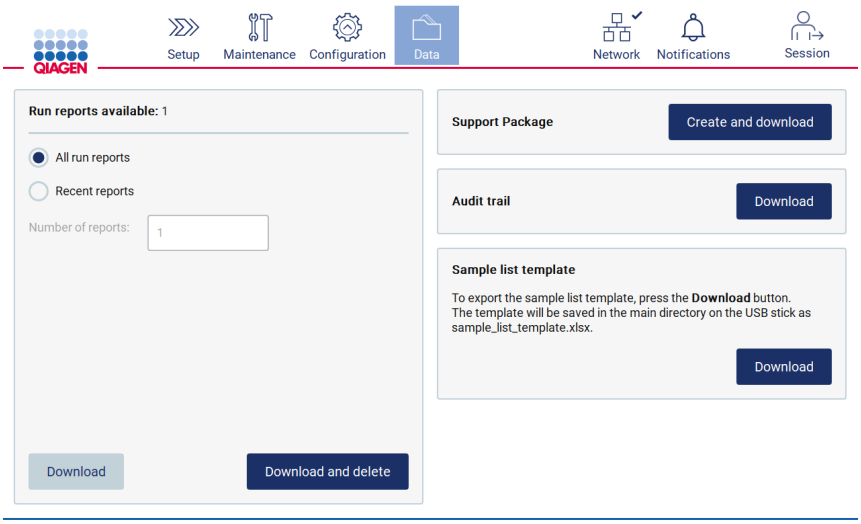


Figure 200. Data tab.

5. The support package is now saved on the USB stick. The download successful screen is displayed. Tap **OK** to close.

   Note: The support package contains information about the last performed runs and hence can contain sensitive information (e.g., sample IDs).

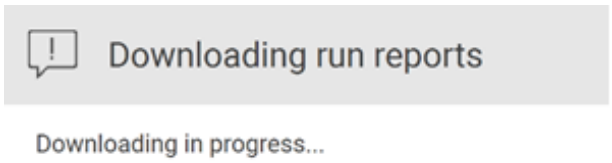


Figure 201. Download successful status.

6. If creation of the support package is not possible, the screen below is displayed and the creation should be attempted again.

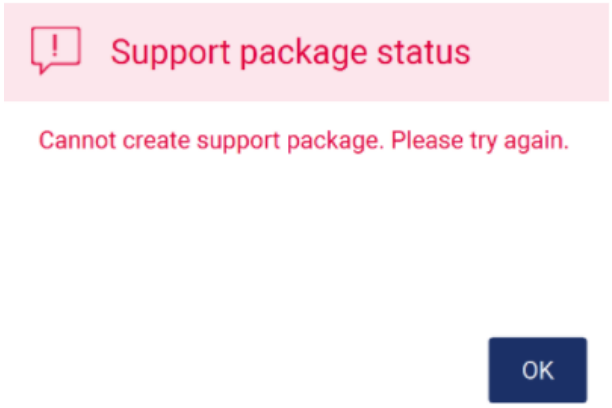


Figure 202. Support package creation failure status.

   Note: The support package contains information about the last performed runs and hence can contain sensitive information.

7.2. Operation

	Comments and suggestions
Load check failed	Perform camera exposure calibration according to Section 4.3.6. Both standard tip racks (not large volume or flip cap racks) must be loaded for the camera exposure calibration. During protocols, both left and right tip rack must be inserted and of the same type rack is used. Racks have to be the same type. Check if there is no contamination (e.g., drops) on the labware. **Note**: Avoid strong environmental light changes and direct sunlight. Exchange failing consumable with a different new consumable. Perform load check again. Load check might fail because of solid samples (e.g., swabs). Any use of custom labware or labels (especially at the upper part of the tubes) can lead to load check issues.
Restricted Mode	In case the instrument turns into restricted mode, the functionality is limited. It is not possible to start a protocol run in this mode. It is still possible to download a support package to support the troubleshooting procedure. One possible root cause is that the hood was not properly closed. In that case ensure that the hood was closed properly by pressing it down with light force and restart the device.
Filter insight the tips is dirty/wet	Dirty/wet filter can be caused by: • Incorrect Sample volume: Ensure the used sample volume is according to the protocol instructions • Incorrect Sample pre-treatment: Pre-treat samples according to the kit handbook • Sample condition (clotted, thick, etc.): According to the kit handbook • Incorrect tubes: Just use the tubes delivered with the kit or explicitly mentioned in the kit handbook/loading screen If the liquid passed through the filter, please reach out to QIAGEN Technical Services.
Hood lock Error	Check if the hood is firmly closed. Confirm by pressing down the hood with light force.
Heater Fuse Error	Please install the latest software update. If software update is not possible, ensure that the hood is closed during start up and restart the device. If error still persists contact QIAGEN Technical Services.
Pipetting tips sticking to pipettor	Use lab tissue to wipe the D-rings and make sure weekly maintenance was performed correctly. There should be no visible grease residues after the weekly maintenance. Eventually remove grease residues with a lint free tissue. Check and clean all positions shown in Figure 187.
Pipette tip was crushed	Pipetting tip may stick to pipettor. See “pipetting tip sticking to pipettor”. Ensure that correct and compatible tubes were used. Tubes from the appropriate kit or tubes that are specified by the kit handbook shall be used. Check the worktable set up and tip rack type.
Imprecise pipetting	If imprecise pipetting appears over several runs (elution volume): Make sure weekly maintenance was performed. Check if the tips sit firmly at the pipettor adapter. Ensure that correct sample volume was used.
Leaking pipette tips	Ensure weekly maintenance was performed. Install the latest protocol update package.
Pipette tips not picked up by pipettor	Make sure that the tip rack is not damaged and is correctly positioned on the worktable. Check if there are no grease residues at the pipette adapter.
Cross-contamination	Ensure maintenance was performed. Clean the piercing unit and worktable with 70% ethanol. Start UV decontamination. Make sure samples and cartridge rack were handled properly.
Software/protocol update fails	Restart the device and try to start the update again. Use only the QIAGEN USB stick. USB stick should stay plugged in during the entire update procedure.
USB device not detected	Wait a few seconds after plugging the USB stick. Unplug and plug in the USB stick again. Restart the device. Try using a different USB port or supported USB stick. Check the USB stick on a PC to ensure it is functional. Make sure you use the QIAGEN USB stick. If the error persists, contact QIAGEN Technical Services.
LAN Connection problem	Check if the ethernet cable is connected correctly. Check the LAN settings (Section 5.3.9).
No W-LAN connection	Check the Wi-Fi setting (Section 5.3.9). W-LAN adapter should be connected before you start the device. Reboot the device.
Freeze during run	Reboot the device. Perform after run maintenance and start a new protocol run. Report such incidences to QIAGEN Technical Service and provide the support package (Section 7.1.1).

	Comments and suggestions
Surface damaged	Ensure that only the cleaning agents as described in Section 6.1 were used.
Display does not turn on	Do not touch the display with excessive force or use corrosive chemicals to clean the display surface. Contact QIAGEN Technical Services for repair.
Low disk space	Download and delete old run reports.
QIAsphere connection not working	Check the network connection. Install the latest software version.
User account locked	Use an Admin account to unlock the account by using the **User Management** menu. If there is no unlocked Admin account, tap on the question mark icon in the upper right corner of the login screen and follow the instructions on the display.

