September 2021

EZ2® Connect and EZ2 Connect Fx User Manual

CE

REF 9003210, 9003220

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MAT 1124549

Sample to Insight

QIAGEN

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.

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 and EZ2 Connect Fx (hereafter also referred to as EZ2) 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
- Safety Information — includes important information on any hazards related to the EZ2 and how to properly use the instrument
- General Description — an overview of the features of the EZ2
- 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
- Glossary — an alphabetical list of terms or words used in this user manual with explanations
- Technical Specification - Technical data

The appendices contain the following information:

- Appendix A - Legal Requirements for the EZ2
- Appendix B – EZ2 Accessories — an overview of the accessories available for the EZ2
- Appendix C - Ordering Information
- 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 or QIAGEN products in general, 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 as well as 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.

For technical assistance and more information, please see our Technical Support Center at **support.qiagen.com** or call one of the QIAGEN Technical Service Departments or local distributors.

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

- EZ2 serial number, type, and version
- Error code (if applicable)
- Timepoint when the error occurred for the first time
- Frequency of error occurrence (i.e., intermittent or persistent error)
- Downloaded 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.

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

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

1.4 Requirements for EZ2 users

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

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 only	Specialists trained, certified, and authorized by QIAGEN

2 Safety Information

Before using the EZ2, 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.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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

WARNING 	**Risk of personal injury** The EZ2 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. After the EZ2 has been unpacked, two people must lift the instrument. Lift the instrument by placing your hands underneath the bottom of the instrument.

WARNING 	**Risk of personal injury and material damage** Do not attempt to move the EZ2 during operation.

Perform the maintenance as described in the Maintenance Procedures section. QIAGEN charges for repairs that are required due to incorrect maintenance.

In case of emergency, power OFF the EZ2 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. 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, handle such liquids carefully and in accordance with the required safety regulations. If liquid has been spilled, wipe it off and leave the EZ2 hood open to allow flammable vapors to disperse.

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

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

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

CAUTION 	**Damage to the instrument** Ensure that the EZ2 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.

2.2 Electrical safety

Note: If operation of the instrument is interrupted in any way (for example, due to interruption of the power supply or a mechanical error), first switch off the EZ2 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 the EZ2. **Risk of personal injury and material damage** Only perform maintenance that is specifically described in this user manual.

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

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

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 or the line power cord appear to be damaged.
- The EZ2 has been stored in unfavorable conditions for a prolonged period.
- The EZ2 has been subjected to severe transport stresses.
- Liquids have come into direct contact with electrical components of the EZ2.
- The power cord has been exchanged with a non-official power cord.

WARNING 	**Electric hazard** Do not touch the EZ2 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 Technical Specification section.

WARNING 	**Explosive atmosphere** The EZ2 instrument 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. Slits and openings that ensure the ventilation of the instrument must not be covered.

WARNING 	**Risk of explosion** The EZ2 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 or interfere with the correct function of the load check. The EZ2 must be located out of direct sunlight.

CAUTION 	**Damage to the instrument** Do not use the EZ2 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

Specimens 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** Some samples used with the EZ2 instrument 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 wastes 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 instrument may be hazardous or may become hazardous after completion of a 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 not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Material Safety Data Sheets (MSDSs) or the OSHA,* ACGIH,† or COSHH‡ documents. Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

* OSHA: Occupational Safety and Health Administration (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 instrument. Bleach in contact with salts from the buffers can produce toxic fumes.

WARNING 	**Toxic fumes** Do not use bleach to disinfect used labware. 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 more information about how to dispose of the EZ2, 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 must remain closed during operation of the instrument. Only open the hood when instructed to do so by the instruction for use.

The worktable of the EZ2 instrument moves during operation of the instrument. While loading the worktable, always stand clear of the instrument. Do not lean on the worktable when the robotic arm of the instrument is moving to reach loading position with its lid open. Wait until the robotic arm 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, the instrument must be operated with the hood closed. 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. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the workdeck whilst the instrument is operating.

2.8 Heat hazard

The EZ2 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.

2.9 Radiation

The EZ2 instrument has a UV LED lamp. The wavelength of the UV light produced by the UV LED lamp is 270 to 285 nm. This wavelength corresponds to ultraviolet light type C, which can be used for decontamination procedures. A mechanical lock ensures that the hood must be 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 instrument has a 2D handheld barcode scanner to allow kit bar code 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 Maintenance Procedures section. 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 instrument may cause personal injuries or damage to the instrument. The EZ2 must only be operated by suitably qualified personnel. Servicing of the EZ2 instrument must only be performed by QIAGEN Field Service Specialists.

WARNING 	**Risk of fire** When cleaning the EZ2 instrument with alcohol-based disinfectant, leave the instrument door open to allow flammable vapors to disperse. Only clean the EZ2 instrument 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 instrument.

CAUTION 	**Damage to the instrument** Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the EZ2 instrument. 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 electric shock** Do not open any panels on the EZ2 instrument. 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 and EZ2 Connect Fx 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.

Symbol	Location	Description
	Type plate on the back of the instrument	Unique Device Identifier (UDI) as a 2D bar code 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.
	Type plate on the back of the instrument	Consult instructions for use.
	Type plate on the back of the instrument	See warnings and precautions.

3 General Description

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 in molecular biology applications using magnetic particle technology.

The EZ2 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 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. The workflow includes sample lysis, nucleic acid binding to magnetic particles, contaminant removal by washing, and, finally, elution from magnetic beads. The execution of individual steps varies and is optimized for each protocol.

The aspiration and dispensation of samples and reagents and the separation of magnetic particles are performed by the 24-channel pipettor head. 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 bar code reading
- An external bar code reader, which is used for reading sample IDs and kit bar codes
- A sample recovery function for forensic protocols
- Extended user management
- User Interface with additional features
- Additional reporting functions
- UV schedule function

3.2 External features of the EZ2

Figure 1. The front of the EZ2 instrument.

1. Touchscreen
2. Hood
3. Power button
4. USB port

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

Figure 2. The back of the EZ2 instrument.

5 RJ-45 Ethernet port

6 Power cord socket — including instrument main fuse

7 Cooling air outlets

8 Instrument type plate

3.2.1 Touchscreen

The EZ2 has a 10.1-inch color touchscreen display with a resolution of 1280 x 800 pixels. The Graphical User Interface (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 view reports.

Figure 3. EZ2 touchscreen display with GUI.

3.2.2 Hood

The EZ2 hood protects the interior of the instrument from external contamination during protocol runs. Additionally, the hood protects operators from UV irradiation when the UV LED light is in use, that is during decontamination procedures.

The hood must be closed to enable a protocol run to start. The hood is locked at the beginning of a run and remains locked throughout the duration of 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, the hood must remain closed and should only be opened when you are instructed to do so by the software.

WARNING 	**Moving parts** To avoid contact with moving parts during the operation of the EZ2, the instrument must be operated with the hood closed. If the hood sensor or lock is not functioning properly, contact QIAGEN Technical Services.

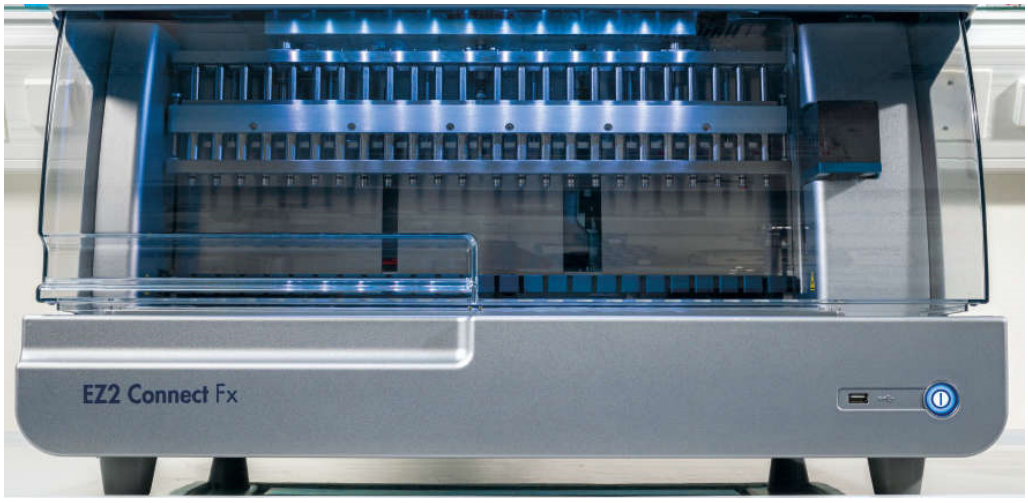

Figure 4. The EZ2 with the hood closed.

3.2.3 USB ports

The EZ2 has 3 USB ports. One is located next to the power button, on the front of the instrument. Two are located on the back of the touchscreen display.

The USB ports allow you to connect a USB drive to the EZ2. 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 the Saving a run report section.

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 Managing protocols section. For more information on software updates, refer to the Updating software section.

The bar code scanner is connected to the EZ2 using any one of the 3 available USB ports.

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

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

Important: Always turn off the EZ2 in order to plug or unplug the Wi-Fi USB device. Plug-and-play of the Wi-Fi USB device while the instrument is turned on is not supported.

3.2.4 RJ-45 Ethernet port and power cord socket

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

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

Figure 5. Location of RJ-45 port and power cord socket.

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. **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. **Risk of personal injury and material damage** Only perform maintenance that is specifically described in this user manual.

3.2.5 Ventilation openings

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

CAUTION 	**Risk of overheating** To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2. Slits and openings that ensure the ventilation of the instrument must not be covered.

3.2.6 Bar code scanner

The bar code scanner delivered with the instrument can be connected to the EZ2 using any one of the 3 USB ports. The scanner is used for reading Q-Card and sample bar codes. For more information on how to use the bar code scanner, refer to the Using the bar code scanner section.

WARNING	**Risk of personal injury** Hazard Level 2 laser light: Do not stare into the light beam when using handheld bar code scanner.

3.3 Internal features of the EZ2

Figure 6. Interior of the EZ2.

1 Pipettor head
2 Cartridge rack
3 Tip rack
4 Magnet module
5 Camera

Internal features not marked in the picture:

- Heating system
- UV LED lamp
- Internal light

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 which can be attached to filter-tips. The syringe pumps operate simultaneously and can aspirate or dispense small volumes of liquid (20–1000 µl) 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, controlled by the EZ2, 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 per-forms aspiration and dispensation operations at different locations on the worktable before ejecting the tips back into the tip rack at the end of the run.

Figure 7. EZ2 pipettor head.

WARNING 	**Moving parts** To avoid contact with moving parts during the operation of the EZ2, the instrument must be operated with the hood closed. 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. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the workdeck whilst the instrument is operating.

3.3.2 Worktable

The EZ2 worktable contains two movable EZ2 Connect Cartridge Rack that hold all the labware required for a protocol run, and the heating system, which controls the temperature of samples during a run.

EZ2 Connect Cartridge Rack

Figure 8. EZ2 Connect Cartridge Rack with two cartridges inserted.

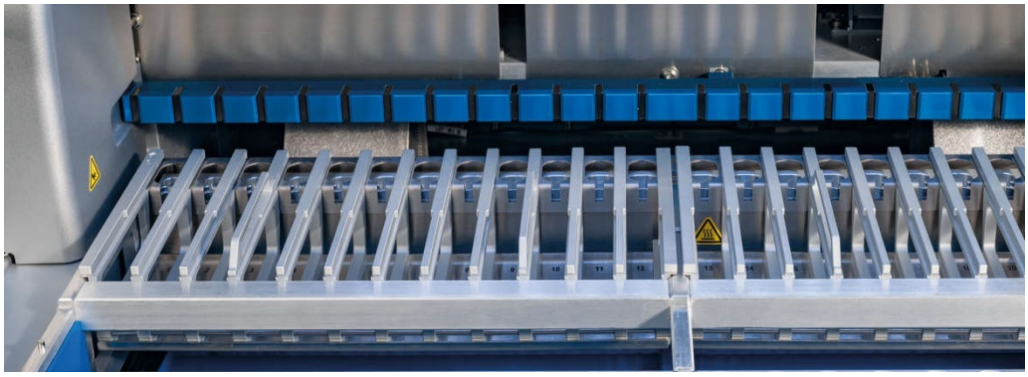

Figure 9. Cartridge rack inside the instrument.

The EZ2 Connect Cartridge Rack consists of two separate parts. The left cartridge rack is used for cartridges in positions from 1 to 12. The right cartridge rack is used for cartridges in positions 13 to 24. On the worktable, the cartridge rack is located behind the tip rack. It holds up to 24 reagent cartridges.

For more information on how to load the EZ2 Connect Cartridge Rack, refer to the Loading the cartridge rack section.

Sealed reagent cartridges 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.

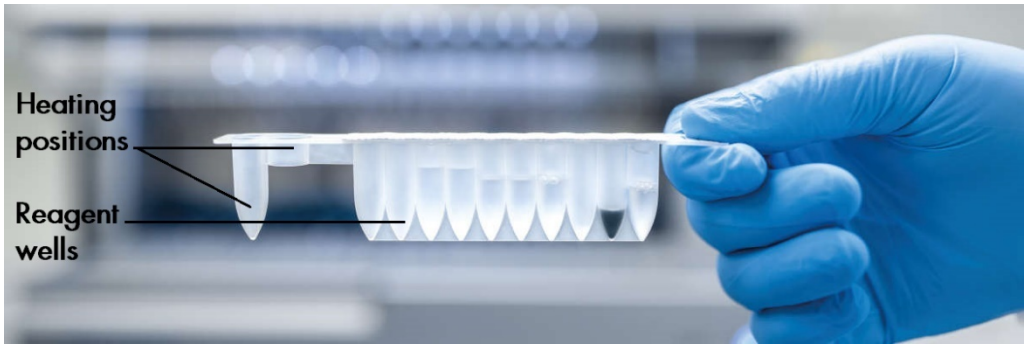

Figure 10. An EZ2 cartridge.

EZ2 Connect Tip Rack

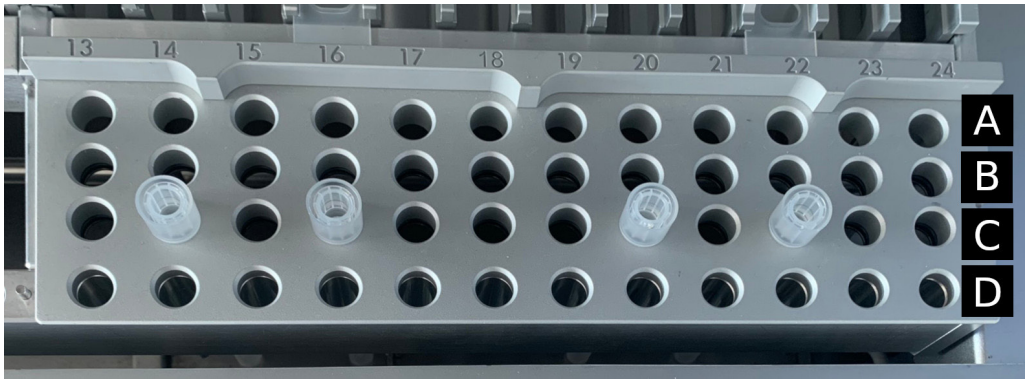

Figure 11. EZ2 Connect Tip Rack.

The EZ2 Connect Tip Rack consists of two separate parts. The left part of the tip rack is used for labware in positions from 1 to 12. The right part of the tip rack is used for labware in positions 13 to 24.

The EZ2 Connect Tip Racks are located at the front of the worktable. Each consists of four rows and 12 columns.

Individual positions in the EZ2 Connect Tip Rack are marked by engravings. During run setup, the User Interface gives instruction to load specific positions of the EZ2 Connect Cartridge Rack with filter tips in tip holders, sample tubes, enzymes in tubes, or elution tubes.

Figure 12. Tip holders and filter tips.

Important: Only use QIAGEN recommended tubes for elution.

For information on how to load the EZ2 Connect Tip Rack, refer to the section Loading the tip rack.

Heating system

The heating system is located under the rear part of cartridge rack. If needed, it heats up the wells in positions 11 and 12 of the cartridge.

Figure 13. Heatable positions in the cartridge rack.

WARNING 	**Hot surface** The heating system can reach temperatures of up to 95°C (203°F). Avoid touching it when it is hot.

Tray

The tray is located underneath the tip and cartridge racks. Its role is to prevent contamination of the EZ2 that could be caused by liquids that are unintentionally spilled. The tray can be removed and cleaned as described in the Daily maintenance section.

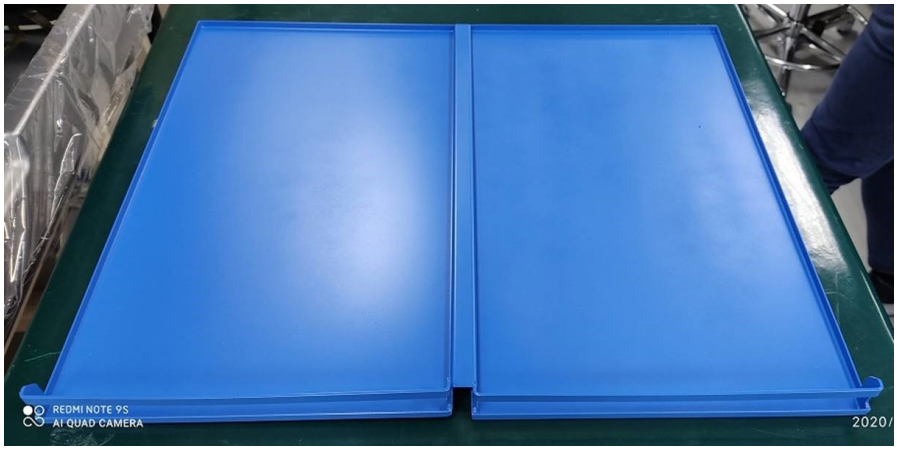

Figure 14. The EZ2 tray.

3.3.3 Magnet module

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

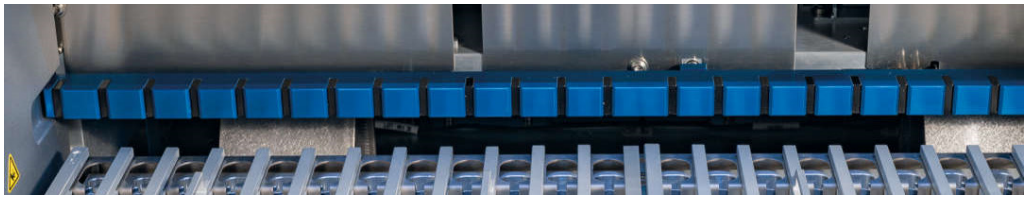

Figure 15. The EZ2 magnet module.