8. Glossary

Term	Definition
Barcode reader	A handheld device that enables scanning of barcodes and conversion of them into data that is transmitted to the EZ2 Connect.
Bottom Tray	A metal tray that is located under the worktable. It collects any drops of liquid that may spill.
Cartridge rack	A metal rack that accommodates reagent cartridges on the worktable.
Connector panel	The panel on the rear of theEZ2 Connect. It contains the power switch, the socket for the power cord, and the fuse box.
D-ring	A ring that is fitted at the bottom of a tip adapter. It is required for good contact between the tip adapter and a filter-tip.
Elution tube	A polypropylene, screw-capped 1.5 mL tube for collecting purified nucleic acids. The recommended elution tubes are screw capped, made of polypropylene, supplied by Sarstedt (cat. no. 72.692) and provided in the EZ2 Connect kits.
Error code	A number that represents an error of theEZ2 Connect.
EZ2 Connect kits	Kits supplied by QIAGEN containing reagents, reagent cartridges and plasticware for use with EZ2 Connect instruments.
Filter-tip	Labware that is picked up by a tip adapter during operation of theEZ2 Connect. Liquid is aspirated into and dispensed from a filter-tip. A filter-tip is also the location where separation of magnetic particles occurs. A filter in the upper part of the tip prevents contamination between the tip and the tip adapter.
Heating system	A component of theEZ2 Connect that accommodates the heating positions of the reagent cartridges and heats samples.
Hood	The main door at the front of theEZ2 Connect. When open, it provides complete access to the worktable.
Pipettor head	The component of the EZ2 Connect that aspirates and dispenses liquid, and pierces cartridges via the piercing unit. The pipettor head moves up and down above the worktable and contains 24 syringe pumps, each of which is connected to a tip adapter.
Protocol	A set of instructions for the EZ2 Connect that allows the instrument to automate a nucleic acid purification procedure.
Reagent cartridge	An item of labware that contains 10 wells and 2 heating positions. One heating position is a well, the other is a slot that can hold a tube. A reagent cartridge is prefilled with reagents and included in the EZ2 Connect kits.
Report file	A file generated by the EZ2 Connect that contains system and run parameters.
Sample tube	A polypropylene, screw-capped 2 mL tube for holding a sample containing nucleic acids to be purified. Sample tubes are 2 mL in volume, screw capped, made of polypropylene, supplied by Sarstedt (cat. no. 72.693), and provided in the EZ2 Connect kits.
Tip adapter	One of 24 metal probes installed on the pipettor head. During operation of the EZ2 Connect, the tip adapters pick up filter-tips from the worktable.
Tip holder	A polypropylene tube that holds a single filter-tip. Tip holders are loaded onto the tip rack.
Tip rack	A metal rack that accommodates tip holders containing filter-tips on the worktable. The tip rack also accommodates sample tubes and elution tubes.
UV LED lamp	A light source of ultraviolet light for decontamination.
Worktable	The surface of the EZ2 Connect that contains racks. The worktable is where samples, reagent cartridges and disposable labware are loaded. The worktable moves backward and forward to position samples and reagents under the pipettor head.

9. Technical Specifications

QIAGEN reserves the right to change specifications at any time.

9.1. Operating conditions

Description	Requirement
Power	100–240 V AC, 50/60 Hz, 1000 VA Mains supply voltage fluctuations are not to exceed 10% of nominal supply voltages.
Fuse	AC Inlet: T4A H 250 V Heater block (temperature fuse): 10 A, 250 V, 117 C
Overvoltage category	II
Air temperature	18–30°C (64–86°F)
Relative humidity	10–75% RH
Altitude	Up to 2000 m (6500 ft)
Place of operation	For indoor use only
Pollution level	2
Environmental class	3K21 (IEC 60721-3-3) 3M11 (IEC 60721-3-3)
Average noise level (over 8 hours)	Max. 70 dBA
IP Code (IEC 60529)	IP20

9.2. Transport conditions

Description	Requirement
Air temperature	–25°C to 60°C (–13°F to 140°F) in manufacturer's package **Note**: If theEZ2 Connect is transported in temperatures below 0°C (32°F), it is recommended to wait 24 hours before switching on the instrument to allow it to reach the temperature conditions of the installation environment.
Relative humidity	5–85% RH
Environmental class	2K11 (IEC 60721-3-2) 2M4 (IEC 60721-3-2)

9.3. Storage conditions

Description	Requirement
Air temperature	5–40°C (41–104°F) in manufacturer's package
Relative humidity	5–85% RH
Environmental class	2K11 (IEC 60721-3-2) 2M4 (IEC 60721-3-2)

9.4. Mechanical data and hardware features

Description	Requirement
Dimensions	Width: 720 mm (28.35 in) Height: 575 mm (22.6 in) Depth: 560 mm (22 in)
Weight	70 kg (154.32 lb)
Instrument features	Automated nucleic acid isolation using magnetic particles Desktop instrument Protocols stored on instrument Processes up to 24 samples in one run Aspirates and dispenses up to 24 samples or reagents simultaneously using a 24-channel pipettor head Separates magnetic particles using patented technology Controlled through a touchscreen Temperature control through a heating system
Data tracking	Barcode reader and on-screen keyboard enable data tracking of samples and consumables. System and run parameters are stored in a report file.
Pipettor head	Contains 24 high-precision syringe pumps, each containing a tip adapter that attaches to filter-tips. Syringe pumps are air-filled. Liquids containing salts, alcohol, solvents and/or magnetic particles can be aspirated and dispensed. Air gaps can be aspirated to prevent aspirated liquid from dripping. Filter-tips are picked up from the tip rack and ejected back into the tip rack. The pipettor head moves in the Z direction (up and down) above the worktable.
Heating system	Accommodates the heating positions of reagent cartridges and has a temperature range of between ambient temperature and 95°C (203°F). Heating block accuracy at 60°C is ± 2°C.
Filter tips	Attach to the tip adapters of the pipettor head to allow liquid aspiration and dispensation. Capacity of 10–1000 µL. The EZ2 Connect accommodates up to 48 tip holders in 2 rows, each containing a filter-tip, in the tip rack on the worktable.
Labware	Reagents are loaded onto the worktable in reagent cartridges. These cartridges are already prefilled by QIAGEN. Up to 24 reagent cartridges can be placed in the cartridge rack. Samples are loaded onto the worktable in 2 mL sample tubes. Steps that require heating occur on the heating system, which accommodates the heating positions of the reagent cartridges. Purified nucleic acids are collected in 1.5 mL elution tubes.
UV LED lamp	UV LED wavelength: 275–285 nm
Capacity	Up to 24 samples per run
Display	10.1-inch color touchscreen. Display with resolution 1280 x 800 pixels.
Camera	Monochrome camera. The USB interface provide power and communication. Sensor resolution is 0.34 MP. Width: 24 mm (0.94 in) Height: 34 mm (1.34 in) Depth: 39 mm (1.54 in)
Network	Wi-Fi: Designed for usage with Wi-Fi adapter provided by QIAGEN. The Wi-Fi adapter supports the 802.11b, 802.11g, and 802.11n Wi-Fi standards, and WEP, WPA-PSK, and WPA2-PSK encryption. Supports LAN If network functionality is used: the Administrator must ensure that the instrument is not visible to the outside of the network

9.5. Barcode reader specifications

Note: The following specifications are referring to the supported Barcode Reader (cat. no. 9027101) for the EZ2 Connect system.

Decoding Capability: 1D / LINEAR CODES: Autodiscriminates all standard 1D codes including GS1 DataBar™ linear codes.

2D CODES: Aztec Code; China Han Xin Code; Data Matrix; MaxiCode; Micro QR Code; QR Code

STACKED CODES: EAN/JAN Composites; GS1 DataBar Composites; GS1 DataBar Expanded Stacked; GS1 DataBar Stacked; GS1 DataBar Stacked Omnidirectional; MacroPDF; MicroPDF417; PDF417; UPC A/E Composites

Reading range

TYPICAL DEPTH OF FIELD Minimum distance determined by symbol length and scan angle. Printing resolution, contrast, and ambient light dependent.

GD4500 standard range (SR)

Code 39: 5 mils: 7.0 to 38.0 cm / 2.7 to 14.9 in

Code 39: 10 mils: 2.2 to 58.0 cm / 0.8 to 22.8 in

Data Matrix: 10 mils: 5.5 to 27.0 cm / 2.2 to 10.6 in

Data Matrix: 15 mils: 2.8 to 41.0 cm / 1.1 to 16.1 in

EAN-13: 13 mils: 1.0 to 71.0 cm / 0.4 to 27.9 in

PDF417: 10 mils: 2.5 to 41.0 cm / 1.0 to 16.1 in

QR Code: 10 mils: 5.5 to 24.0 cm / 2.2 to 9.5 in

GD4500 High Density (HD)

Code 39: 3 mils: 5.0 to 15.0 cm / 2.0 to 5.9 in

Code 39: 5 mils: 0.5 to 25.0 cm / 0.2 to 9.8 in

Data Matrix: 5 mils: 5.5 to 9.0 cm / 2.2 to 3.5 in

EAN-13: 13 mils: 1.0 to 40.0 cm / 0.4 to 15.7 in

Data Matrix: 10 mils: 2.0 to 27.0 cm / 0.8 to 10.6 in

EAN-13: 7.5 mils: 2.0 to 23.5 cm / 0.8 to 9.3 in

PDF417: 4 mils: 3.0 to 12.0 cm / 1.2 to 4.7 in

PDF417: 10 mils: 0.5 to 31.0 cm / 0.2 to 12.2 in

QR Code: 10 mils: 2.0 to 25.0 cm / 0.8 to 9.8 in

Note: Further information can be found in the Barcode reader manual.