3.3.4 Camera

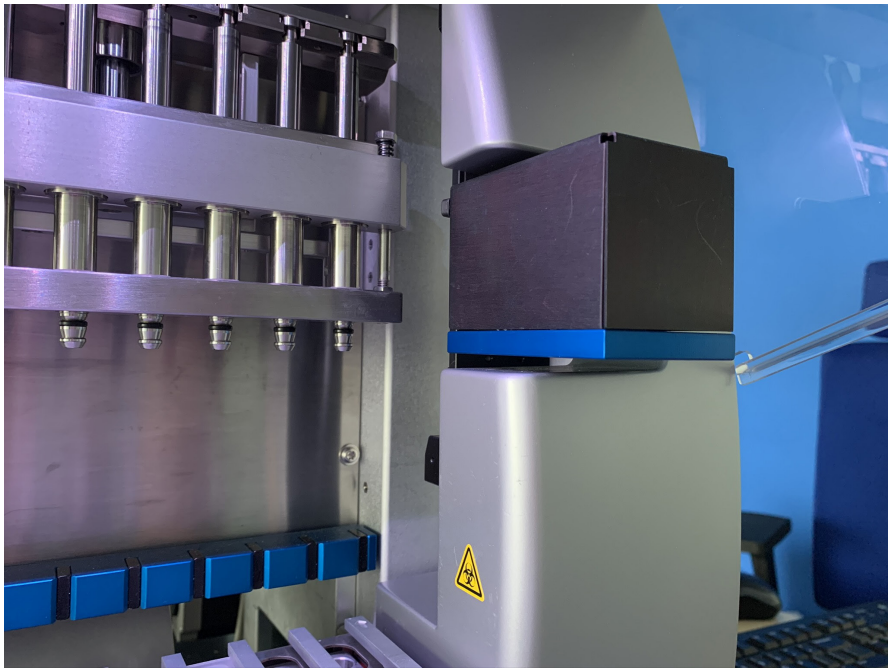

Figure 16. Camera module.

The EZ2 Connect Fx version has a built-in camera that is used for load checks and reading bar codes from cartridges.

Load checks are done before a protocol run starts. The camera checks if all the labware has been loaded in the correct positions, tubes are opened if required. The results of the load check are shown on the screen. For more information on the load check, refer to the Load check section.

The camera also reads the cartridge 2D bar codes. Information that is collected from the Q-Card is included in run reports.

3.3.5 UV LED light

The EZ2 is equipped with a UV LED light for decontamination. During the maintenance decontamination procedure, the UV LED moves over the worktable.

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, the instrument must be operated with the hood closed. If the hood sensor or lock is not functioning correctly, contact QIAGEN Technical Services.

3.3.6 Internal light

The EZ2 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 (for example, 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.

4.1 Installation environment

The EZ2 is a plug-and-play instrument. Unpacking and installation procedures are easy to follow, but a person who is familiar with laboratory equipment should oversee the installation.

4.1.1 Site requirements

The EZ2 must be located out of direct sunlight, away from heat sources and away from sources of vibration and electrical interference. Refer to Section Technical Specifications 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. Refer to the Technical Specifications section for the weight and dimensions of the EZ2. Ensure that the workbench is dry, clean and vibration-proof and has additional space for accessories.

The EZ2 must be placed within approximately 1.5 m of a properly grounded (earthed) AC power out-let. The power line to the instrument should be voltage regulated and surge protected. Ensure that the EZ2 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 instrument is not designed for use in an explosive atmosphere.

CAUTION 	**Risk of overheating** To ensure proper ventilation, maintain a minimum clearance of 10 cm at the sides and rear of the EZ2. Slits and openings that ensure the ventilation of the instrument must not be covered.

WARNING 	**Risk of personal injury and material damage** The EZ2 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 instrument and cause damage to plastic parts. The EZ2 must be located out of direct sunlight.

CAUTION 	**Damage to the instrument** Do not use the EZ2 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

The EZ2 operates at: 100–240 V AC +/– 10%, 50/60 Hz, 1000 VA.

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

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 	**Electrical hazards** 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 that the EZ2 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.

WARNING 	**Electrical hazards** 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.

4.2 Unpacking the EZ2

WARNING 	**Risk of personal injury** The EZ2 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 instrument
- Quick-start guide and safety instructions
- Left and right EZ2 Connect Cartridge Rack
- Left and right EZ2 Connect Tip Rack
- Left and right EZ2 Connect Tip Rack - Flip Cap Tube (for EZ2 Connect Fx)
- Power cord set
- USB drive
- Silicone grease
- Certificate of manufacture
- Hand-held bar code scanner (for EZ2 Connect Fx)

To unpack the EZ2:

1. Before unpacking the EZ2, 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.
4. Remove the outer carton box by holding at the cut-out area and lifting up the outer carton box.
5. Remove the two pieces of protector from the unit.
6. Move the unit to the workbench or trolley from the packaging. When lifting the EZ2, slide your fingers under the side of the instrument and keep your back straight.
   Important: Two persons are required to lift the EZ2.

   Important: Do not hold the touchscreen display while unpacking or lifting the EZ2, this might damage the instrument.
7. Remove the transport lock for P-Axis by pulling the transport lock from bottom.

Figure 17. Transport lock.

8. Remove gel from the unit.
9. Remove the transport lock for Y-Axis by pushing the bottom of transport lock towards rear direction and pull it out from the rear. There is a total of two transport locks for Y-Axis.
10. Check if the packing list document is included after unpacking the EZ2.
11. Read the packing list to check that you have received all items. If anything is missing, contact QIAGEN Technical Services.
12. Check that the EZ2 is not damaged and that there are no loose parts. If anything is damaged, contact QIAGEN Technical Services. Make sure that the EZ2 has equilibrated to ambient temperature before powering on.

13. Retain the package in case you need to transport the EZ2 in the future. Refer to the Packing the EZ2 section for more details. Using the original package minimizes the possibility of damage during transportation of the EZ2.

4.3 Installing the EZ2

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

- Removal of the EZ2 accessories and shipping material.
- Installation of the AC power cord
- Installation of external barcode scanner
- Installation of the Wi-Fi adapter
- 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 Service.

4.3.1 Removal of the EZ2 accessories and shipping materials

1. Remove the power cord, barcode scanner, and the quick-start guide from the foam packing material on top of the EZ2.
2. Remove the USB flash drive, cartridge and sample/tip racks
3. Ensure all shipping foams, transport locks and other packing material have been removed as described in the Unpacking the EZ2 section.

4.3.2 Installation of the AC power cord

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

   Note: Only use the power cord that is supplied with the EZ2.
2. Ensure that the power switch is set to OFF.

Figure 18. Location of the power button.

3. Check that the voltage rating on the label at the back of the EZ2 matches the voltage available at the installation site.
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 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 3 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 bar code scanner.

4.3.4 Installation of Wi-Fi adapter (optional when using QIAsphere)

1. Remove the Wi-Fi adapter from the packaging
2. Before turning on the instrument, plug the Wi-Fi adapter into one of the 3 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

1. Follow steps 1 to 5 from the Starting the EZ2 section.
2. To log in for the first time, enter **Admin** in both **User ID** and **Password** fields then press **Log in**. After this login, you will have administrator rights with the option to set up other users. Refer to the Managing users section for further details.

   Note: After first log in using the Admin account, the password should be changed according to the Password policy described in the Managing user security section and as per instruction in the Changing password section.
3. From the **Configuration** menu under the **System** tab, you can modify the Device Name, Date and Time fields. You also find information on Software version, Serial number, and Firmware version. For further details, see the Setting basic system data section.

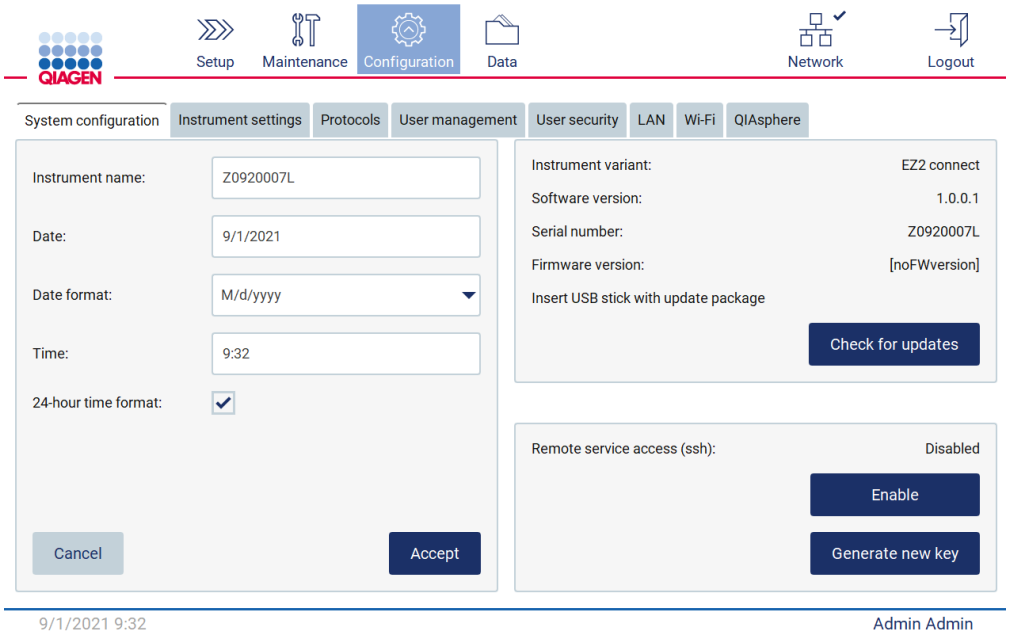

Figure 19. The System configuration tab.

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 the Changing Instrument settings section.

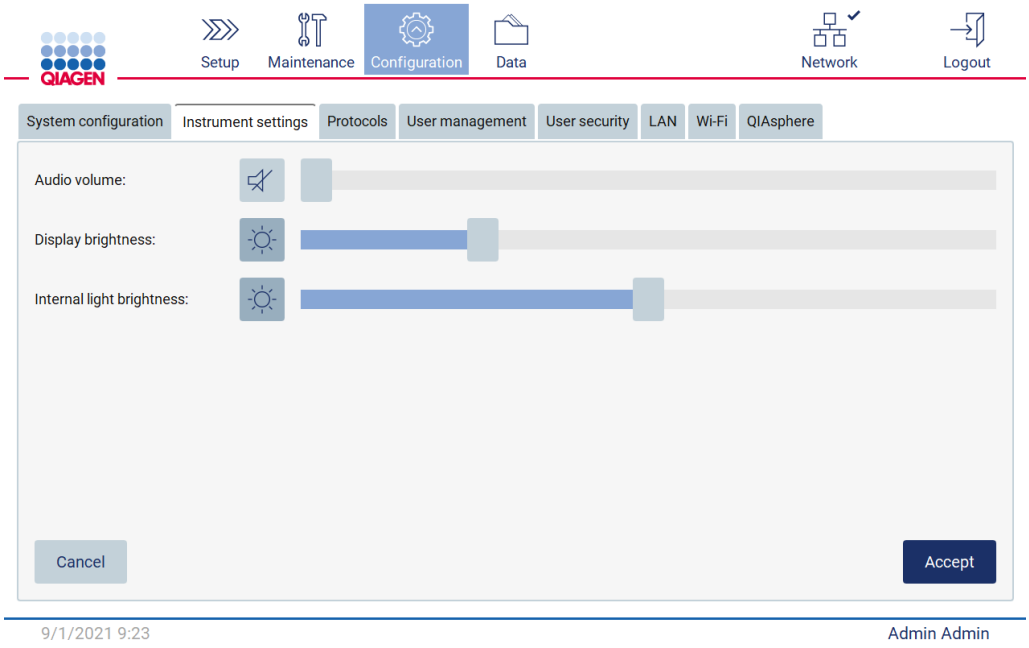

Figure 20. Details on the Instrument setting tab.

4.3.6 Perform camera exposure calibration (for EZ2 Connect Fx)

Note: Only Administrators can perform the camera exposure calibration.

WARNING 	**Moving parts** To avoid contact with moving parts during the operation of the EZ2, the instrument must be operated with the hood closed. If the hood sensor or lock is not functioning correctly, 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.

Figure 21. Camera exposure calibration screen.

3. During the calibration routine, the following will be displayed:

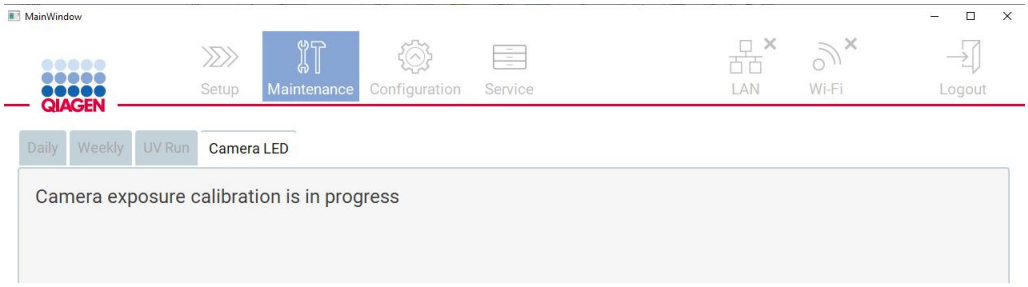

Figure 22. Camera exposure calibration is in progress message.

Note: For support or technical advice regarding this please contact QIAGEN Technical Service Department or see our Technical Support Center at http://www.qiagen.com/service-and-support/technical-support.

5 Operating Procedures

This section describes how to operate the EZ2 Instrument.

Before proceeding, it is recommended that you familiarize yourself with the features of the instrument as described in the External features of the EZ2 and Internal features of the EZ2 sections.

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

The hood of the EZ2 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.

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

WARNING 	**Moving parts** To avoid contact with moving parts during the operation of the EZ2, the instrument must be operated with the hood closed. 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. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the workdeck whilst the instrument is operating.

WARNING 	**Risk of personal injury and material damage** Do not attempt to move the EZ2 during operation.

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument. The EZ2 must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 must only be performed by QIAGEN Field Service specialists.

CAUTION 	**Damage to the instrument** Avoiding spilling water or chemicals onto the EZ2. 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, handle such liquids carefully and in accordance with the required safety regulations. If liquid has been spilled, wipe it off and leave the EZ2 hood open to allow flammable vapors to disperse.

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

CAUTION 	**Damage to the instrument** Ensure that the EZ2 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** Some samples used with the EZ2 instrument 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 wastes 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 materials 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.

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 bar code scanner.

5.1 General information

The EZ2 is operated using a touchscreen display. Some of the actions that you can do using the Graphical User Interface (GUI) are:

- Guided run setups and maintenance
- Checking the status of the run and the instrument
- Generating and save run reports
- Changing instrument settings to customize your EZ2

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

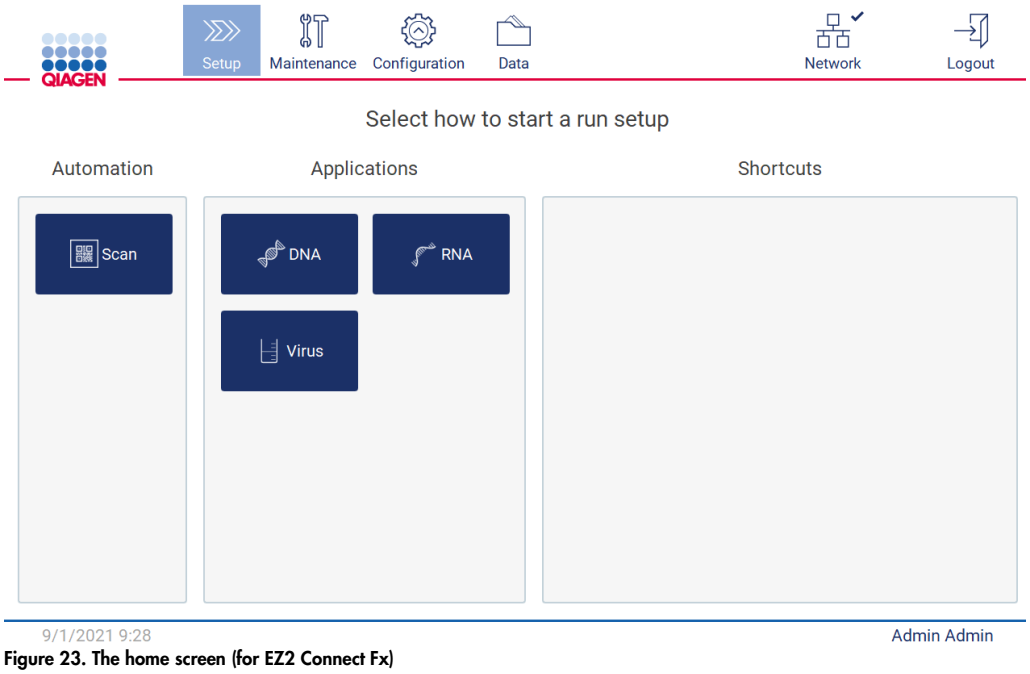

Figure 23. The home screen (for EZ2 Connect Fx)

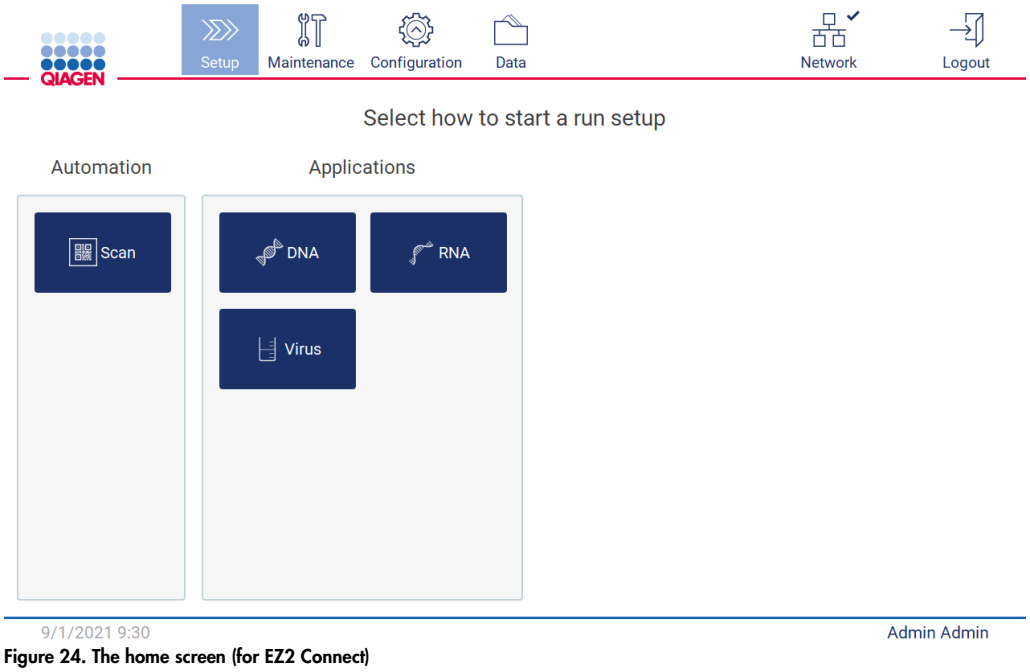

Figure 24. The home screen (for EZ2 Connect)

Toolbar

The toolbar is used to access the main sections of the EZ2 software, to check the connection status of the LAN and Wi-Fi, 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.

Element	Description
	Tap this button to go to the **Home** screen, where you can start the setup process of a protocol run.
	Tap this button to go to the **Tools** section, where you can configure data exchange, and access maintenance procedures.
	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.
	Shows the status of the LAN connection.
	Shows the status of the Wi-Fi connection.
	Tap this button to log out.

Figure 25. Description of elements in the User Interface.

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, the software version, and the name of 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 instrument software. To access the keyboard, tap the field that you want to edit. The keyboard appears.

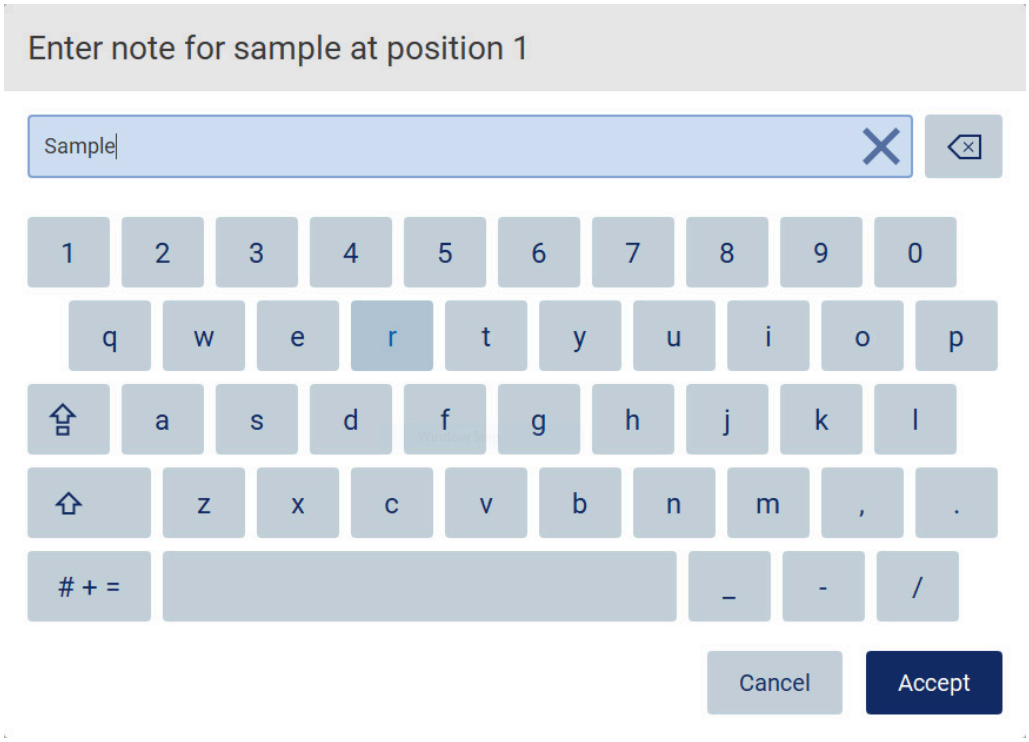

Figure 26. The on-screen keyboard.

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 **ABC** A B C.

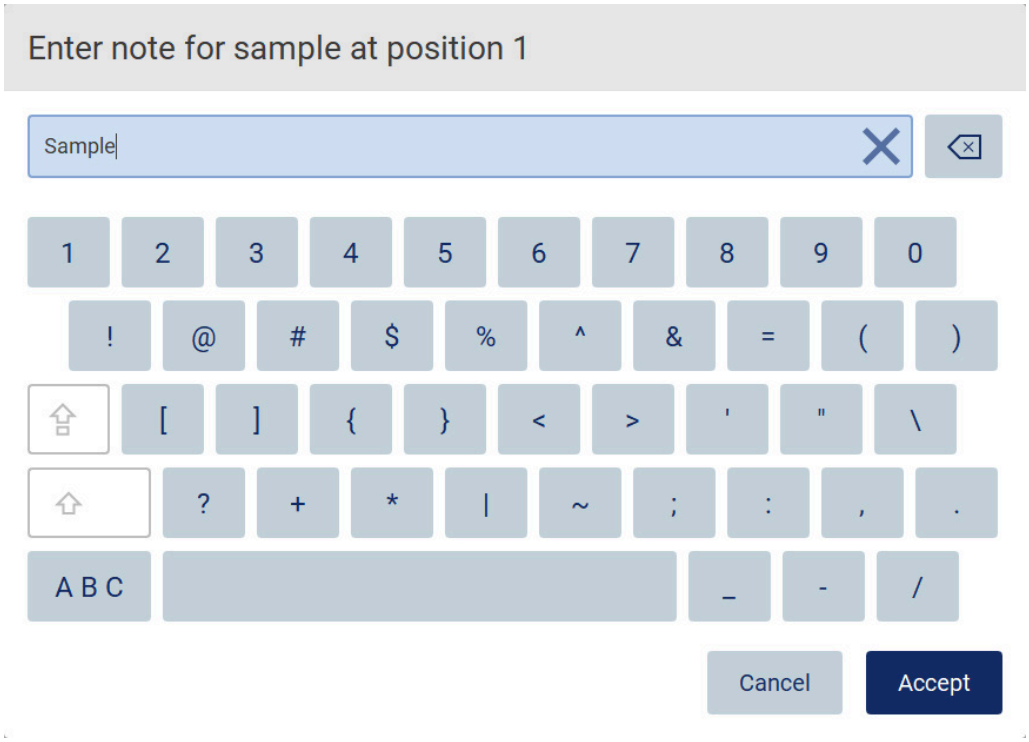

Figure 27. The on-screen keyboard in special character mode.

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 have 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.

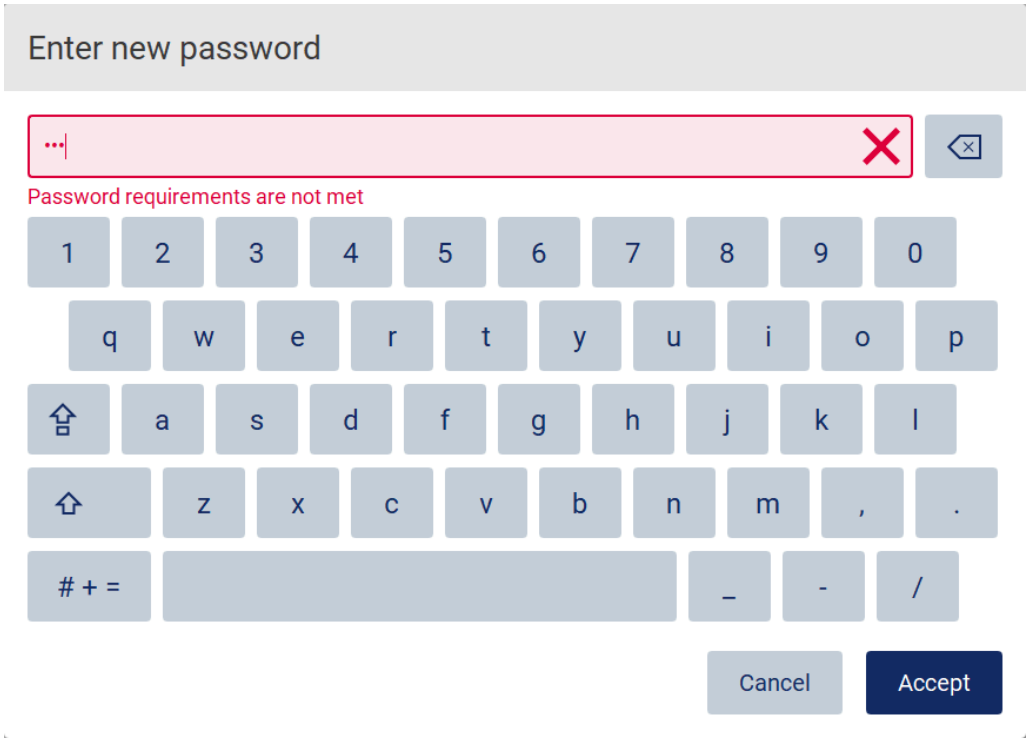

Figure 28. Example of text field validation.

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

To start the EZ2, switch on the instrument and log in, then follow the steps below:

1. Close the hood of the instrument.
2. Press the power button. The startup screen appears, and the instrument is initialized. After the initialization is done, the **Login** screen appears.

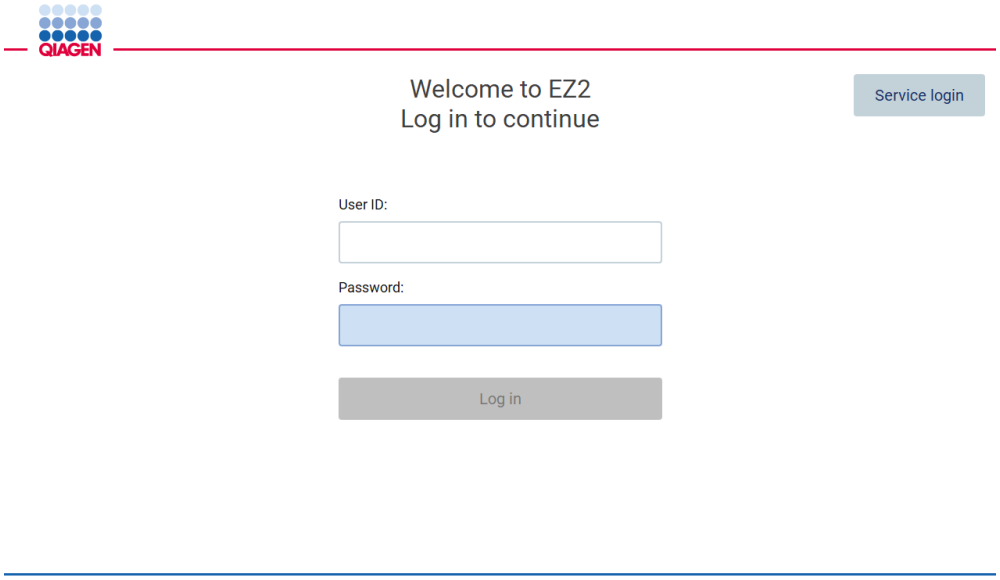

Figure 29. The login screen.

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 Entering text and numbers section.

   Note: If this is the first time the EZ2 is 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 is switched on, enter the default password, that is **Admin**.

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, your account is locked. To activate your account, contact your administrator. If you are the only administrator and your account is locked, contact QIAGEN Technical Support.

5.3 Configuring the EZ2

Administrators of the EZ2 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 device name, date, time, date format and time zone, follow the steps below:

Note: Only Administrators can change system settings.

1. Tap the **Configuration** icon on the toolbar and tap the **System configuration** tab.

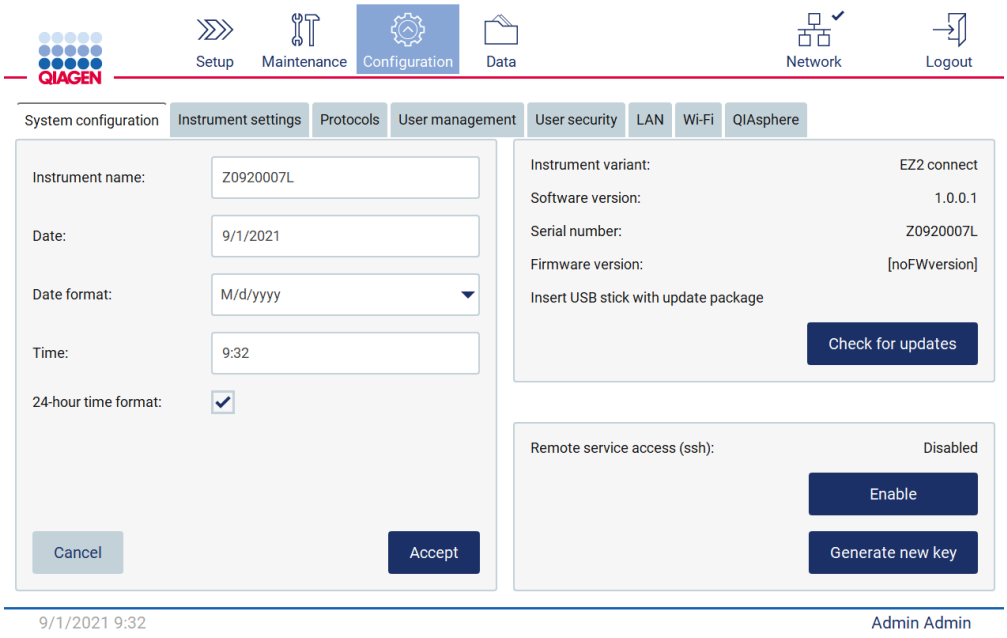

Figure 30. System configuration tab.

2. To set the device name, tap the **Device 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.

3. 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**.

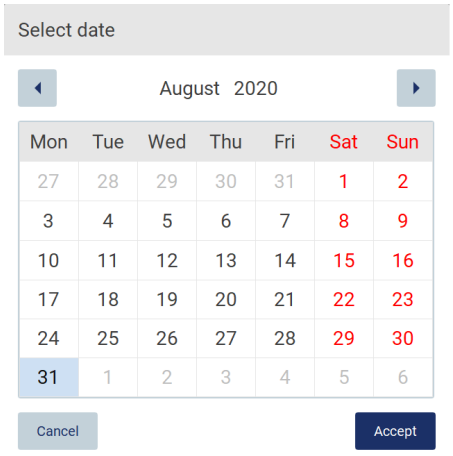

Figure 31. Select date dialog.

4. To set the time, tap the **Time** field and enter the time using the on-screen keyboard.
5. To set the date format, tap the **Date format** drop-down list and select one of the listed formats.
6. To use the 24-hour time format, select the **24-hour time format** checkbox. To use the 12-hour for-mat, clear the **24-hour time format** checkbox.
7. To set the time zone automatically using the QIAsphere Base connection, select the **Set time zone automatically** checkbox.

   Note: This setting requires an active QIAsphere Base connection. For more information on configuring QIAsphere Base, refer to Configuring QIAsphere Base. If QIAsphere Base is not configured, the **Set time zone automatically** checkbox is disabled.
8. To save the settings, tap **Accept**.

5.3.2 Changing Instrument settings

You can adjust the settings of the EZ2 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 and tap the **Instrument settings** tab.

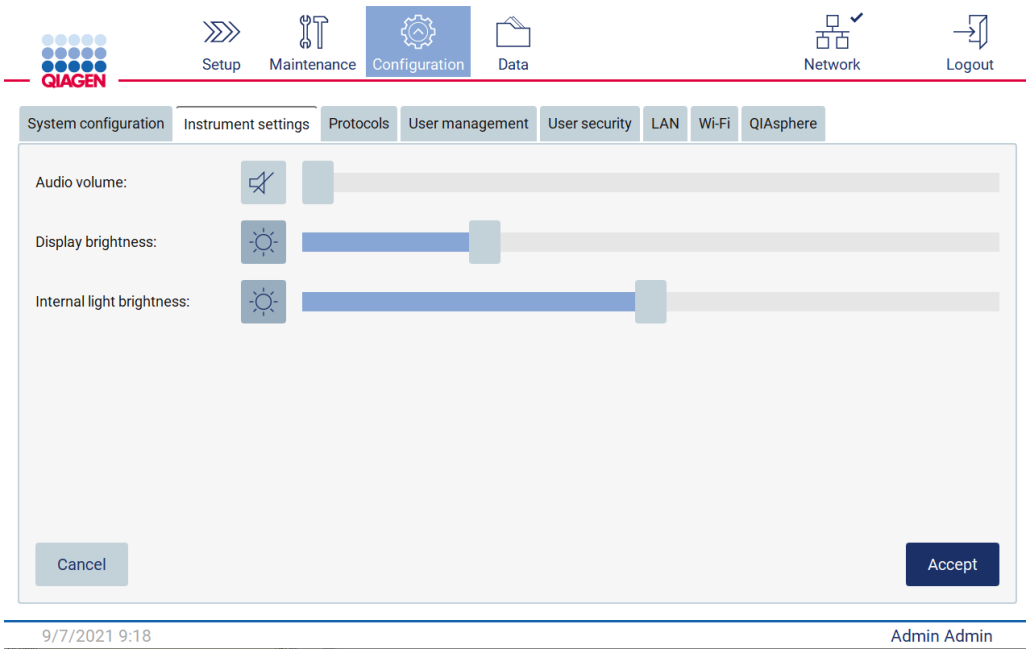

Figure 32. The Instrument settings tab.

2. 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.
3. To adjust the brightness of the touchscreen, use the **Display brightness** slider. To set the lowest brightness, tap **Display brightness**, or move the slider to the far-left position.

   Note: The lowest brightness setting turns off the backlight of the display, which makes the content on the touchscreen barely visible.
4. 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.
5. Tap **Accept** to save the modified settings, or tap **Cancel** to restore previously saved settings.

5.3.3 Managing users

EZ2 user management allows you to create and edit user accounts with two different roles: administrator and operator.

Note: The EZ2 Connect Fx version has an additional advanced user role who can create shortcuts.

When you use the EZ2 for the first time, a default user (Admin) is pre-installed and configured.

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 and tap the **User management** tab. Existing users are shown in the table.

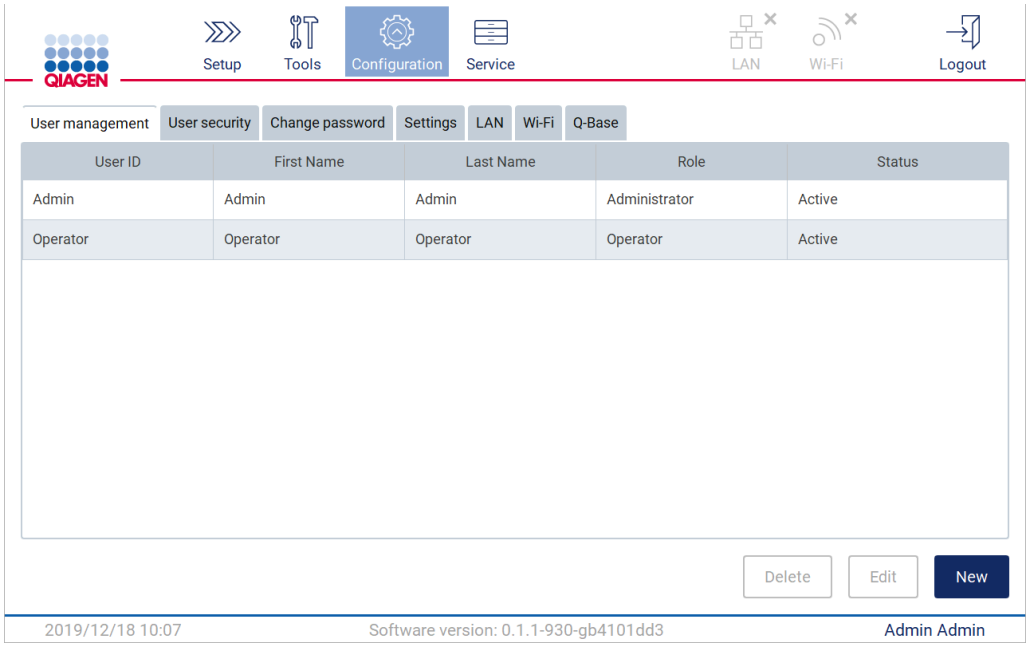

Figure 33. The User Management tab.

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

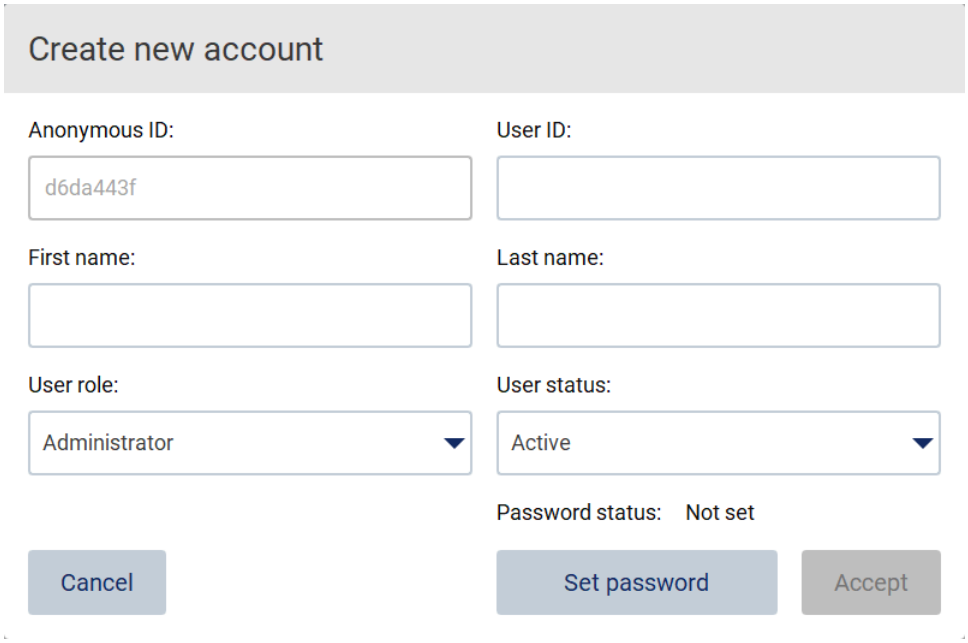

Figure 34. Create new account dialog.