Appendix A

Declaration of Conformity

Name and address of the legal manufacturer

QIAGEN GmbH
QIAGEN Strasse 1
40724 Hilden
Germany

An up-to-date declaration of conformity can be requested from QIAGEN Technical Services.

Waste Electrical and Electronic Equipment (WEEE)

This section provides information about disposal of waste electrical and electronic equipment by users.

The crossed-out wheeled bin symbol (see below) indicates that this product must not be disposed of with other waste; it must be taken to an approved treatment facility or to a designated collection point for recycling, according to local laws and regulations.

The separate collection and recycling of waste electronic equipment at the time of disposal helps to conserve natural resources and ensures that the product is recycled in a manner that protects human health and the environment.

Recycling can be provided by QIAGEN upon request at additional cost. In the European Union, in accordance with the specific WEEE recycling requirements and where a replacement product is being supplied by QIAGEN, free recycling of its WEEE-marked electronic equipment is provided.

To recycle electronic equipment, contact your local QIAGEN sales office for the required return form. Once the form is submitted, you will be contacted by QIAGEN either to request follow-up information for scheduling collection of the electronic waste or to provide you with an individual quote.

California Proposition 65 Warning

This product contains chemicals known to the State of California to cause cancer, birth defect or other reproductive harm.

Liability clause

QIAGEN shall be released from all obligations under its warranty in the event repairs or modifications are made by persons other than its own personnel, except in cases where the Company has given its written consent to perform such repairs or modifications.

All materials replaced under this warranty will be warranted only for the duration of the original warranty period, and in no case beyond the original expiration date of original warranty unless authorized in writing by an officer of the Company. Read-out devices, interfacing devices, and associated software will be warranted only for the period offered by the original manufacturer of these products. Representations and warranties made by any person, including representatives of QIAGEN, which are inconsistent or in conflict with the conditions in this warranty shall not be binding upon the Company unless produced in writing and approved by an officer of QIAGEN.

The EZ2 Connect is equipped with an Ethernet port and a Wi-Fi USB device. The Purchaser of the EZ2 Connect is solely responsible for preventing any and all computer viruses, worms, trojans, malware, hacks, or any other type of cybersecurity breaches. QIAGEN assumes no liability for computer viruses, worms, trojans, malware, hacks, or any other type of cybersecurity breaches.

License information

The EZ2 Connect software package contains open source software. License texts are available on the EZ2 Connect product pages (**www.qiagen.com**).

Appendix B – EZ2 Connect Parts and Components/Consumables

Ordering information

Product	Contents	Cat. no.
EZ2 Connect	EZ2 Connect benchtop instrument to isolate nucleic acids from up to 24 samples in parallel, includes 1-year warranty on parts and labor	9003210
EZ2 Connect Fx	EZ2 Connect Fx benchtop instrument for isolation of DNA from casework and reference samples in forensic workflows, with internal camera for cartridge check and load checks, barcode reader, EZ2 Connect Tip Rack – Flip Cap Tube, and 1-year warranty on parts and labor.	9003220
Accessories		
EZ2 Connect Tip Rack	Tip Rack for EZ2 Connect, for use with screw-cap tubes	9027009
EZ2 Connect Tip Rack - Flip Cap Tube	Tip Rack for EZ2 Connect, for use with flip-cap tubes	9027010
EZ2 Connect Tip Rack - Large Volume	Tip Rack for EZ2 Connect, for use with large volume tubes	9027011
EZ2 Connect Cartridge Rack	Cartridge rack for EZ2 Connect, for use with prefilled kit cartridges	9027012
USB Flash Drive	USB flash drive provided by QIAGEN, for use with EZ2 USB ports	9026881
Barcode Reader	Barcode scanner to allow kit barcode and sample barcode scanning	9027101
Silicone Grease		9027102

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at **www.qiagen.com** or can be requested from QIAGEN Technical Services or your local distributor.

Appendix C – Consignes de sécurité

Avant d'utiliser le EZ2 Connect, il est impératif de lire attentivement ce manuel et de porter une attention particulière aux consignes de sécurité. Afin de garantir un fonctionnement de l'appareil en toute sécurité et de maintenir l'appareil en bon état de marche, il est impératif de suivre les instructions et consignes de sécurité fournies dans le présent manuel d'utilisation.

Les dangers éventuels pouvant porter atteinte à l'utilisateur ou détériorer l'appareil sont clairement indiqués aux endroits appropriés tout au long de ce manuel d'utilisation.

Si l'équipement est utilisé d'une manière non spécifiée par le fabricant, la protection offerte par l'équipement risque d'en être affectée.

Les types d'informations de sécurité suivants sont fournis tout au long du manuel.

AVERTISSEMENT

Le terme AVERTISSEMENT signale des situations risquant d'entraîner des accidents corporels dont l'utilisateur, ou d'autres personnes, pourraient être victime.

Les détails concernant ces circonstances sont donnés dans un encadré identique à celui-ci.

ATTENTION

Le terme ATTENTION signale des situations risquant d'entraîner des détériorations de l'appareil ou de tout autre matériel.

Les détails concernant ces circonstances sont donnés dans un encadré identique à celui-ci.

Les conseils donnés dans ce manuel ont pour but de venir compléter les exigences de sécurité habituelles en vigueur dans le pays de l'utilisateur, et non de s'y substituer.

Notez qu'il peut être nécessaire de consulter la réglementation locale avant de signaler tout incident grave survenant en lien avec le produit au fabricant et/ou son représentant autorisé (s'applique uniquement aux appareils marqués CE avec un représentant agréé établi dans l'UE) et à l'organisme de régulation du pays de l'utilisateur et/ou du patient.

Utilisation appropriée

AVERTISSEMENT/ ATTENTION

Risque de dommages corporels et matériels

Une utilisation inappropriée de l'EZ2 Connect peut entraîner des blessures corporelles ou une détérioration de l'instrument. L'EZ2 Connect ne doit être utilisé que par du personnel qualifié ayant été convenablement formé. L'entretien de l'instrumentEZ2 Connect ne doit être effectué que par un spécialiste de l'entretien sur site QIAGEN.

AVERTISSEMENT

Risque de dommages corporels et matériels

Ne pas essayer de déplacer l'EZ2 Connect pendant qu'il est en marche.

Procéder à la maintenance comme décrit à la Section 6. QIAGEN facture les réparations dues à une maintenance inappropriée.

En cas d'urgence, éteindre l'EZ2 Connect à l'aide de l'interrupteur d'alimentation situé à l'avant de l'instrument et débrancher le câble d'alimentation de la prise secteur.

ATTENTION

Détérioration de l'instrument

Éviter de renverser de l'eau ou des produits chimiques sur l'EZ2 Connect. La détérioration de l'instrument due à de l'eau ou à des produits chimiques renversés annulera votre garantie.

AVERTISSEMENT

Risque d'incendie ou d'explosion

En cas d'utilisation d'éthanol ou de liquides à base d'éthanol sur le EZ2 Connect, manipulez ces liquides avec prudence et conformément aux règles de sécurité nécessaires. En cas de déversement de liquide, essuyez-le et laissez le capot de l'EZ2 Connect ouvert pour que les vapeurs inflammables puissent s'évaporer.

AVERTISSEMENT

Risque d'explosionRisque d'explosion

L'EZ2 Connect est conçu pour être utilisé avec les réactifs et les substances fournis avec les kits QIAGEN, comme indiqué dans le mode d'emploi correspondant. L'utilisation d'autres réactifs et substances peut provoquer un incendie ou une explosion.