3. 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.

4. Select the **User role** and **User status** from their respective drop-down lists.
5. Tap **Set password**. The **Set user password** dialog 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. To modify the password policy, refer to the Managing user security section.

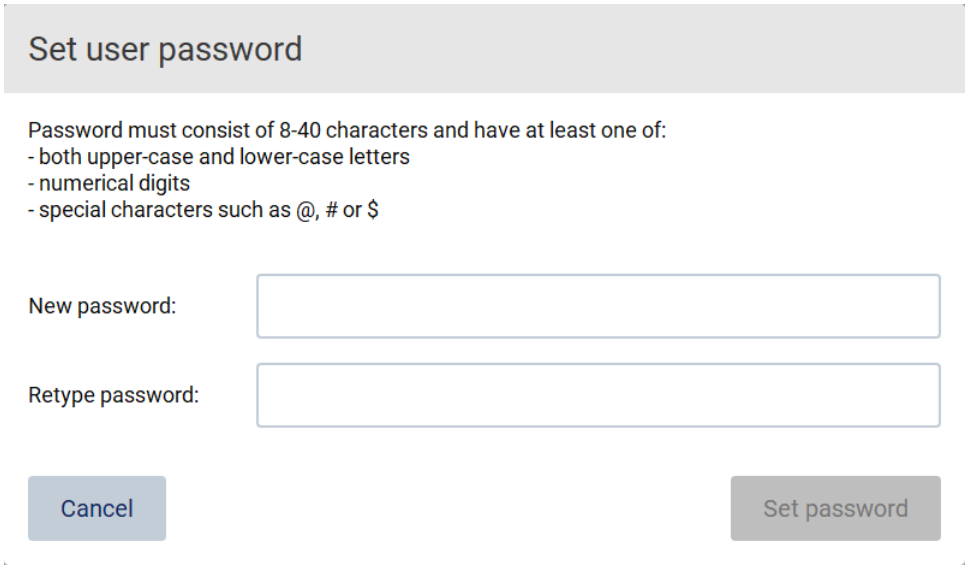

Figure 35. Set user password dialog.

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

   Note: Users can change their password later, see the Changing password section.

7. 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.

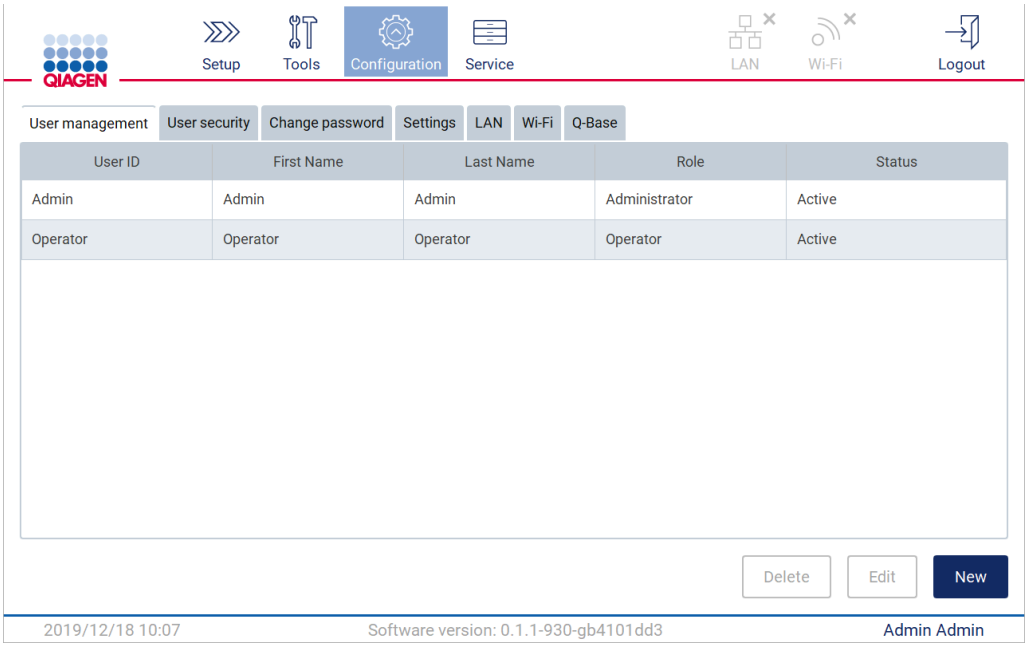

Figure 36. The User Management tab.

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

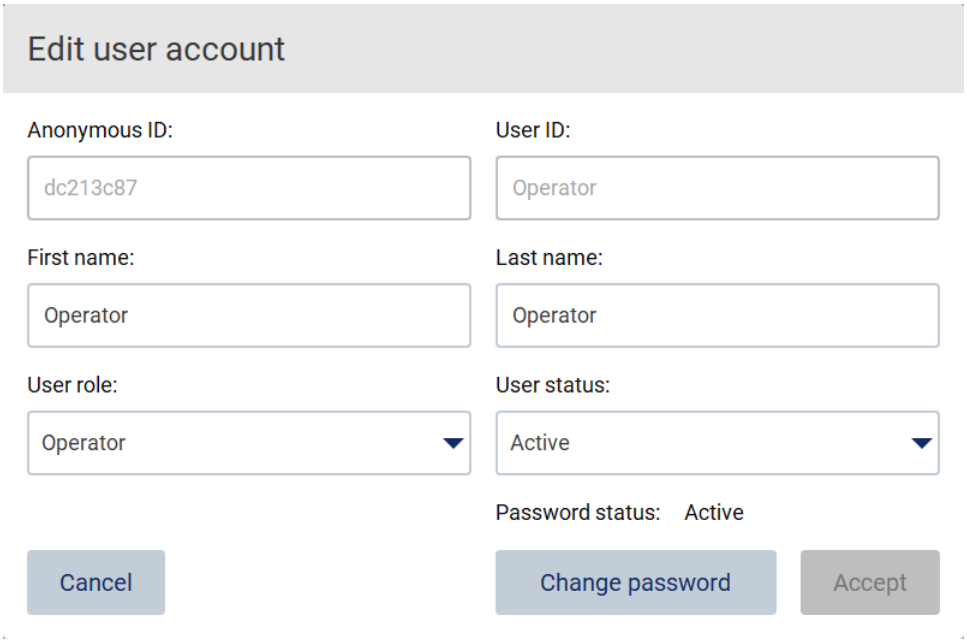

Figure 37. Edit user account dialog.

3. To edit the **First name** or **Last name**, tap the respective boxes and modify the contents using the on-screen keyboard.

4. To change the **User role** or **User status**, tap the respective drop-down lists and select an option.
5. To change the password of the user, tap **Change password**. The **Change user password** dialog appears.

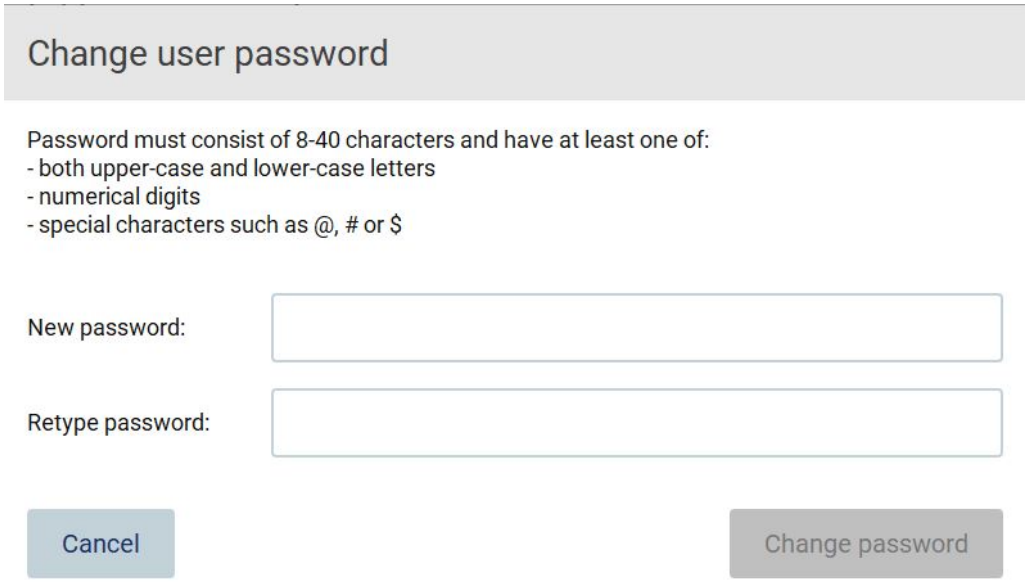

Figure 38. Change user password screen.

6. 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. To modify the password policy, refer to the Managing user security section.
7. Tap **Change password**.
8. 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.

Deleting a user

Note: Only administrators can delete user accounts.

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

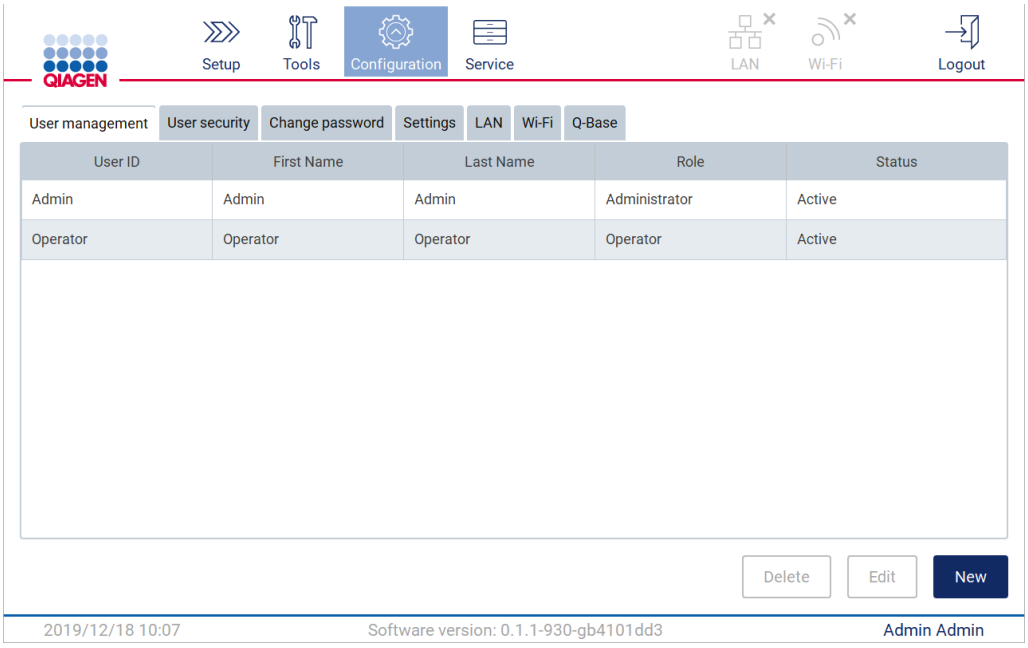

Figure 39. The User Management tab.

2. Tap the table row that corresponds to the user you want to delete.
3. Tap **Delete**. A confirmation dialog is shown.

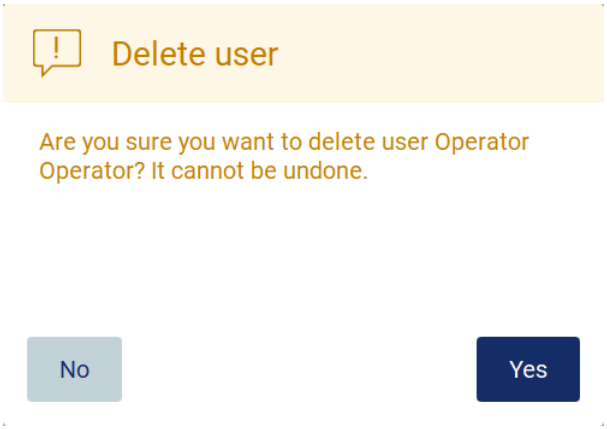

Figure 40. Delete user confirmation dialog.

4. To confirm the account deletion, tap **Yes**.

Deactivating a user

Note: Only administrators can deactivate user accounts.

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

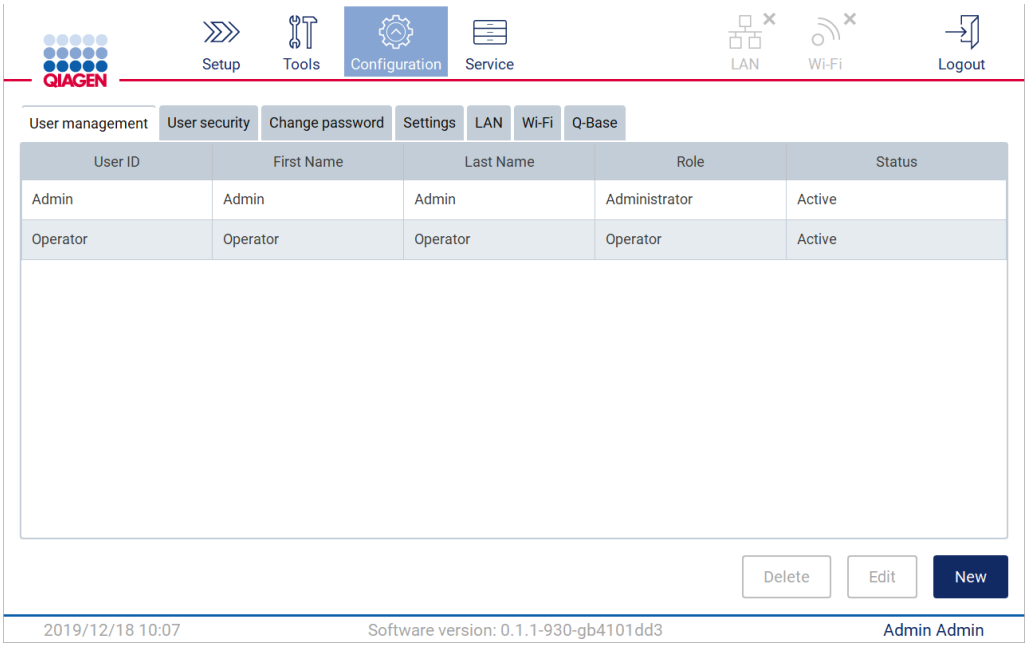

Figure 41. The User Management tab.

2. Tap the table row that corresponds to the user that you want to deactivate.
3. Tap **Edit**.
4. Tap the **User status** drop-down list and select **Inactive**.
5. 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. **Note**: For cybersecurity reasons, an operator must change the password provided by the administrator upon first login.

To change your own password, follow the procedure below.

1. Tap the **Configuration** icon on the toolbar and tap the **Change password** tab.

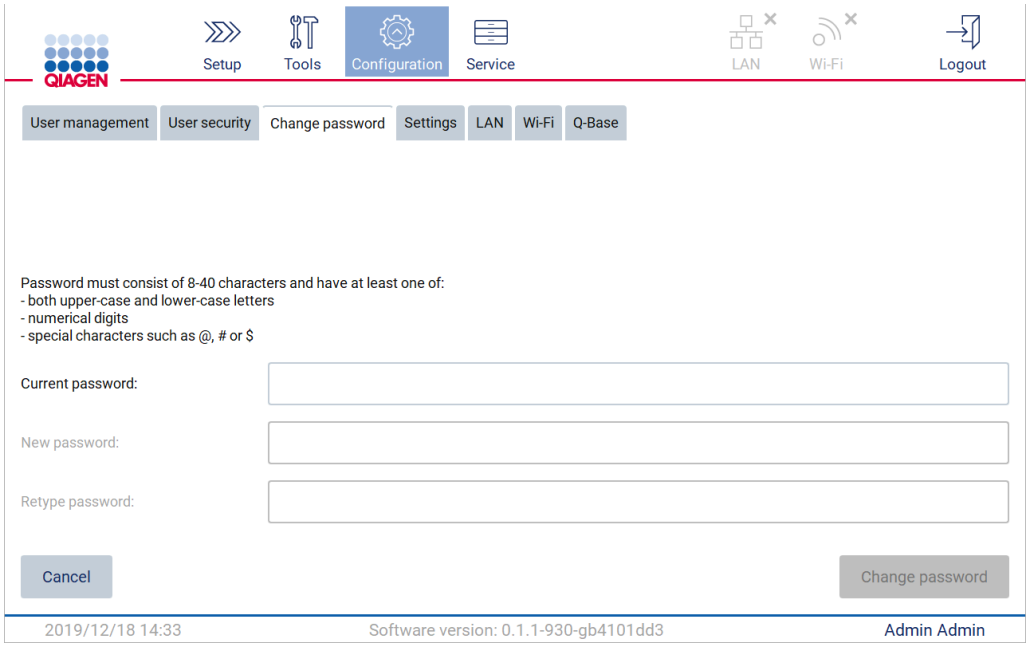

Figure 42. Change password tab.

2. Tap the **Current password** field and enter your current password using the on-screen keyboard.
3. Tap **Accept**.
4. 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.
5. Tap **Change password**.

5.3.5 Managing user security

Administrators can change the password policy for all user roles, as well as 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 and tap the **User security** tab.

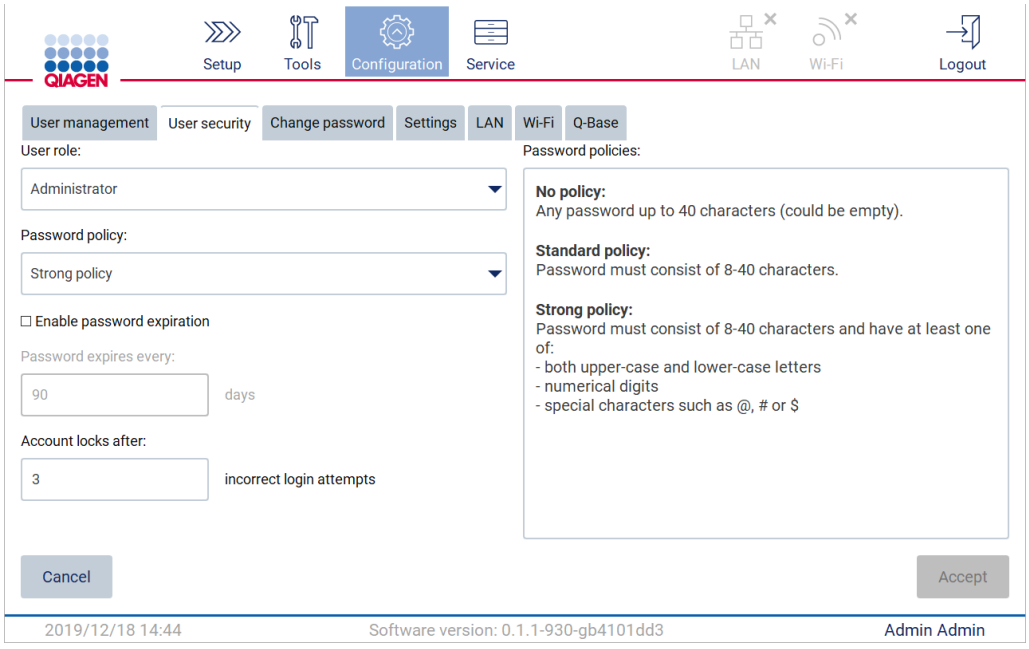

Figure 43. User security tab.

2. To change the password policy, select the user role whose policy you want to change from the **User role** drop-down list.
3. Select an option from the **Password policy** drop-down list. There are three password policy options:
    - No policy — there are no requirements for the password. The password length can be between 0 and 40 characters.
    - Standard policy — the password length must be between 8 and 40 characters.
    - Strong policy — the password length must be between 8 and 40 characters, and must contain either uppercase and lowercase letters, numerical digits or special characters.
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.
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. It is recommended to set to at least 2 incorrect attempts. Otherwise, one typographical error will lock your account.
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: Protocols tab is only available to users with administrator role.

1. Plug in a USB flash drive with a protocol package.
2. Tap **Protocols**.

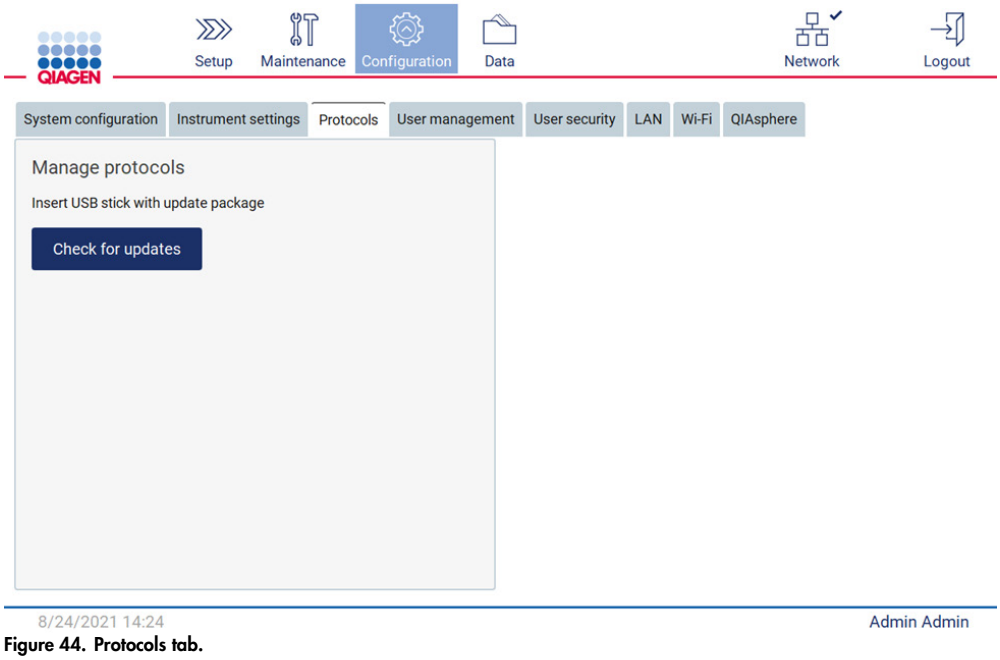

Figure 44. Protocols tab.

3. Tap **Check for updates**.
4. Start the installation by choosing the protocol package and tap **Accept**.
5. After installation is finished, restart the device.

5.3.7 Updating software

Note: Only administrators can update the software.

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

1. Plug in a USB flash drive with the newest software version.
2. Tap the **Configuration** icon on the toolbar and tap the **System configuration** tab.

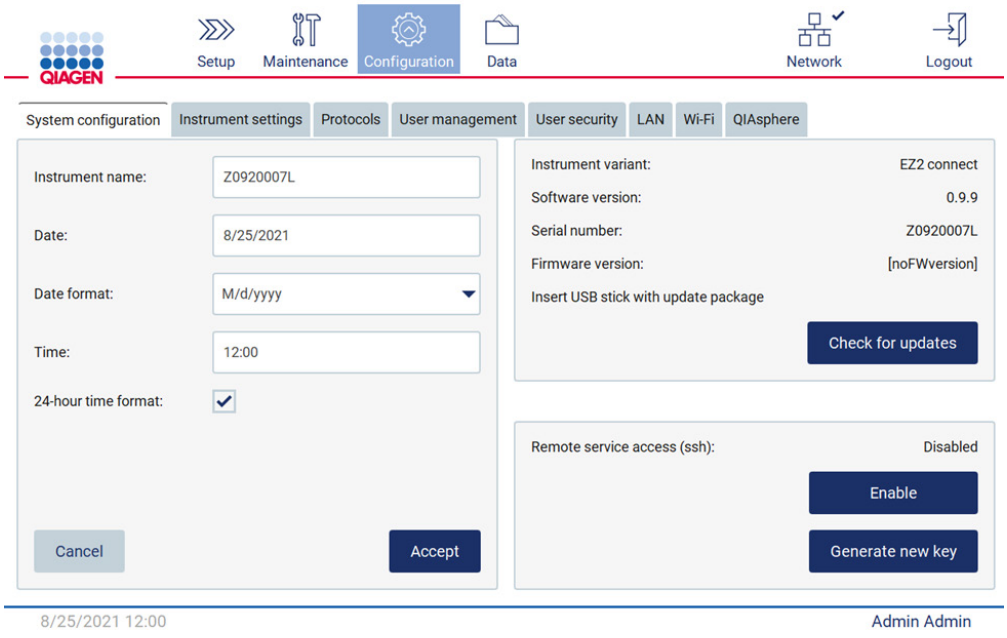

Figure 45. System Configuration tab.

3. Tap **Check for updates**.
4. Start the installation by choosing the software package and tap **Accept**.
5. After installation is finished, follow the restart instruction of the machine.

5.3.8 Configuring network and QIAsphere Base connections

Configuring a LAN connection

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

1. Tap the **Configuration** icon on the toolbar and tap the **LAN** tab.

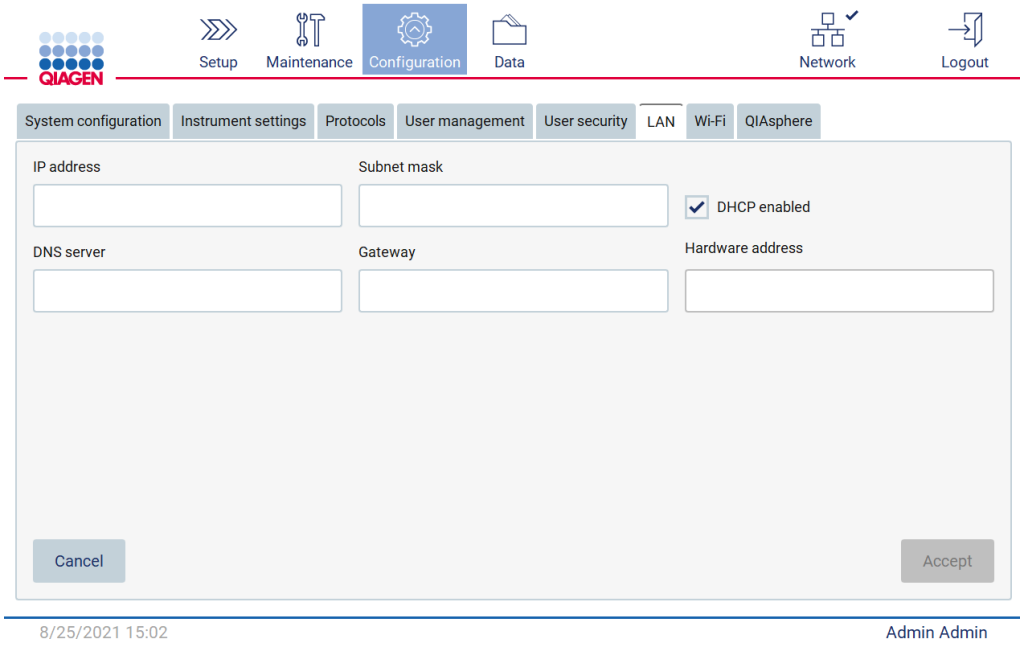

Figure 46. The LAN tab.

2. Enter **IP address**.
3. Enter **Subnet mask**.
4. Tap **Accept.**

Configuring a Wi-Fi connection

Note: Only administrators can configure Wi-Fi settings.

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

The EZ2 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 and tap the Tap **Wi-Fi** tab.

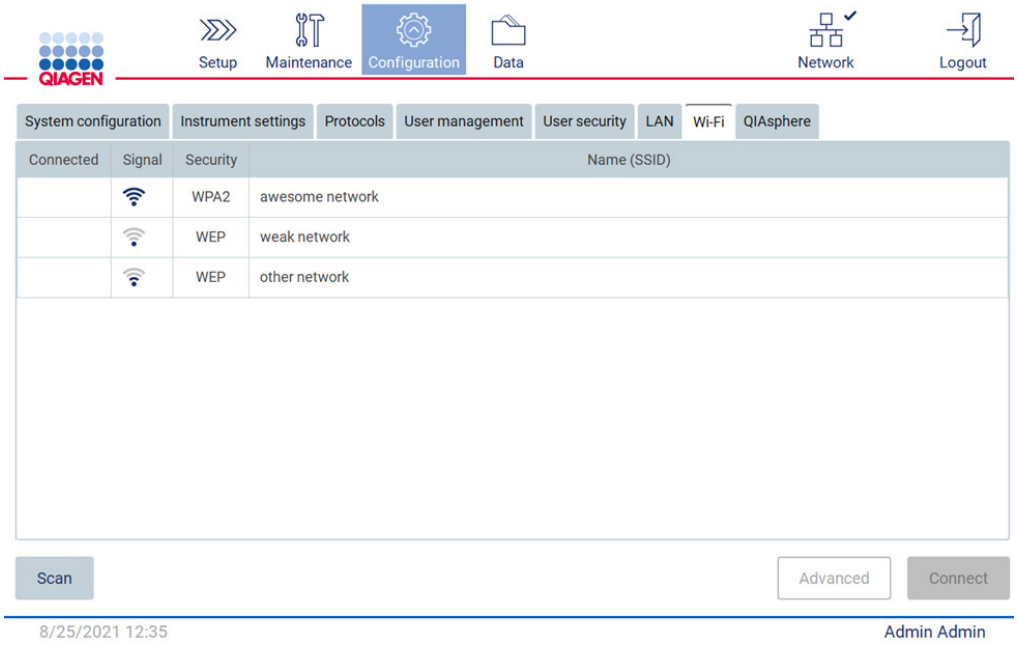

Figure 47. The Wi-Fi tab.

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

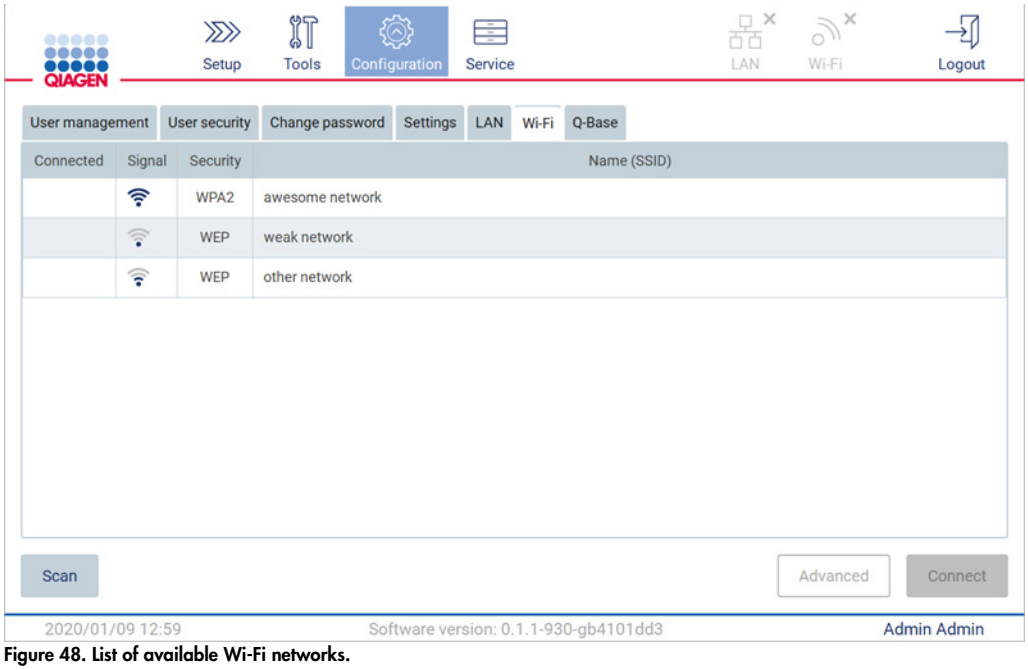

Figure 48. List of available Wi-Fi networks.

3. To select a network, tap the row that corresponds to the network you want to select.
4. To connect to the selected network, tap **Connect**.
5. 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.
   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 the Troubleshooting section for more information.

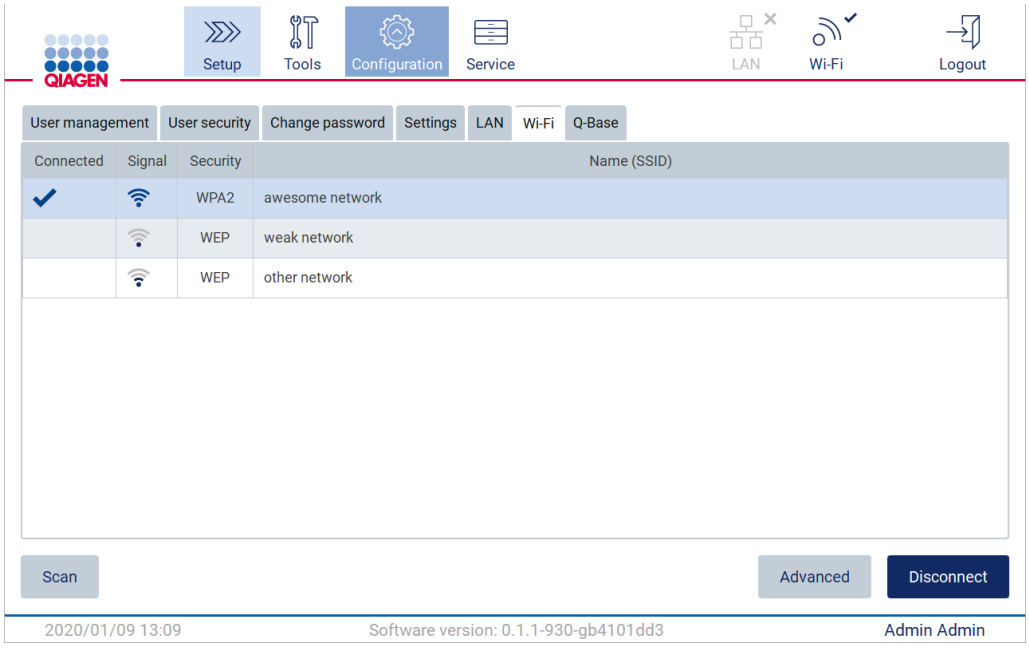

Figure 49. Successful connection to a Wi-Fi network.

6. To disconnect from a network, tap the row that represents the network that the instrument is connected to. Then, tap **Disconnect**.
7. To view additional information about the network, or to change its password, tap **Advanced**. To go back to the Wi-Fi tab, tap **Back**. To change the password, tap **Change password**. To disconnect from the network, tap **Disconnect**.

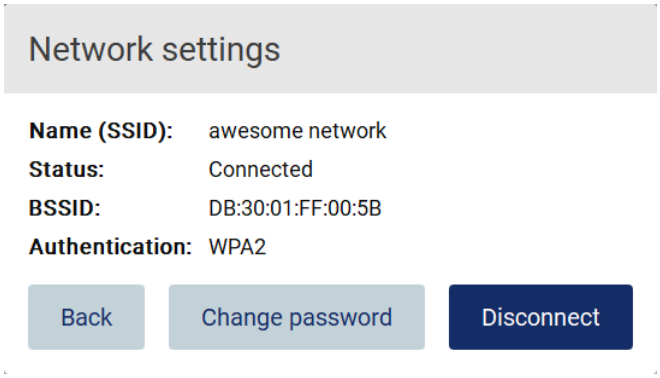

Figure 50. Network settings dialog.

Configuring QIAsphere Base connection

For information on how to configure QIAsphere Base, refer to the QIAsphere Base user manual.

For more details on the QIAsphere Base network configuration and how to connect both devices with each other, refer to the QIAsphere Base user manual which is available at www.qiagen.com.

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 and tap the **QIAsphere** tab.

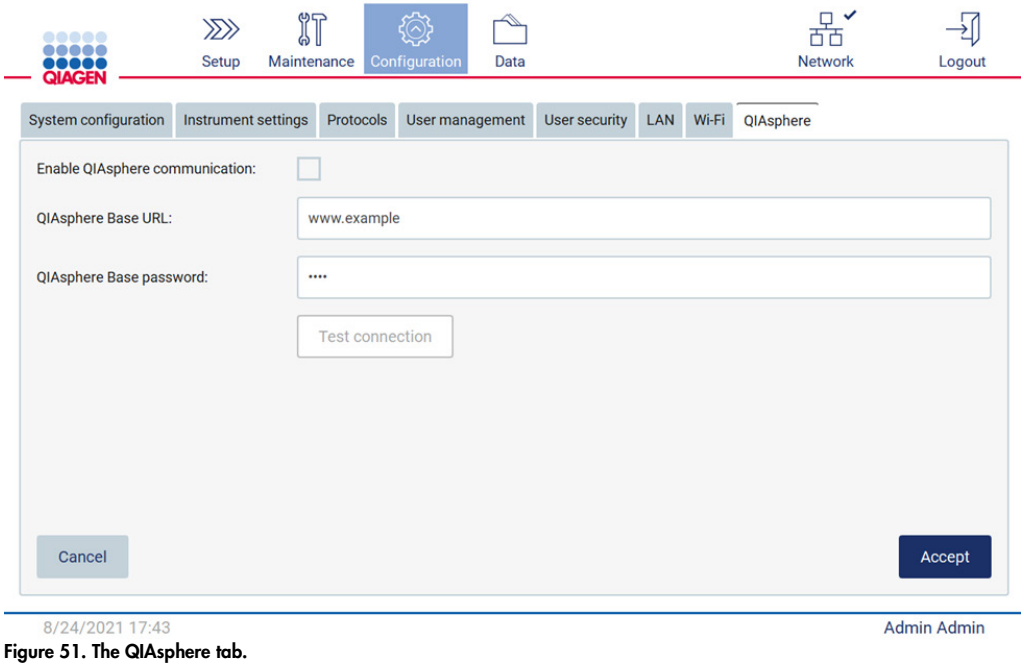

Figure 51. The QIAsphere tab.

2. Enter the QIAsphere Base URL.
3. Enter the QIAsphere Base password.
4. Tick the **Enable QIAsphere communication** box.
5. Tap **Accept**.
6. Tap **Test connection**.

Note: If you have any trouble regarding the QIAsphere, please use the QIAsphere Base user manual or contact the QIAGEN support.