Si des substances dangereuses sont renversées sur ou à l'intérieur du EZ2 Connect, l'utilisateur porte l'entière responsabilité de la réalisation de la procédure de décontamination requise.

Remarque : ne pas placer ou fixer d'objets sur l'EZ2 Connect.

ATTENTION

Détérioration de l'instrument

Assurez-vous que l'EZ2 Connect est éteint avant de déplacer manuellement les composants mécaniques de l'instrument.

ATTENTION

Détérioration de l'instrument

Ne pas s'appuyer sur l'instrument ou l'écran tactile.

Sécurité électrique

Remarque : si le fonctionnement de l'appareil est interrompu d'une quelconque manière (par exemple, en raison de l'interruption de l'alimentation électrique ou d'une erreur mécanique), mettre d'abord l'appareil EZ2 Connect hors tension, puis débrancher le cordon d'alimentation de la prise secteur avant de tenter un dépannage ou une activité de service.

AVERTISSEMENT **Danger électrique**

Toute interruption du conducteur de protection (conducteur de terre/de masse) à l'intérieur ou à l'extérieur de l'instrument ou toute déconnexion de la borne du conducteur de protection est susceptible de rendre l'instrument dangereux.

Toute interruption intentionnelle est interdite.

Tensions mortelles à l'intérieur de l'instrument

Lorsque l'instrument est connecté électriquement, les bornes peuvent être sous tension et l'ouverture de capots ou le retrait d'éléments risque d'exposer des éléments sous tension.

AVERTISSEMENT **Endommagement des composants électroniques**

Avant de mettre l'instrument SOUS tension, veiller à utiliser la bonne tension d'alimentation.

L'utilisation d'une tension d'alimentation incorrecte risque d'endommager les composants électroniques.

Pour connaître la tension d'alimentation recommandée, consulter les spécifications indiquées sur la plaque signalétique de l'instrument.

AVERTISSEMENT **Risque d'électrocution**

Ne pas ouvrir pas les panneaux de l'EZ2 Connect.

Risque de dommages corporels et matériels

Effectuer uniquement la maintenance spécifiquement décrite dans le présent manuel d'utilisation.

Afin que l'EZ2 Connect fonctionne de manière satisfaisante et en toute sécurité, suivre les conseils suivants :

- Le câble d'alimentation doit être branché dans une prise électrique disposant d'un conducteur de protection (terre/masse).
- Placer l'instrument de manière à laisser le câble d'alimentation facilement accessible pour le brancher et le débrancher.
- Utiliser uniquement les cordons d'alimentation fournis par QIAGEN.
- Ne pas modifier ou remplacer des composants internes de l'appareil.
- Ne pas faire fonctionner l'appareil en ayant retiré des capots ou des composants.
- Si un liquide s'est répandu à l'intérieur de l'appareil, éteignez-le, déconnectez-le de la prise secteur et prenez contact avec les services techniques QIAGEN pour obtenir des conseils avant de tenter un dépannage ou une activité de service.

Si l'instrument présente un danger électrique, empêcher le reste du personnel de s'en servir et contacter les services techniques QIAGEN.

L'instrument peut présenter un danger électrique dans les cas suivants :

- l'EZ2 Connect ou le câble d'alimentation semblent être détériorés ;
- l'EZ2 Connect a été stocké dans des conditions défavorables pendant une longue période ;

- l'EZ2 Connect a été soumis à de sévères contraintes de transport ;
- des liquides ont été en contact direct avec des composants électriques de l'EZ2 Connect ;
- le câble d'alimentation a été remplacé par un câble d'alimentation non authentique.

AVERTISSEMENT **Danger électrique**

Ne touchez pas l'EZ2 Connect avec les mains humides.

AVERTISSEMENT **Danger électrique**

N'installez jamais un fusible autre que celui indiqué dans le manuel d'utilisation.

Conditions de fonctionnement

Différents paramètres, tels que les plages de température et d'humidité, sont indiqués dans la Section 9.

AVERTISSEMENT **Atmosphère explosive**

L'EZ2 Connect n'est pas conçu pour être utilisé dans une atmosphère explosive.

AVERTISSEMENT **Risque de surchauffe**

Afin de garantir une bonne ventilation, laisser un dégagement d'au moins 10 cm sur les côtés et à l'arrière de l'EZ2 Connect.

Les fentes et les ouvertures qui garantissent la ventilation de l'instrument ne doivent pas être obstruées.

AVERTISSEMENT **Risque d'explosion**

L'EZ2 Connect est conçu pour être utilisé avec les réactifs et substances fournis avec les kits QIAGEN. L'utilisation d'autres réactifs et substances peut provoquer un incendie ou une explosion.

ATTENTION **Détérioration de l'instrument**

La lumière directe du soleil peut blanchir certaines parties de l'instrument endommager les pièces en plastique ou nuire au bon fonctionnement du contrôle de charge. L'EZ2 Connect doit être tenu à l'abri de la lumière directe du soleil.

ATTENTION **Détérioration de l'instrument**

Ne pas utiliser l'EZ2 Connect à proximité de sources de fortes radiations électromagnétiques (par exemple, des sources de haute fréquence non blindées et exploitées délibérément ou des appareils radio mobiles), car celles-ci peuvent interférer avec le bon fonctionnement.

Sécurité biologique

Les prélèvements et les réactifs contenant des matières provenant d'êtres humains doivent être considérés comme potentiellement infectieux. Utiliser des procédures de laboratoire sûres, comme décrites dans des publications telles que Biosafety in Microbiological and Biomedical Laboratories, HHS (**https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf**). Il est impératif de connaître le risque que ces agents représente pour la santé et d'utiliser, de stocker et de mettre au rebut ce type d'échantillons conformément aux règles de sécurité en vigueur.

ADVERTISSEMENT **Échantillons contenant des agents infectieux**

Échantillons contenant des agents infectieux EZ2 Connect peuvent contenir des agents infectieux. Manipuler ces échantillons avec la plus grande précaution et conformément aux règles de sécurité exigées.

Toujours porter des lunettes de protection, des gants et une blouse de laboratoire.

La personne responsable (par exemple le directeur du laboratoire) doit prendre les précautions nécessaires pour s'assurer que l'environnement de travail est sûr, que les opérateurs de l'instrument sont convenablement formés et qu'ils ne sont pas exposés à des niveaux dangereux d'agents infectieux selon les définitions retenues dans les fiches de données de sécurité (FDS) ou dans les documents de l'OSHA1 *, de l'ACGIH † ou du COSHH ‡ applicables.

L'évacuation des vapeurs et la mise au rebut des déchets doivent être effectuées conformément à toutes les réglementations et lois nationales, régionales et locales relatives à la santé et à la sécurité.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

Produits chimiques

ADVERTISSEMENT **Produits chimiques dangereux**

Certains produits chimiques utilisés avec l'instrument EZ2 Connect peuvent être dangereux ou le devenir après l'exécution d'une purification.

Toujours porter des lunettes de protection, des gants et une blouse de laboratoire.

Le responsable (par exemple le chef de laboratoire) doit prendre les précautions nécessaires pour s'assurer que l'espace de travail environnant est sûr et que les opérateurs travaillant sur l'instrument ne sont pas exposés à des niveaux dangereux de substances toxiques (chimiques ou biologiques) selon les définitions retenues dans les fiches de données de sécurité (FDS) ou les documents de l'OSHA*, de l'ACGIH† ou du COSHH‡ applicables.

L'évacuation des vapeurs et la mise au rebut des déchets doivent être effectuées conformément à toutes les réglementations et lois nationales, régionales et locales relatives à la santé et à la sécurité.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

Vapeurs toxiques

AVERTISSEMENT **Vapeurs toxiques**

N'utilisez pas de javellisant pour nettoyer ou désinfecter l'appareil EZ2 Connect. Le contact de l'eau de Javel avec des sels provenant des tampons peut produire des vapeurs toxiques.

AVERTISSEMENT **Vapeurs toxiques**

Ne pas utiliser de produit à base d'eau de Javel pour désinfecter les accessoires de laboratoire usagés. Le contact de l'eau de Javel avec des sels provenant des tampons peut produire des vapeurs toxiques.

Remarque : si vous utilisez des solvants volatils, des substances toxiques, etc., vous devez disposer d'un système de ventilation de laboratoire efficace afin d'évacuer les vapeurs qui peuvent être générées.

Élimination des déchets

Les consommables usagés, tels que les cartouches de réactif et les pointes de filtres, peuvent contenir des produits chimiques dangereux ou des agents infectieux issus du processus de purification. Ces déchets doivent être convenablement collectés et mis au rebut conformément aux règles de sécurité locales.

Pour en savoir plus sur la mise au rebut de l'EZ2 Connect, se reporter à l'Annexe A : Waste Electrical and Electronic Equipment (WEEE).

ATTENTION **Produits chimiques dangereux et agents infectieux**

Les déchets peuvent contenir des matières toxiques ou infectieuses et doivent être mis au rebut de manière appropriée. Se référer aux règles de sécurité en vigueur concernant les procédures de mise au rebut.

Dangers mécaniques

Le capot du EZ2 Connect doit rester fermé pendant le fonctionnement de l'instrument. Ouvrir le capot uniquement lorsque les instructions d'utilisation l'indiquent.

La table de travail de l'instrument EZ2 Connect se déplace pendant que l'instrument fonctionne. Lors du chargement du plan de travail, rester toujours à bonne distance de l'instrument. Ne pas se pencher sur le plan de travail quand le bras robotisé de l'instrument se déplace vers la position de chargement avec le couvercle ouvert. Attendre que le bras robotisé termine son déplacement avant d'entreprendre un chargement ou un déchargement.

AVERTISSEMENT **Pièces mobiles**

Pour éviter tout contact avec des pièces en mouvement pendant le fonctionnement du EZ2 Connect, l'instrument doit être utilisé avec le capot fermé.

Si le capteur ou le verrou du capot ne fonctionne pas correctement, contacter les services techniques QIAGEN.

AVERTISSEMENT **Pièces mobiles**

Évitez tout contact avec les pièces en mouvement lorsque l'EZ2 Connect est en marche. Ne placer en aucun cas les mains sous le bras de pipetage pendant le mouvement. Ne pas essayer de retirer un objet en plastique du plan de travail pendant que l'instrument fonctionne.

Danger lié à la chaleur

La table de travail de l'EZ2 Connect contient un système de chauffage.

AVERTISSEMENT **Surface brûlante**

Le système de chauffage peut atteindre une température de jusqu'à 95 °C (203 °F). Éviter de le toucher lorsqu'il est chaud.

Radiations

L'instrument EZ2 Connect contient une lampe UV LED. La longueur d'onde de la lumière UV produite par la lampe UV LED est de 270 à 285 nm. Cette longueur d'onde correspond à une lumière ultraviolette de type C, qui peut être utilisée pour des procédures de décontamination. Un verrou mécanique veille à ce que le capot soit fermé pour le fonctionnement de la LED à UV. Si le capteur ou le verrou du capot ne fonctionne pas correctement, contacter les services techniques QIAGEN.

AVERTISSEMENT **Rayonnement UV**

Éviter de regarder directement la lumière UV. Ne pas exposer votre peau à la lumière UV.

L'instrument EZ2 Connect est équipé d'un lecteur de code-barres 2D portable qui permet de lire les codes-barres des kits et échantillons.

AVERTISSEMENT **Risque de blessure personnelle**

Lumière laser avec niveau de danger 2 : Ne pas regarder fixement le faisceau lumineux lors de l'utilisation du lecteur de code-barres portable.

Sécurité de maintenance

AVERTISSEMENT/ ATTENTION **Risque de dommages corporels et matériels**

Effectuer uniquement la maintenance spécifiquement décrite dans le présent manuel d'utilisation.

Procéder à la maintenance comme décrit à la Section 6. QIAGEN facture les réparations dues à une maintenance inappropriée.

AVERTISSEMENT/ ATTENTION **Risque de dommages corporels et matériels**

L'utilisation inappropriée de l'instrument EZ2 Connect peut entraîner des accidents corporels ou une détérioration de l'instrument.

L'EZ2 Connect ne doit être utilisé que par un personnel dûment qualifié.

L'entretien de l'instrument EZ2 Connect ne doit être effectué que par des spécialistes de l'entretien sur site QIAGEN.

AVERTISSEMENT **Risque d'incendie**

Lorsque l'instrument EZ2 Connect est nettoyé avec un désinfectant à base d'alcool, laisser la porte de l'instrument ouverte pour permettre la dispersion des vapeurs inflammables.

Nettoyer l'instrument EZ2 Connect avec un désinfectant à base d'alcool seulement lorsque les composants de la table de travail ont refroidi.

ATTENTION **Détérioration de l'instrument**

Ne pas utiliser de produit à base d'eau de Javel, de solvants ou de réactifs contenant des acides, des agents alcalins ou des produits abrasifs pour nettoyer l'instrument EZ2 Connect.

ATTENTION **Détérioration de l'instrument**

N'utilisez pas de flacons pulvérisateurs contenant de l'alcool ou un agent désinfectant pour nettoyer les surfaces de l'instrument EZ2 Connect. Les flacons pulvérisateurs ne doivent être utilisés que pour nettoyer les éléments qui ont été retirés des plans de travail et si les pratiques opérationnelles du laboratoire local le permettent.

ATTENTION **Détérioration de l'instrument**

Après avoir essuyé la table de travail avec des serviettes en papier, s'assurer qu'il ne reste aucun morceau de serviette en papier. Des morceaux de serviette en papier restant sur la table de travail peuvent entraîner une collision des tables de travail.

AVERTISSEMENT/ ATTENTION **Risque d'électrocution personnelle**

Ne pas ouvrir les panneaux de l'instrument EZ2 Connect.

Effectuer la maintenance uniquement de la manière décrite dans le présent manuel d'utilisation.

Symboles sur l'instrument EZ2 Connect

Les symboles suivants figurent sur les instruments EZ2 Connect et EZ2 Connect Fx.

Symbole	Emplacement	Description
	Système de chauffage : intérieur de l'instrument	Danger lié à la chaleur : la température du système de chauffage peut atteindre 95 °C.
	À proximité du support de pointes	Danger biologique : le support de pointes peut être contaminé par une substance nocive pour l'organisme et doit être manipulé avec des gants.
	À l'arrière de l'instrument	Danger lié au rayonnement UV : éviter de regarder directement la lumière UV. Ne pas exposer votre peau à la lumière UV.
	Sur le lecteur de code-barres portatif	Lumière laser avec niveau de danger 2 : Ne pas regarder fixement le faisceau lumineux lors de l'utilisation du lecteur de code-barres portable.
	Bras robotisé : intérieur de l'instrument	Danger d'écrasement : la buse peut vous écraser les doigts ou la main.

Symbole	Emplacement	Description
	Plaque signalétique à l'arrière de l'instrument	Symbole CE pour l'Europe.
	Plaque signalétique à l'arrière de l'instrument	Label CSA pour le Canada et les États-Unis.
	Plaque signalétique à l'arrière de l'instrument	Marque RCM (antérieurement marque C-Tick) pour l'Australie et la Nouvelle-Zélande.
	Plaque signalétique à l'arrière de l'instrument	Marque RoHS pour la Chine (restriction de l'utilisation de certaines substances dangereuses dans le matériel électrique et électronique).
	Plaque signalétique à l'arrière de l'instrument	Symbole DEEE pour l'Europe.
	Plaque signalétique à l'arrière de l'instrument	Fabricant légal.
	Plaque signalétique à l'arrière de l'instrument	UDI (Unique Device Identifier) en tant que code-barres 2D au format Data Matrix.
	Plaque signalétique à l'arrière de l'instrument	Numéro d'article du commerce global.
	Plaque signalétique à l'arrière de l'instrument	Numéro de série.
	Plaque signalétique à l'arrière de l'instrument	Lire le mode d'emploi.
	Plaque signalétique à l'arrière de l'instrument	Se reporter aux avertissements et précautions.

Appendix D – Sicherheitshinweise

Lesen Sie dieses Handbuch sorgfältig durch, bevor Sie den EZ2 Connect benutzen. Beachten Sie dabei insbesondere die Sicherheitshinweise. Die Gebrauchsanweisungen und Sicherheitshinweise im Handbuch müssen befolgt werden, um einen sicheren Betrieb des Geräts zu gewährleisten und das Gerät in einem sicheren Zustand zu erhalten.