5.4 Setting up a protocol run

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

Commonly used QIAGEN protocols are pre-installed on the EZ2 upon delivery. You can download all available QIAGEN protocols from the QIAGEN website.

The EZ2 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.

Important: Before starting a protocol run, read the relevant QIAGEN kit handbook and follow the instructions on sample storage, handling and preparation provided in the handbook.

5.4.1 Selecting application type

To begin setting up a protocol run, tap an application in the **Applications** pane, a favorite protocol in the **Favorites** pane, or a recently used protocol in the **Recently Used** pane.

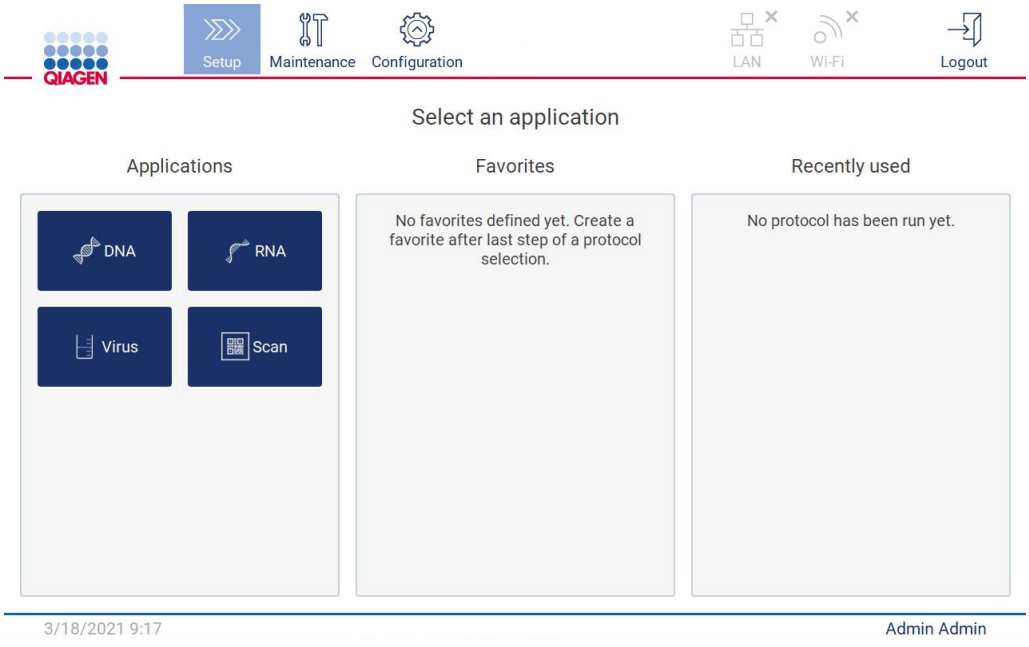

Figure 52. Select an application screen.

The software will automatically proceed to the next screen. Depending on the scanned Q-Card barcode, the software will automatically skip selections screens if the required information is provided by bar code scanning.

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.

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

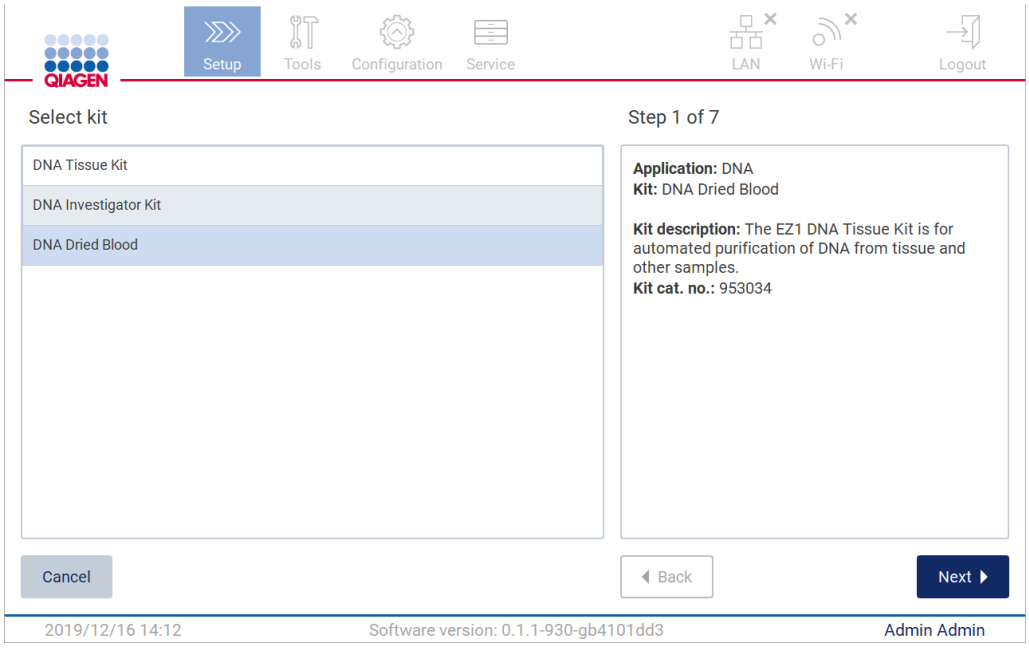

Figure 53. Select kit step.

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 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.

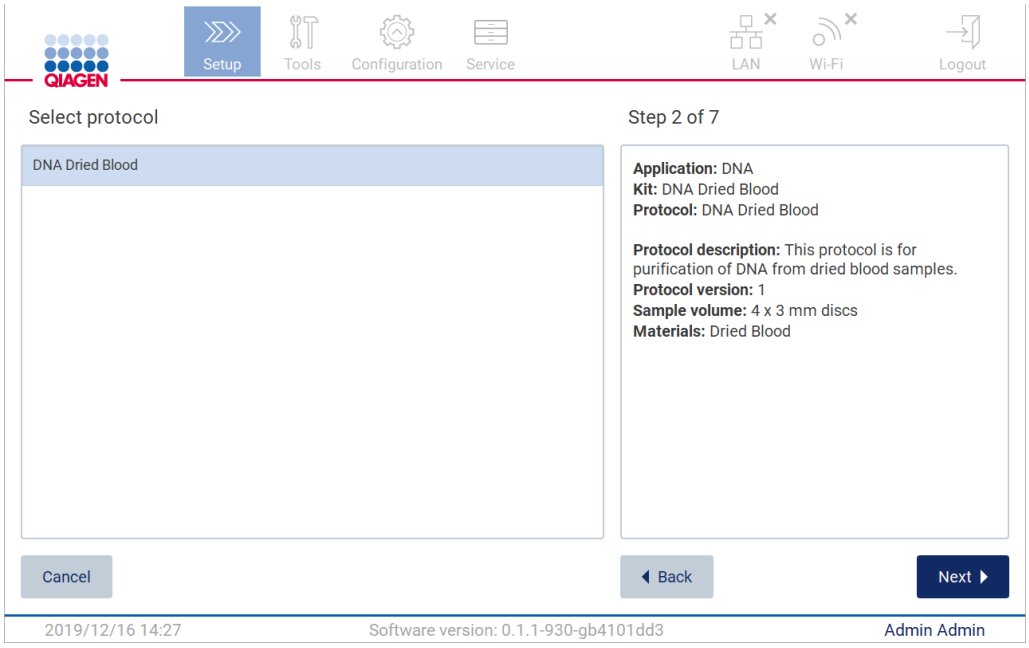

Figure 54. Select protocol step.

After you select 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**.

5.4.4 Defining parameters

To set values for protocol parameters, tap the box next to each parameter in the **Define parameters** pane.

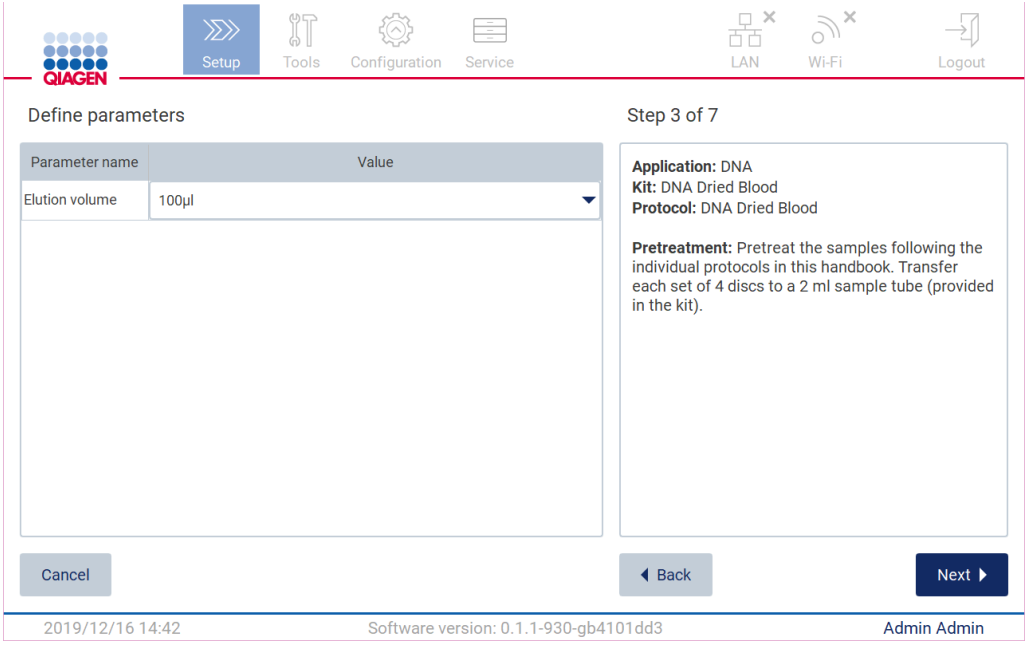

Figure 55. Define parameters step.

Additional information about the protocol is also displayed on the screen, e.g. references into the respective kit handbook with respect to storage, handling, and pretreatment (if required).

Note: Ensure you have 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**.

5.4.5 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, use the **Select all** toggle.

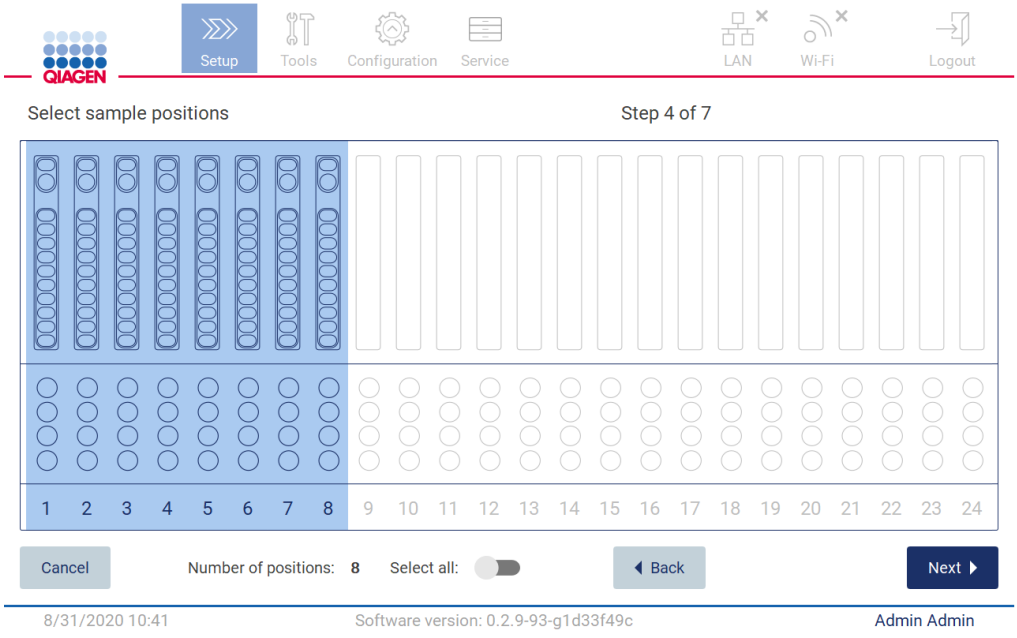

Figure 56. Select sample positions step.

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

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

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

5.4.6 Entering sample IDs

The format of a sample ID is **YYYY-MM-DD_hh-mm_XX**, where the first 16 characters represent the current date and time, and the XX is the sample number. To generate the Sample IDs, you must press the **Generate missing sample IDs** button.

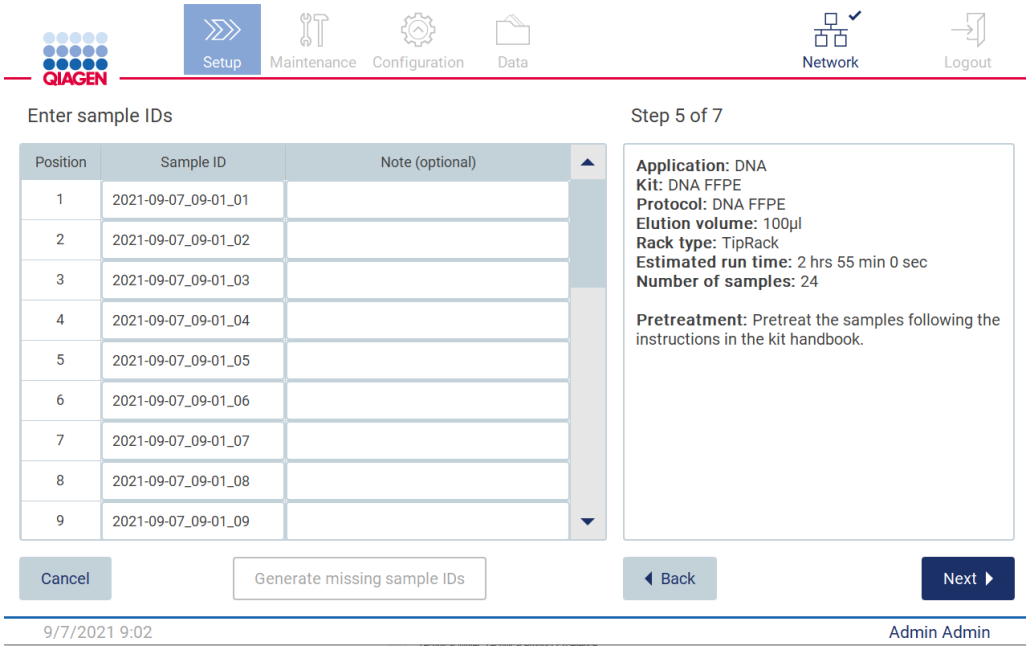

Figure 57. Enter sample IDs step.

Modifying a sample ID

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

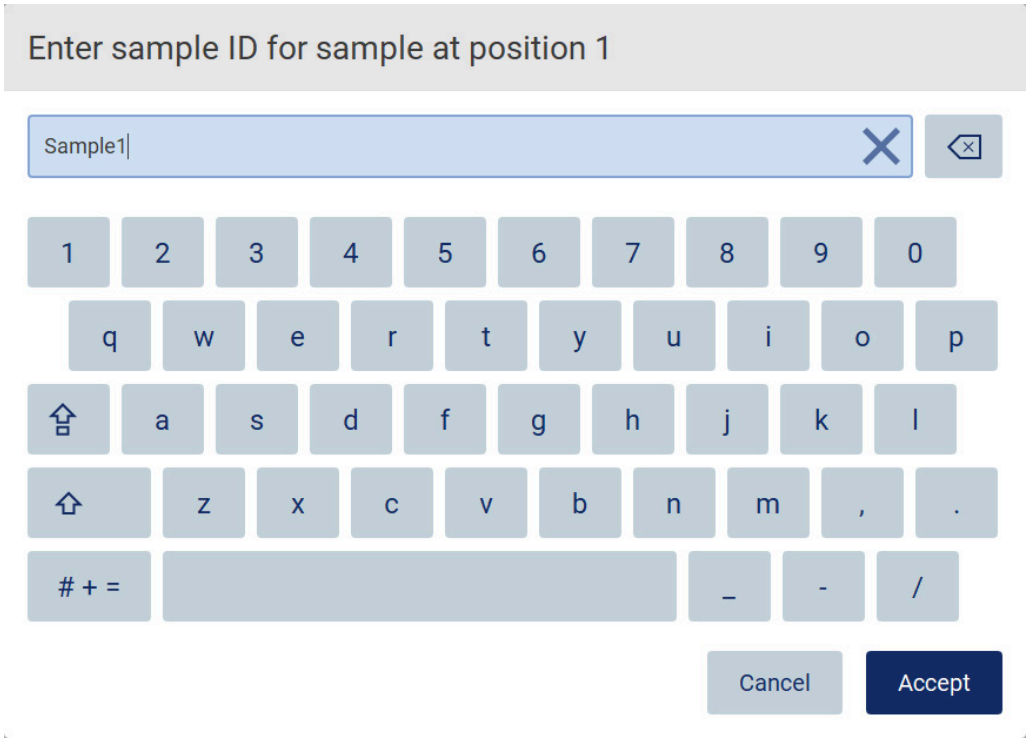

Figure 58. Changing the sample ID.

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.

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.

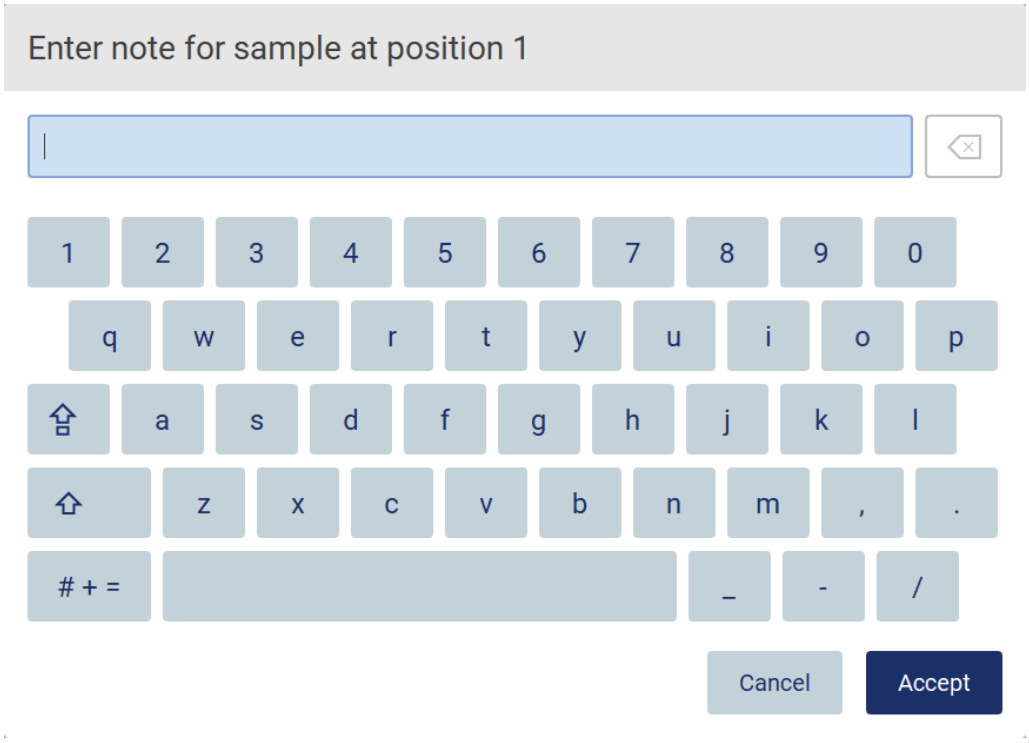

Figure 59. Adding a note to a sample.

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**.

5.4.7 Loading the EZ2 Connect Cartridge Rack

Remove the cartridge rack from the instrument and place it safely onto the bench. See the Loading and unloading the cartridge rack section.