Mögliche Gefahren, durch die der Benutzer verletz oder das Gerät beschädigt werden könnten, sind an den entsprechenden Stellen in diesem Benutzerhandbuch angegeben.

Wenn das Gerät anders verwendet wird als vom Hersteller angegeben, können die Schutzvorrichtungen des Geräts beeinträchtigt werden.

In diesem Handbuch werden die folgenden Kategorien von Sicherheitshinweisen verwendet:

WARNUNG

Der Begriff „WARNUNG“ (“WARNING”) weist Sie auf Situationen hin, in denen eine Verletzungsgefahr für Sie selbst oder andere Personen besteht.

Nähere Einzelheiten über diese Situationen werden in einem Textfeld wie diesem beschrieben.

VORSICHT

Der Begriff „ACHTUNG“ (“CAUTION”) weist Sie auf Situationen hin, in denen das Gerät oder andere Geräte beschädigt werden könnten.

Nähere Einzelheiten über diese Situationen werden in einem Textfeld wie diesem beschrieben.

Die in diesem Handbuch enthaltenen Hinweise stellen eine Ergänzung und keinen Ersatz der üblichen Sicherheitsanforderungen dar, die im jeweiligen Land gelten.

Bitte beachten Sie, dass Sie ggf. verpflichtet sind, Ihre lokalen Vorschriften zur Meldung schwerwiegender Vorkommnisse im Zusammenhang mit dem Produkt an den Hersteller und/oder den Bevollmächtigten (nur bei Produkten mit CE-Kennzeichnung und einem in der EU ansässigen Bevollmächtigten) und die Regulierungsbehörde, welcher der Benutzer und/oder der Patient unterliegt, zu konsultieren.

Sachgemäße Handhabung

WARNUNG/ VORSICHT

Gefahr von Personen- und Sachschäden

Die unsachgemäße Anwendung desEZ2 Connect kann zu Verletzungen des Benutzers oder zur Beschädigung des Geräts führen. Die Bedienung des EZ2 Connect ndarf nur durch qualifiziertes, entsprechend geschultes Personal erfolgen. Die Instandhaltung desEZ2 Connect Geräts darf nur durch Service-Spezialisten des QIAGEN Außendienstes durchgeführt werden.

WARNUNG

Verletzungsgefahr

Der EZ2 Connect ist sehr schwer und darf nicht von einer Person angehoben werden. Heben Sie das Gerät nicht allein an, um eine Verletzung und/oder Beschädigung des Geräts zu vermeiden. Heben Sie den EZ2 Connect mithilfe des Handgriffs am Verpackungskarton an. Nachdem der EZ2 Connect ausgepackt ist, muss das Gerät von zwei Personen angehoben werden. Greifen Sie zum Anheben mit den Händen unter den Geräteboden.

WARNUNG

Gefahr von Personen- und Sachschäden

Bewegen Sie den EZ2 Connect auf keinen Fall während des Betriebs.

Führen Sie alle Wartungsarbeiten gemäß den Anweisungen im Abschnitt 6 dieses Handbuchs durch. QIAGEN stellt Reparaturen, die auf nicht fachgerecht durchgeführte Wartungsmaßnahmen zurückzuführen sind, in Rechnung.

Schalten Sie den EZ2 Connect im Notfall am Netzschalter an der Front des Geräts aus und ziehen Sie das Netzkabel aus der Netzsteckdose.

VORSICHT

Beschädigung des Geräts

Verschütten Sie kein Wasser oder Chemikalien auf dem EZ2 Connect. Durch verschüttetes Wasser oder verschüttete Chemikalien verursachte Geräteschäden sind nicht durch die Garantie abgedeckt.

WARNUNG

Brand- oder Explosionsgefahr

Bei der Verwendung von Ethanol oder von Flüssigkeiten auf Ethanolbasis auf dem EZ2 Connect müssen diese Flüssigkeiten vorsichtig und in Übereinstimmung mit den erforderlichen Sicherheitsbestimmungen gehandhabt werden. Entfernen Sie verschüttete Flüssigkeiten direkt mit den dafür vorgesehenen Materialien. Lassen Sie dabei die Haube des EZ2 Connect geöffnet, sodass sich entzündbare Dämpfe verflüchtigen können.

WARNUNG

Explosionsgefahr

Der EZ2 Connect darf ausschließlich mit Reagenzien und Substanzen aus den QIAGEN Kits gemäß den Angaben in der entsprechenden Gebrauchsanweisung verwendet werden. Die Verwendung anderer Reagenzien und Substanzen kann zu einem Brand oder einer Explosion führen.

Falls Gefahrstoffe auf dem oder im EZ2 Connect verschüttet werden, ist der Benutzer für die Durchführung einer entsprechenden Dekontamination verantwortlich.

Hinweis: Stellen Sie keine Gegenstände auf den EZ2 Connect.

VORSICHT **Beschädigung des Geräts**

Stellen Sie sicher, dass der EZ2 Connect ausgeschaltet ist, bevor Sie mechanische Komponenten des Geräts von Hand bewegen.

VORSICHT **Beschädigung des Geräts**

Lehnen Sie sich nicht gegen das Gerät oder den Touchscreen.

Elektrische Sicherheit

Hinweis: Falls der Betrieb des Geräts auf irgendeine Weise unterbrochen wurde (z. B. aufgrund einer Unterbrechung der Stromversorgung oder eines mechanischen Fehlers), schalten Sie zuerst das EZ2 Connect Gerät aus und ziehen Sie das Netzkabel aus der Steckdose, bevor Sie Maßnahmen zur Fehlerbehebung oder Inspektion ergreifen.

WARNUNG **Stromschlaggefahr**

Jede Unterbrechung des Schutzleiters (Erdungs- bzw. Masseleiter) im Gerät oder außerhalb des Geräts und jede Abtrennung des Schutzleiters am Anschluss der Netzleitung erhöht die Gefahr eines Stromschlags.

Eine falsche Versorgungsspannung kann Schäden an der Elektronik hervorrufen.

Wenn das Gerät an die Stromversorgung angeschlossen ist, sind die Anschlussstellen spannungsführend. Durch das Öffnen der Abdeckungen oder das Entfernen von Gehäuseteilen können spannungsführende Komponenten freigelegt werden.

WARNUNG **Beschädigung von elektronischen Bauteilen**

Stellen Sie vor dem Einschalten des Geräts sicher, dass die korrekte Versorgungsspannung verwendet wird.

Eine falsche Versorgungsspannung kann Schäden an der Elektronik hervorrufen.

Überprüfen Sie die empfohlene Versorgungsspannung anhand der technischen Daten auf dem Typenschild des Geräts.

WARNUNG **Gefahr durch Stromschlag**

Öffnen Sie keine der Abdeckplatten des EZ2 Connect.

Gefahr von Personen- und Sachschäden

Es dürfen nur Wartungsarbeiten ausgeführt werden, die in diesem Benutzerhandbuch konkret beschrieben sind.

Um einen zufriedenstellenden und sicheren Betrieb des EZ2 Connect zu gewährleisten, befolgen Sie bitte die nachstehenden Hinweise:

- Das Netzkabel muss an eine Netzsteckdose mit Schutzleiter (Erdungs-/Masseleiter) angeschlossen werden.
- Sorgen Sie dafür, dass der Netzstecker jederzeit frei zugänglich ist, damit das Gerät vom Stromnetz getrennt bzw. daran angeschlossen werden kann.
- Es darf nur das von QIAGEN mitgelieferte Netzkabel verwendet werden.
- Nehmen Sie im Geräteinneren keine Einstellungen an Geräteteilen vor und wechseln Sie keine Teile aus.

- Nehmen Sie das Gerät nicht in Betrieb, wenn Abdeckungen oder Teile entfernt worden sind.
- Falls Flüssigkeit im Gerät verschüttet wurde, schalten Sie es aus, ziehen Sie den Netzstecker und setzen Sie sich für Hilfestellung mit dem Technischen Service von QIAGEN in Verbindung, bevor Sie Maßnahmen zur Fehlerbehebung oder Inspektion ergreifen.