The **Load the cartridge rack** step features 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 on the instrument touchscreen.

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

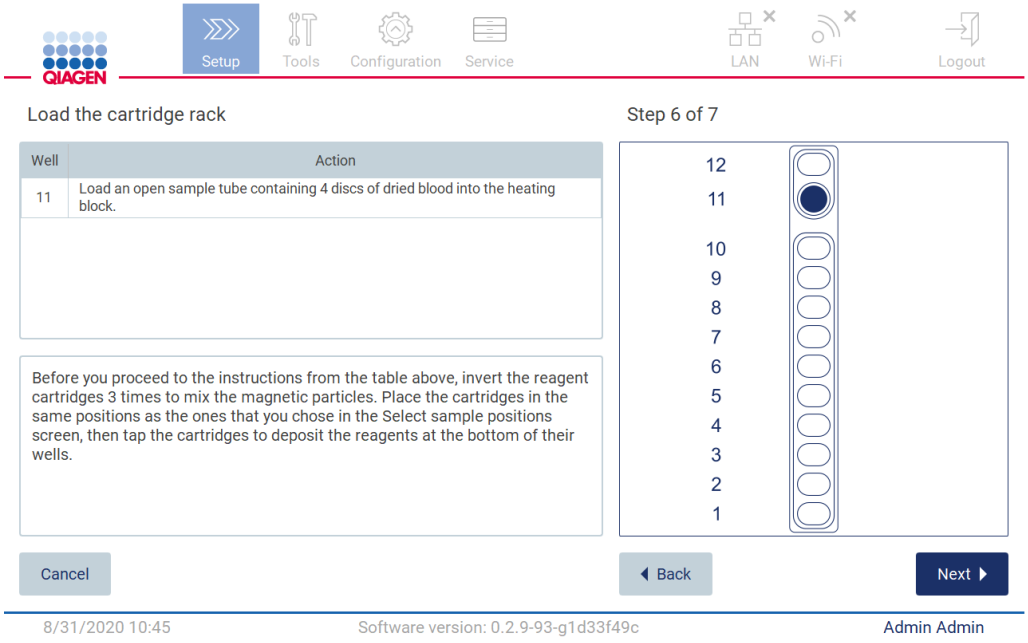

Figure 60. Load the cartridge rack step.

To proceed to the **Load the tip rack** step, tap **Next**.

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

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

5.4.8 Loading the EZ2 Connect Tip Rack

Remove the tip rack from the instrument and place it safely onto the bench. See the Loading and unloading the tip rack section.

The **Load the tip rack** 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.

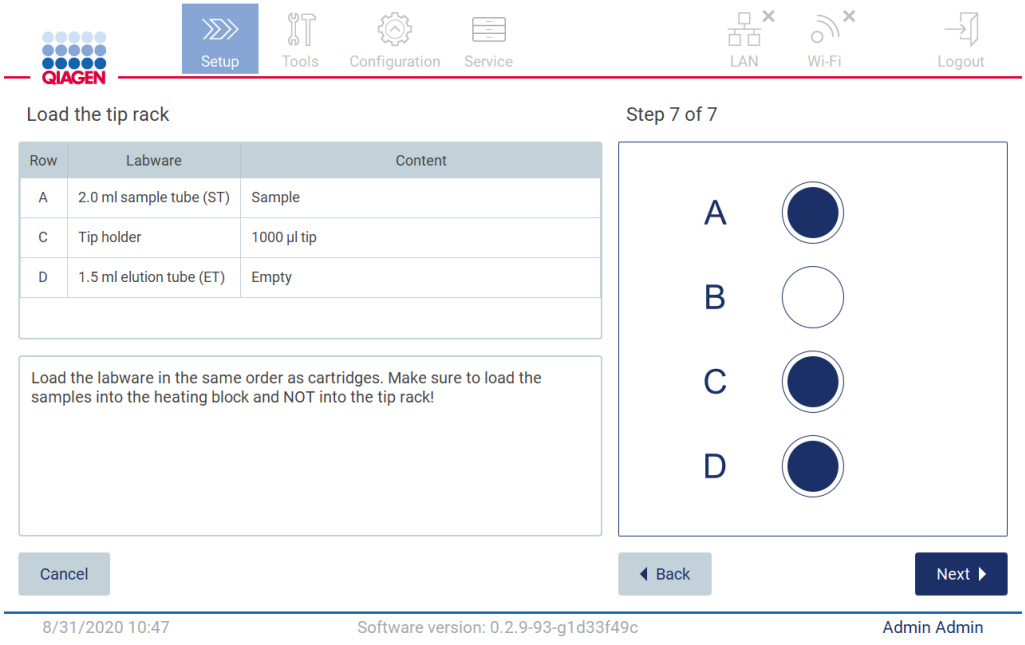

Figure 61. Load the tip rack step.

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.

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.

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

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

5.5 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, tap **Yes** to confirm the cancellation, or tap **No** to go back to the run setup.

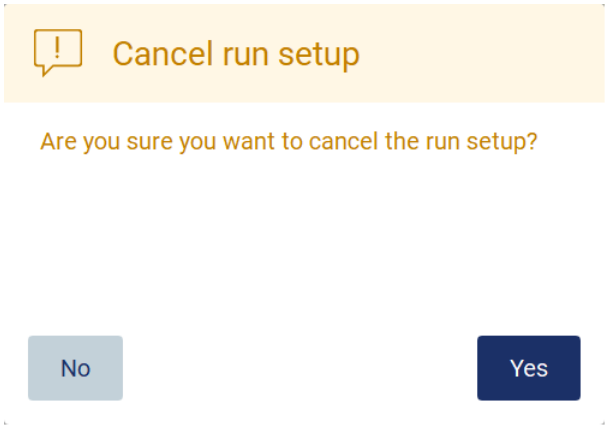

Figure 62. The Cancel run setup dialog.

5.6 Starting the protocol run and monitoring its progress

After successfully completing all the steps of the protocol run setup, you can start the run, and, optionally, add the protocol to your favorites. During the protocol run, you can monitor its progress. Ongoing steps 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 is shown.

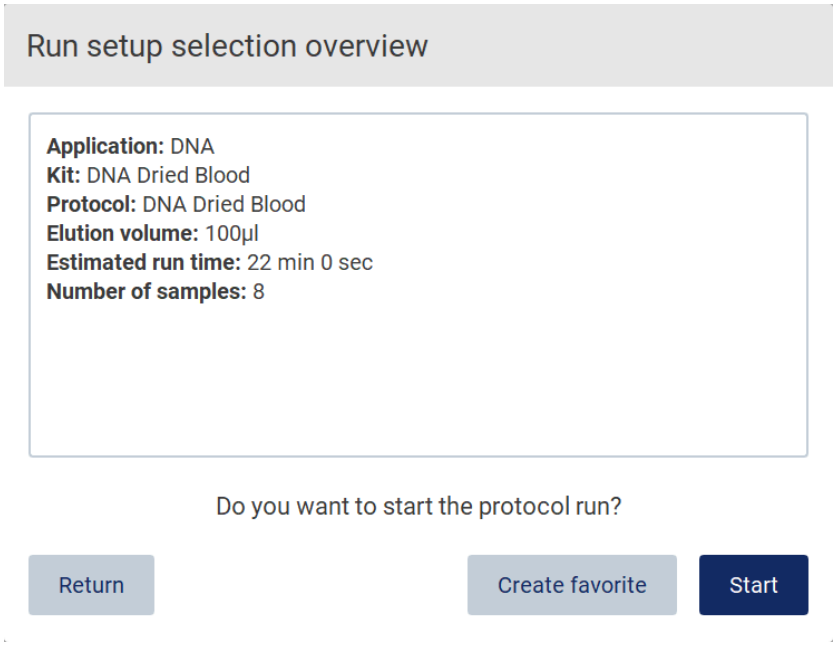

Figure 63. Run setup selection overview dialog.

2. If all the information in the overview is correct, tap **Create favorite** to save the protocol to your favorites, or 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**.

3. If the hood of the instrument is open, close it and tap **Proceed**.

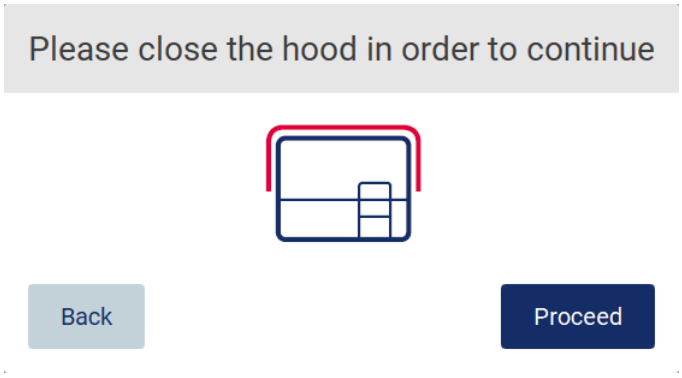

Figure 64. Close the hood dialog.

4. **For EZ2 Connect Fx**: If your instrument has a built-in camera, a load check is performed. For more information about the load check, refer to the Load check section. The run will start after the check is completed. To stop the load check, tap **Abort**.

Note: Wait until the **Load Check** has successfully completed before leaving the instrument unattended.

5. Progress of the run and the elapsed run time are displayed on the **Protocol run in progress** screen.

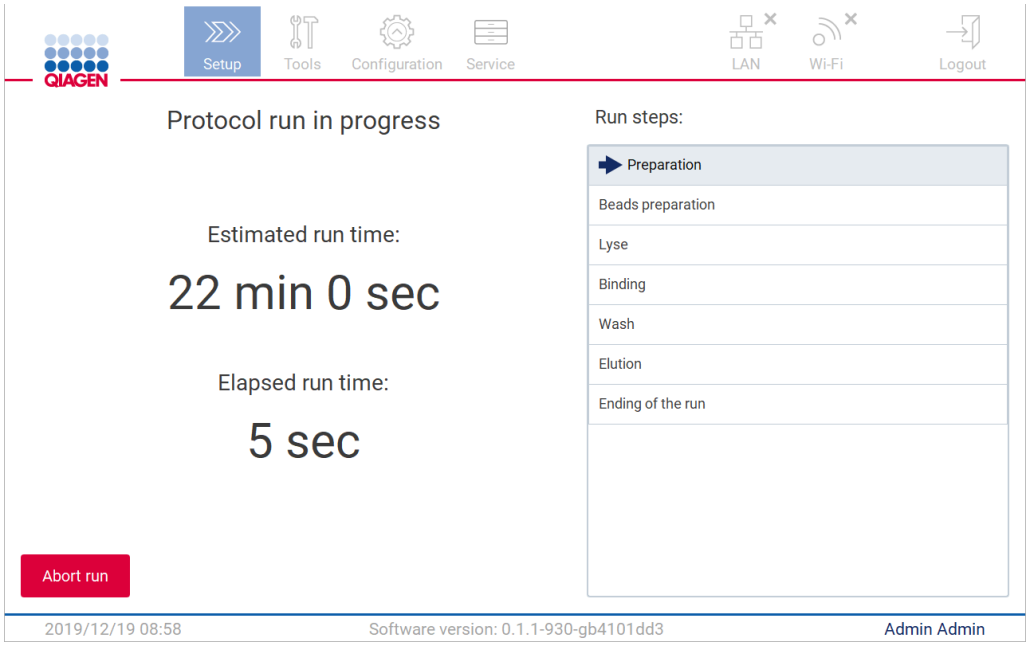

Figure 65. Run progress screen.

5.6.1 Load check

Note: The load check feature is only available in EZ2 Connect Fx instruments.

The EZ2 Connect Fx comes with a built-in camera, which checks if you have loaded all of the cartridges and labware into the correct positions on the worktable. However, the content of the labware in the tip rack is not checked, so you must make sure that you have carefully followed the instructions related to the protocol you are running.

The load check starts after you tap **Start** in the **Run setup selection overview** dialog window. For more information on starting a run, refer to the Starting the protocol run and monitoring its progress section.

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.

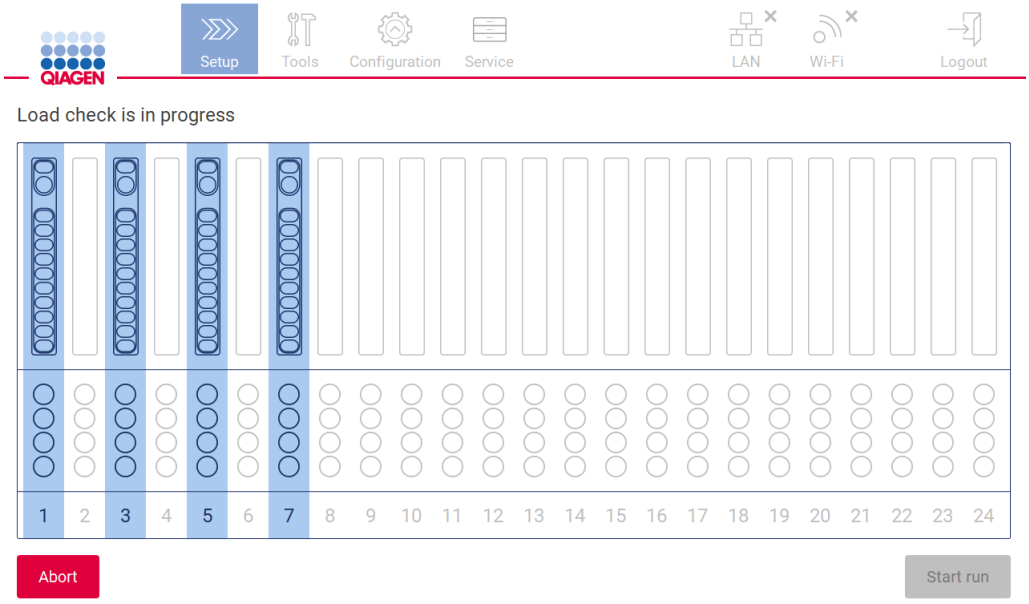

Figure 66. Load check is in progress screen.

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. To return to the loading instructions and start the load check procedure again, tap **Back**. The **Load the tip rack** screen is shown. Once you correctly load the worktable, tap **Next** in the **Load the tip rack** screen. The load check procedure starts again.

Note: In case of repeated load check failure, please recalibrate the camera (refer to section 6.6).

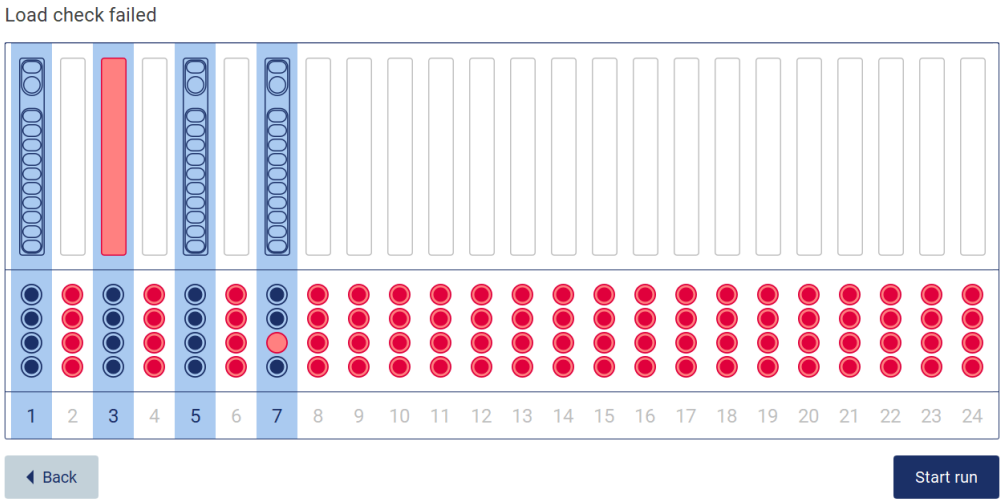

Figure 67. Load check failed screen.

5.7 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. Follow the instructions to properly remove all labware from the instrument and clean the piercing unit, see the After run maintenance section. If after run maintenance is completed, tap the check box to transfer the maintenance status into the run report. For more information on how to save a run report, refer to the Saving a run report section.

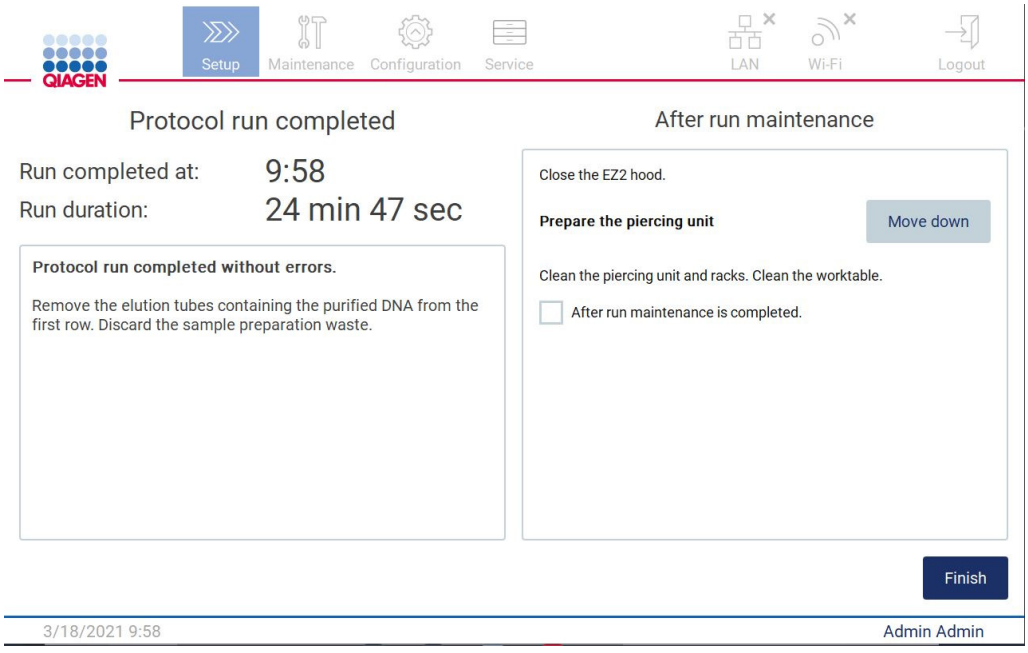

Figure 68. Protocol run competed screen.

5.8 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 appears.
2. Tap **Yes** to stop the run, or tap **No** to go back to the **Protocol run in progress** screen.

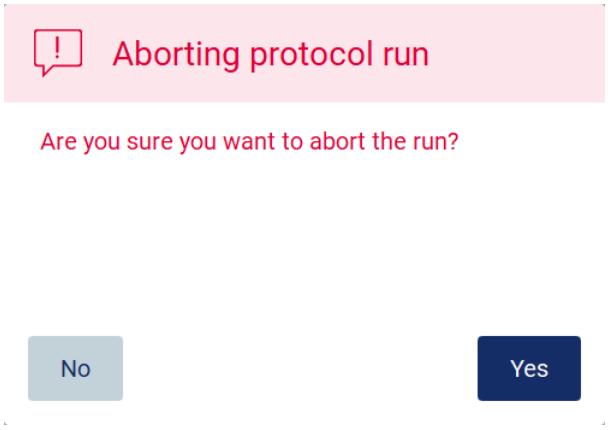

Figure 69. Aborting protocol run dialog.

3. When the run is aborted, the instrument finishes the current movement, and then attempts to dispense the contents of the pipettes into an empty tube, and to release tips into empty tip holders. Then, the worktable returns to its initial position. 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.