Falls die elektrische Sicherheit bei der Bedienung des Geräts nicht mehr gewährleistet werden kann, muss das Gerät gegen Benutzung durch darüber nicht informiertes Personal gesichert werden. Kontaktieren Sie anschließend den Technischen Service von QIAGEN.

Die elektrische Sicherheit des Geräts ist nicht mehr gegeben, wenn:

- der EZ2 Connect oder das Netzkabel beschädigt erscheint;
- der EZ2 Connect längere Zeit unter ungünstigen Bedingungen gelagert wurde;
- der EZ2 Connect unsachgemäß transportiert wurde;
- Flüssigkeiten in direkten Kontakt mit elektrischen Komponenten des EZ2 Connect gekommen sind;
- das Stromkabel durch ein nicht offizielles Stromkabel ersetzt wurde.

WARNUNG **Stromschlaggefahr**

Fassen Sie den EZ2 Connect nicht mit feuchten Händen an.

WARNUNG **Stromschlaggefahr**

Setzen Sie nur Sicherungen des Typs ein, der im Benutzerhandbuch angegeben ist.

Betriebsbedingungen

Parameter wie Temperatur- und Feuchtigkeitsbereich sind in Abschnitt 9 beschrieben.

WARNUNG **Explosionsfähige Atmosphäre**

Das EZ2 Connect Gerät ist nicht für den Gebrauch in explosionsfähiger Atmosphäre vorgesehen.

WARNUNG **Überhitzungsgefahr**

Vergewissern Sie sich, dass ein Mindestabstand von 10 cm zwischen Seitenwänden und Rückseite des EZ2 Connect und der Raumwand eingehalten wird, damit eine ausreichende Belüftung des Geräts gewährleistet ist.

Die Lüftungsschlitze und Öffnungen, die die Be- und Entlüftung des Geräts gewährleisten, dürfen nicht verdeckt werden.

WARNUNG **Explosionsgefahr**

Der EZ2 Connect ist für die Verwendung mit Reagenzien und Substanzen bestimmt, die zusammen mit QIAGEN-Kits geliefert werden. Die Verwendung anderer Reagenzien und Substanzen kann zu einem Brand oder einer Explosion führen.

VORSICHT **Beschädigung des Geräts**

Direktes Sonnenlicht kann zum Ausbleichen von Teilen des Geräts führen, Schäden an Kunststoffteilen verursachen oder die Beladungsüberprüfung beeinträchtigen. Der EZ2 Connect muss an einem Ort aufgestellt werden, an dem er vor direkter Sonneneinstrahlung geschützt ist.

VORSICHT **Beschädigung des Geräts**

Der EZ2 Connect darf nicht in der unmittelbaren Nähe von Quellen starker elektromagnetischer Strahlung (z. B. nicht abgeschirmten, absichtlich betriebenen HF-Quellen oder Funkgeräten) aufgestellt oder betrieben werden, da diese den ordnungsgemäßen Betrieb des Geräts stören können.

Biologische Sicherheit

Bei Proben und Reagenzien, die humanes Untersuchungsmaterial enthalten, sollte immer von einer möglichen Infektionsgefahr ausgegangen werden. Wenden Sie nur sichere Laborverfahren an, wie sie z. B. in Veröffentlichungen wie Biosafety in Microbiological and Biomedical Laboratories, HHS (**https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories- 2009- P.pdf**), beschrieben sind. Sie sollten sich der Gesundheitsgefahr bewusst sein, die von diesen Erregern ausgeht, und derartige Proben gemäß den erforderlichen Sicherheitsbestimmungen handhaben, lagern und entsorgen.

WARNUNG **Proben mit infektiösen Erregern**

Manche Proben, die mit dem EZ2 Connect Gerät verwendet werden, können infektiöse Erreger enthalten. Gehen Sie beim Umgang mit diesen Proben mit der größtmöglichen Vorsicht und gemäß den erforderlichen Sicherheitsbestimmungen vor.

Tragen Sie immer eine Schutzbrille, Laborhandschuhe und einen Laborkittel.

Die verantwortliche Person (z. B. der Laborleiter) muss alle erforderlichen Vorsichtsmaßnahmen ergreifen, um sicherzustellen, dass der Arbeitsbereich sicher ist und die Bediener des Geräts ausreichend geschult sind. Außerdem dürfen die Grenzwerte in Bezug auf infektiöse Erreger, die in den entsprechenden Sicherheitsdatenblättern (Material Safety Data Sheets, MSDS) oder den Vorschriften der OSHA1*, ACGIH† oder COSHH‡ festgelegt sind, nicht überschritten werden.

Beim Betrieb eines Abzugs und bei der Entsorgung von Abfallstoffen müssen alle Bestimmungen und Gesetze auf Bundes-, Landes- und kommunaler Ebene zu Gesundheitsschutz und Sicherheit am Arbeitsplatz eingehalten werden.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

Chemikalien

WARNUNG **Gefährliche Chemikalien**

Einige Chemikalien, die mit dem EZ2 Connect Gerät verwendet werden, können gefährlich sein oder nach Beendigung einer Aufreinigung gefährlich werden.

Tragen Sie immer eine Schutzbrille, Laborhandschuhe und einen Laborkittel.

Die verantwortliche Person (z. B. der Laborleiter) muss alle erforderlichen Vorsichtsmaßnahmen ergreifen, um sicherzustellen, dass der Arbeitsbereich sicher ist. Außerdem dürfen die Grenzwerte in Bezug auf toxische (chemische oder biologische) Stoffe, die in den entsprechenden Sicherheitsdatenblättern (Material Safety Data Sheets, MSDS) oder den Vorschriften der OSHA*, ACGIH† oder COSHH‡ festgelegt sind, nicht überschritten werden.

Beim Betrieb eines Abzugs und bei der Entsorgung von Abfallstoffen müssen alle Bestimmungen und Gesetze auf Bundes-, Landes- und kommunaler Ebene zu Gesundheitsschutz und Sicherheit am Arbeitsplatz eingehalten werden.

* OSHA — Occupational Safety and Health Organization (United States of America)
† ACGIH – American Conference of Government Industrial Hygienists (United States of America)
‡ COSHH – Control of Substances Hazardous to Health (United Kingdom)

Giftige Dämpfe

WARNUNG **Giftige Dämpfe**

Verwenden Sie keine Bleichmittel zum Reinigen oder Desinfizieren desEZ2 Connect Geräts. Bleichmittel können mit Salzen, die in den Puffern enthalten sind, reagieren und giftige Dämpfe erzeugen.

WARNUNG **Giftige Dämpfe**

Verwenden Sie zum Desinfizieren von gebrauchtem Labormaterial keine Bleichmittel. Bleichmittel können mit Salzen, die in den Puffern enthalten sind, reagieren und giftige Dämpfe erzeugen.

Hinweis: Alle Arbeiten mit flüchtigen Lösungsmitteln, toxischen Substanzen etc. müssen unter einem funktionierenden Laborabzugssystem durchgeführt werden, damit die möglicherweise entstehenden Dämpfe abziehen können.

Abfallentsorgung

Benutzte Verbrauchsartikel, z. B. Reagenzienkartuschen und Einweg-Filterpipettenspitzen, können gefährliche Chemikalien oder infektiöse Erreger aus dem Aufreinigungsprozess enthalten. Derartige Abfälle müssen gesammelt und sachgerecht gemäß den geltenden kommunalen Sicherheitsbestimmungen entsorgt werden.

Weitere Informationen zur Entsorgung des EZ2 Connect finden Sie in Anhang A: Waste Electrical and Electronic Equipment (WEEE).

VORSICHT **Gefährliche Chemikalien und infektiöse Erreger**

Im Abfall können toxische oder infektiöse Materialien enthalten sein, die sachgerecht entsorgt werden müssen. Bitte beachten Sie für die sachgerechte Entsorgung die geltenden kommunalen Sicherheitsbestimmungen.

Gefahr durch mechanische Teile

Die Haube des EZ2 Connect muss während des Betriebs des Geräts geschlossen sein. Öffnen Sie die Haube nur, wenn Sie dazu in der Gebrauchsanweisung angewiesen werden.

Die Arbeitsplattform des EZ2 Connect Geräts bewegt sich während des Betriebs des Geräts. Halten Sie immer Abstand zum Gerät, wenn Sie die Arbeitsplattform beladen. Stützen Sie sich nicht auf die Arbeitsplattform, wenn sich der Roboterarm des Geräts bei geöffnetem Deckel bewegt, um die Ladeposition einzunehmen. Warten Sie, bis der Roboterarm seine Bewegungen abgeschlossen hat, bevor Sie mit dem Beladen oder Entladen beginnen.

WARNUNG **Sich bewegende Geräteteile**

Um einen Kontakt mit sich bewegenden Teilen beim Betrieb des EZ2 Connect zu vermeiden, darf das Gerät nur mit geschlossener Haube betrieben werden.

Sollten der Haubensensor oder die Haubenverriegelung nicht ordnungsgemäß funktionieren, wenden Sie sich an den Technischen Service von QIAGEN.

WARNUNG **Sich bewegende Geräteteile**

Vermeiden Sie jeglichen Kontakt mit sich bewegenden Geräteteilen, während der EZ2 Connect in Betrieb ist. Unter keinen Umständen dürfen sich Hände unter dem Pipettierarm befinden, während dieser sich senkt. Versuchen Sie niemals, Kunststoffartikel von der Arbeitsplattform zu entfernen, während sich das Gerät im Betrieb befindet.

Gefahr durch Hitze

In die Arbeitsplattform des EZ2 Connect ist ein Heizsystem integriert.

WARNUNG **Heiße Oberflächen**

Das Heizsystem kann Temperaturen von bis zu 95 °C (203 °F) erreichen. Berührungen im heißen Zustand sind zu vermeiden.

Strahlung

Das EZ2 Connect Gerät verfügt über eine UV-LED-Lampe. Die Wellenlänge des von der UV-LED-Lampe erzeugten UV-Lichts beträgt 270 bis 285 nm. Diese Wellenlänge entspricht ultraviolettem Licht des Typs C, das für Dekontaminationszwecke verwendet werden kann. Eine mechanische Verriegelung gewährleistet, dass die Haube während des Betriebs der UV-LED geschlossen bleibt. Sollten der Haubensensor oder die Haubenverriegelung nicht ordnungsgemäß funktionieren, wenden Sie sich an den Technischen Service von QIAGEN.

WARNUNG **UV-Strahlung**

Vermeiden Sie es, direkt in das UV-Licht zu schauen. Setzen Sie Ihre Haut nicht dem UV-Licht aus.

Das EZ2 Connect Gerät ist mit einem 2D-Barcode-Handscanner ausgestattet, mit dem Kit- und Probenbarcodes eingelesen werden können.

WARNUNG **Verletzungsgefahr**

Laserlicht der Gefahrenklasse 2: Schauen Sie bei Verwendung des Barcode-Handscanners nicht in den Laserstrahl.

Wartungssicherheit

WARNUNG/ VORSICHT **Gefahr von Personen- und Sachschäden**

Es dürfen nur Wartungsarbeiten ausgeführt werden, die in diesem Benutzerhandbuch konkret beschrieben sind.

Führen Sie alle Wartungsarbeiten gemäß den Anweisungen im Abschnitt 6 dieses Handbuchs durch. QIAGEN stellt Reparaturen, die auf nicht fachgerecht durchgeführte Wartungsmaßnahmen zurückzuführen sind, in Rechnung.

WARNUNG/ VORSICHT **Gefahr von Personen- und Sachschäden**

Die unsachgemäße Anwendung des EZ2 Connect Geräts kann zu Verletzungen des Benutzers oder zur Beschädigung des Geräts führen.

Die Bedienung des EZ2 Connect darf nur durch ausreichend qualifiziertes Personal erfolgen.

Die Instandhaltung des EZ2 Connect Geräts darf nur durch Service-Spezialisten des QIAGEN Außendienstes durchgeführt werden.

WARNUNG **Brandgefahr**

Lassen Sie nach dem Reinigen des EZ2 Connect Geräts mit einem Desinfektionsmittel auf Alkoholbasis die Gerätetür offen, damit sich entzündliche Dämpfe verflüchtigen können.

Reinigen Sie das EZ2 Connect Gerät erst mit einem Desinfektionsmittel auf Alkoholbasis, wenn sich die Komponenten der Arbeitsplattform abgekühlt haben.

VORSICHT **Beschädigung des Geräts**

Verwenden Sie keine Bleichmittel, Lösungsmittel oder Reagenzien, die Säuren, Laugen oder Abrasivstoffe enthalten, um das EZ2 Connect Gerät zu reinigen.

VORSICHT **Beschädigung des Geräts**

Verwenden Sie keine Sprühflaschen, die Alkohol oder Desinfektionsmittel enthalten, um die Oberflächen des EZ2 Connect Geräts zu reinigen. Sprühflaschen dürfen nur zur Reinigung von Gegenständen benutzt werden, die zuvor von der Arbeitsplattform entfernt wurden und wenn dies nach den lokalen Laborvorschriften zulässig ist.

VORSICHT **Beschädigung des Geräts**

Vergewissern Sie sich nach dem Abwischen der Arbeitsplattform mit Papierhandtüchern, dass keine Reste der Papiertücher im Gerät verbleiben. Auf der Arbeitsfläche verbleibende Stücke der Papiertücher könnten Zusammenstoß auf der Arbeitsplattform führen.

WARNUNG/ VORSICHT **Gefahr durch Stromschlag**

Öffnen Sie keine der Abdeckplatten des EZ2 Connect Geräts.

Es dürfen nur Wartungsarbeiten ausgeführt werden, die in diesem Benutzerhandbuch beschrieben sind.

Symbole auf dem EZ2 Connect Gerät

Die folgenden Symbole befinden sich auf dem EZ2 Connect und EZ2 Connect Fx Gerät.

Symbol	Ort	Beschreibung
	Heizsystem – im Inneren des Geräts	Gefahr durch Hitze – die Temperatur des Heizsystems kann bis zu 95 °C betragen.
	Nahe am Tip-Rack	Biogefährdung – das Tip-Rack kann mit biogefährdendem Material kontaminiert sein und darf nur mit Laborhandschuhen angefasst werden.
	Auf der Geräterückseite	Gefährdung durch UV-Strahlung — Vermeiden Sie es, direkt in das UV-Licht zu schauen. Setzen Sie Ihre Haut nicht dem UV-Licht aus.
	Am Barcode-Handscanner	Laserlicht der Gefahrenklasse 2: Schauen Sie bei Verwendung des Barcode-Handscanners nicht in den Laserstrahl.
	Roboterarm – im Inneren des Geräts	Quetschgefahr – die Pipettiereinheit kann Ihre Finger oder Hand quetschen.
	Typenschild an der Geräterückseite	CE-Kennzeichen (Zertifizierung gemäß europäischer Richtlinien).
	Typenschild an der Geräterückseite	CSA-Kennzeichen für Kanada und die USA.
	Typenschild an der Geräterückseite	RCM (ehemals C-Tick)-Kennzeichen für Australien und Neuseeland.
	Typenschild an der Geräterückseite	RoHS-Kennzeichen für China (Einschränkungen in Bezug auf den Gebrauch bestimmter Gefahrstoffe in Elektro- und Elektronikgeräten).
	Typenschild an der Geräterückseite	WEEE-Kennzeichen für Europa.
	Typenschild an der Geräterückseite	Hersteller i. S. d. Gesetzes
	Typenschild an der Geräterückseite	Unique Device Identifier (UDI) als 2D-Barcode im Data Matrix-Format.
GTIN	Typenschild an der Geräterückseite	Internationale Artikelnummer
SN	Typenschild an der Geräterückseite	Seriennummer.
	Typenschild an der Geräterückseite	Gebrauchsanweisung beachten.
	Typenschild an der Geräterückseite	Siehe Warn- und Vorsichtshinweise.

Document Revision History

Date	Changes
09/2021	Initial draft of the User Manual
09/2022	Update according to new SW 1.1 functionalities and packaging change. This includes LIMS feature, improved weekly maintenance procedure, some text improvements, and minor additions.
03/2024	Update according to new SW 1.2 functionalities: Cooling after run, UV run scheduler, patch management via QIAsphere, screen lock, time synchronization with QIAsphere, time zone support, notification center. Improved description of the weekly maintenance procedure. Improved structure.