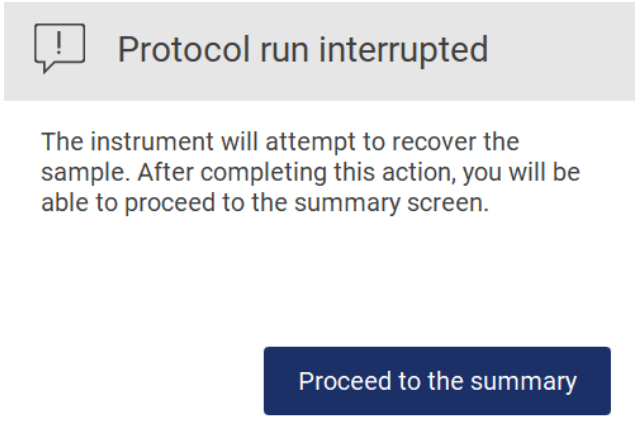

Figure 70. Protocol run interrupted dialog.

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 the Saving a run report section.

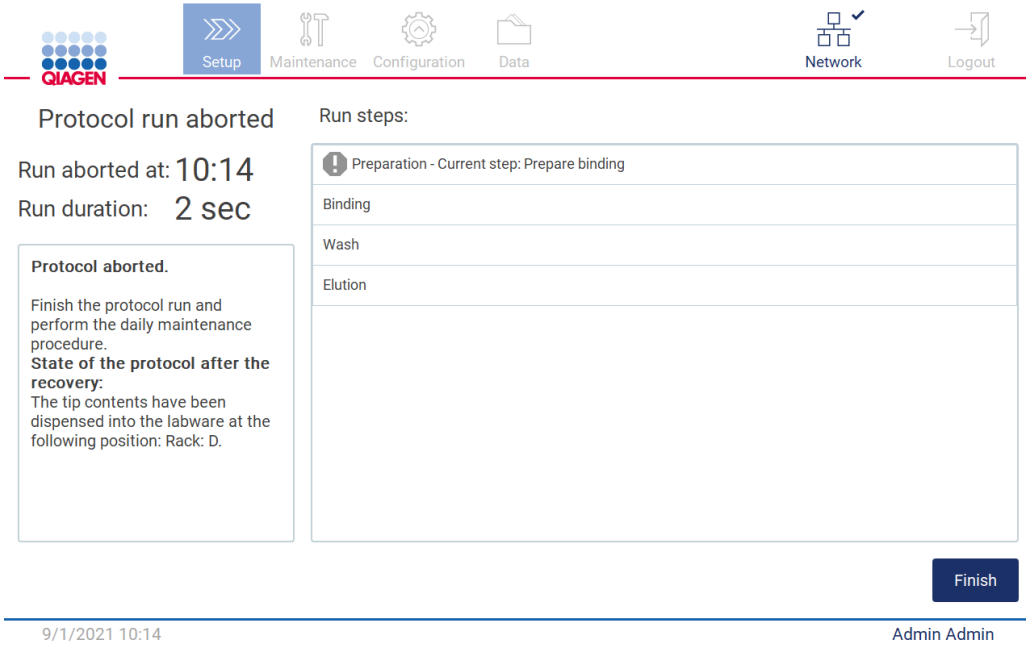

Figure 71. Protocol run aborted screen.

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 Daily maintenance section.

5.9 Sample recovery

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

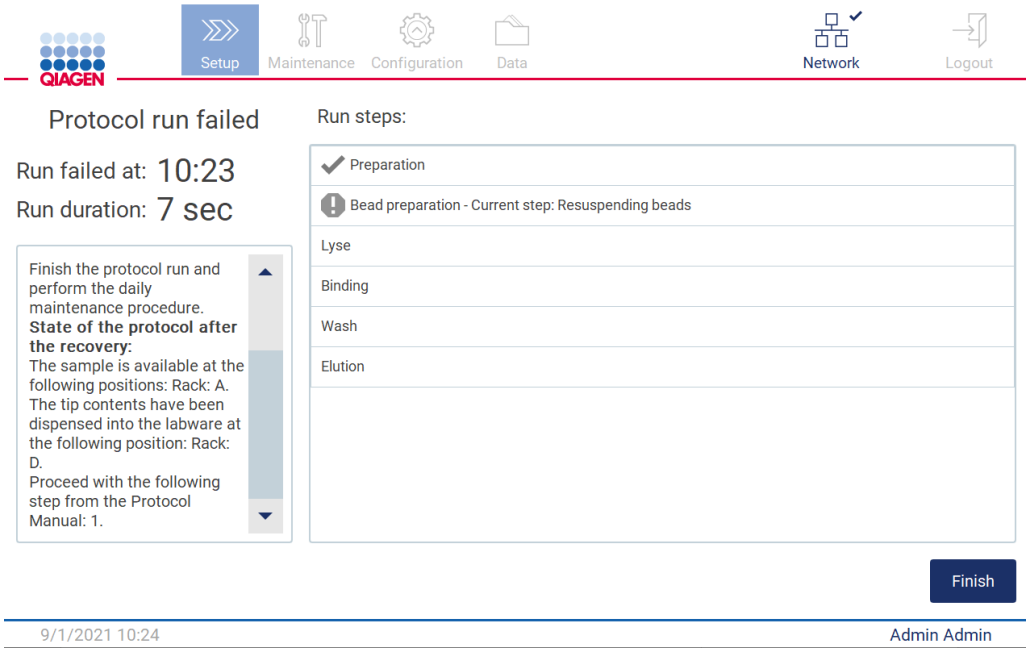

Figure 72. Protocol run failed screen.

5.10 Saving a run report

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

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

For more information on what the run report contains, refer to the Run report contents section.

5.10.1 Run report contents

An EZ2 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 name of the user that was logged in when the run was started
- The serial number of the instrument and software version
- 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
- The kit name, material number, lot number, and expiration date
- The name 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
- 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
- Validity of samples

5.11 Setting up the worktable

Setting up the EZ2 worktable consists of removing the tip rack and the cartridge rack from the instrument, loading the cartridges, tubes, tip holders and tips, and placing the racks back into the instrument. Some protocols require additional actions to be done before the start of a run, e.g. inversion of the cartridge to mix the magnetic beads. These actions are described in the Loading the cartridge rack and Loading the tip rack screens of the protocol run setup process, and in the kit handbooks.

5.11.1 Loading and unloading the cartridge rack

To load the cartridge rack, follow the steps below:

1. Follow the instructions of the respective kit handbook on how to treat the reagent cartridges be-fore 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. Tap the reagent cartridges until the reagents are deposited at the bottom of the wells.
3. 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.
4. 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.
5. Once all the reagent cartridges are loaded, place each cartridge rack section onto the worktable.

At the end of a protocol run, you must remove the reagent cartridges from the cartridge rack. To do so, follow the steps below:

1. 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.
2. Slide out the reagent cartridges and dispose of them properly, according to local safety regulations.

CAUTION 	**Hazardous materials 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.

3. 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 the Cleaning agents, Disinfecting the EZ2, and Removing contamination sections.
4. Place the cartridge rack sections back in the instrument.

5.11.2 Loading and unloading the tip rack

To load the tip rack, follow the steps below:

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. Place the tips into their tip holders.
3. Load the tip holders with tips/labware into Row C.

   Note: Information on whether the selected protocol requires one or two rows of tips is shown on the screen in the **Load the tip rack** step of the run setup process and provided in the kit handbook.
4. Load the labware into Row A and D (or C, if you are using the flip cap 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. When using the flip cap rack, place the flip caps into the slots located below Row A or above Row C.
5. Once all the labware is loaded, place the tip rack sections onto the worktable.

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

Note: Remove the elution tube containing the eluant before removing the used labware from the tip rack.

1. Remove one or both sections of the tip rack from the worktable. To remove a tip rack section, grab both sides of the section and gently pull up.
2. Remove the labware from the tip rack and dispose of any unnecessary labware, according to local safety regulations.

CAUTION	**Hazardous materials 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.

3. 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 the Cleaning agents, Disinfecting the EZ2, and Removing contamination sections.
4. Place the tip rack sections back in the instrument.

5.12 Using the bar code scanner

Important: Basic version does not contain the 2D handheld barcode scanner, but it can be purchased separately. Usage of 2D handheld barcode scanner is optional

The 2D handheld barcode scanner can be used to scan the following barcodes during Protocol setup

- Kit Q-Cards
- Sample Bar Codes

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

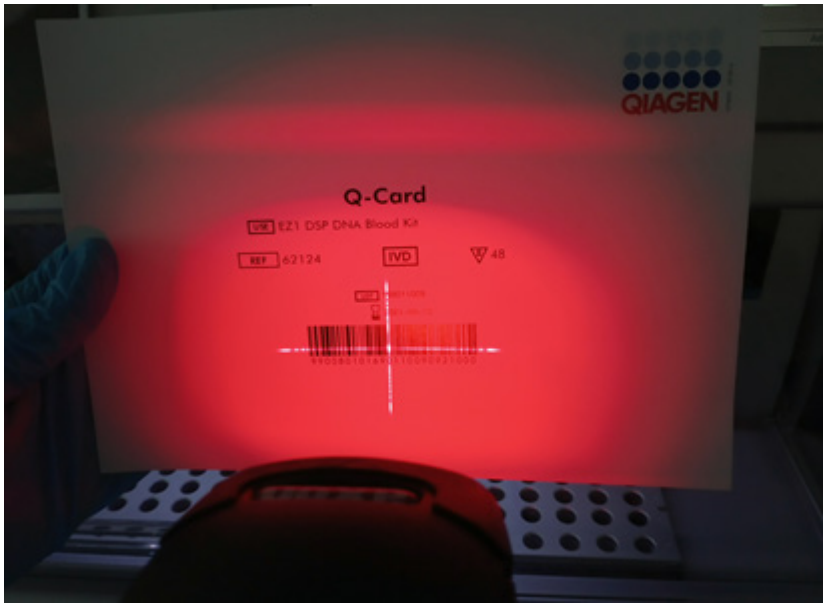

Figure 73. Scanning the information into the Instrument.

WARNING 	**Risk of personal injury** Hazard Level 2 laser light: Do not stare into the light beam when using handheld bar code scanner.

5.13 Logging out and switching the instrument off

To log out of the Software, tap the **Log out** button on the toolbar.

To switch the instrument off, press the power button.

Note: It is not recommended to switch the instrument off when a protocol run, or maintenance procedure are in progress

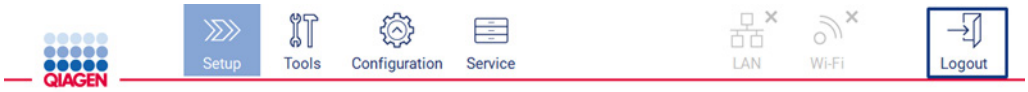

Figure 74. Location of the Log out button.

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, maintenance procedures must be performed. The procedures are shown in the table below. Each maintenance procedure must be carried out by appropriate personnel.

Important: The maintenance procedures as shown in the table below must be carried out to ensure reliable operation of the EZ2. Each maintenance procedure must be carried out by appropriate personnel.

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 regular and daily procedures.	Laboratory technicians or equivalent
Annual maintenance and servicing	Annually or semiannually, depending on your requirements (for more information contact QIAGEN Technical Service.	QIAGEN Instrument Service Specialists only

Optionally, a UV decontamination procedure may be performed as required to reduce pathogen and nucleic acid decontamination.

6.1 Cleaning agents

The surfaces and removable parts of the EZ2 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, do not use them.

General cleaning of the EZ2, with the exception of the hood, can be done using mild detergents, such as the Mikrozid® AF sensitive, or 70% ethanol. 70% ethanol should only be used on the worktable. 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 instrument or used labware. 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. 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.

WARNING 	**Risk of electric shock** Do not open any panels on the EZ2. **Risk of personal injury and material damage** Only perform maintenance that is specifically described in this user manual.

WARNING	**Risk of fire or explosion** When using ethanol or ethanol-based liquids to clean the EZ2, handle such liquids carefully and in accordance with the required safety regulations. If any liquid spills, wipe it off and leave the EZ2 hood open to allow flammable vapors to disperse.

6.1.1 Disinfecting the EZ2

Ethanol-based disinfectants can be used for disinfecting surfaces such as the worktable. An example of an 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 **www.schuelke.com**.

Disinfectants based on quaternary ammonium salt can be used for submerging worktable items. An example of such disinfectants are the Lysetol® AF or Gigasept® Instru AF (Schülke & Mayr GmbH, see **www.schuelke.com**). These disinfectants consist of 14 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.

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

6.2 After run maintenance

After run maintenance is required after each run on the EZ2.

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

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

WARNING 	**Moving parts** To avoid contact with moving parts during the operation of the EZ2, the instrument must be operated with the hood closed. 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. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the workdeck whilst the instrument is operating.

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument.

WARNING 	**Samples combining 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 instrument 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.

If you are working with potentially infectious materials, such as human blood, serum or plasma, the EZ2 should be decontaminated after use (for more details, see the Disinfecting the EZ2, and Removing contamination sections).

After running a protocol, clean the piercing unit of the pipettor head.

1. Remove all sample preparation waste and discard it according to your local safety regulations.
2. Remove the eluates and store them appropriately
3. Close the hood

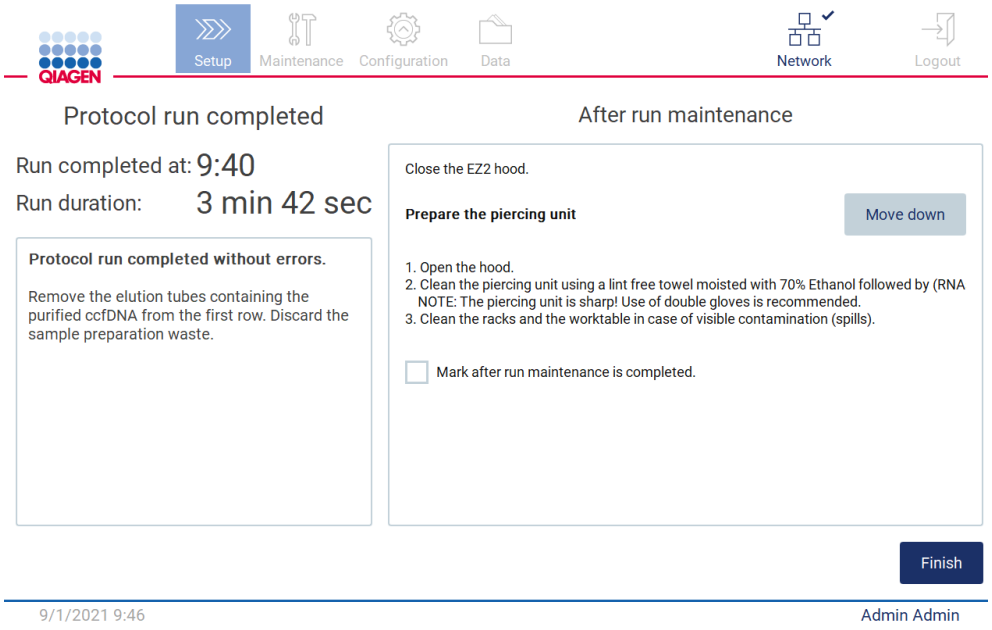

Figure 75. Protocol run completed screen.

4. To begin the procedure, tap **Move down**. The instrument lowers the piercing unit of the pipettor head.
5. Open the hood.
6. Wipe the piercing unit using a soft tissue moistened with 70% ethanol. The piercing unit is sharp. Two pairs of gloves are recommended.

Figure 76. Cleaning the EZ2 piercing unit.

7. Wipe the piercing unit with a soft tissue moistened with distilled water.
8. Close the hood.
9. To document the cleaning procedure in the run report, confirm that the maintenance has been completed by activating the checkbox.
10. On the touchscreen, tap **Finish**. The piercing unit returns to its home position.
11. Open the hood.
12. If contamination is visible on the worktable, clean it with 70% ethanol, and then with distilled water.
13. Wipe the surface of the instrument using a soft tissue moistened with 70% ethanol.

Note: The hood should **ONLY** be cleaned with lint free tissue moistened with 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, the instrument must be operated with the hood closed. 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. Under no circumstances should hands be placed under the pipetting arm during movement. Do not attempt to remove any plasticware from the workdeck whilst the instrument is operating.

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument.

WARNING 	**Samples combining 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 instrument 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 daily maintenance procedure, complete the After run maintenance.

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

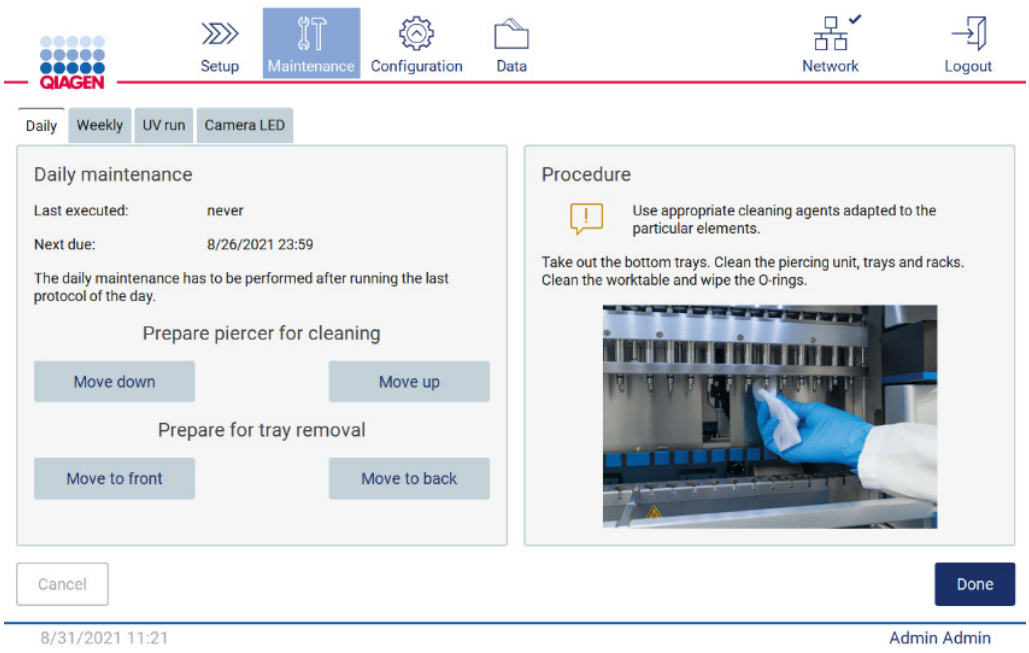

Figure 77. Daily maintenance screen.

3. Clean the piercing unit (if this is not yet done during after run maintenance).
4. To prepare the piercing unit for cleaning tap **Move down**.
5. Open the hood.
6. Clean the piercing unit as recommended for After run maintenance.
7. Close the hood.
8. To return the piercing unit to home position, tap **Move up**.
9. Clean the worktable with 70% ethanol, and then with distilled water (if this is not yet done during after run maintenance).
10. To allow tray removal, tap **Move to back**.
11. Check if the tray is clean. If necessary, clean it with 70% ethanol, and then with distilled water.
12. Wipe the instrument racks with 70% ethanol, and then with distilled water.
13. Lightly wipe the O-rings of the tip adapters with a lint-free tissue to remove any residual liquid.

6.4 Weekly maintenance

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument.

WARNING 	**Samples combining 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 instrument 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 O-rings of the tip adapters every week.

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

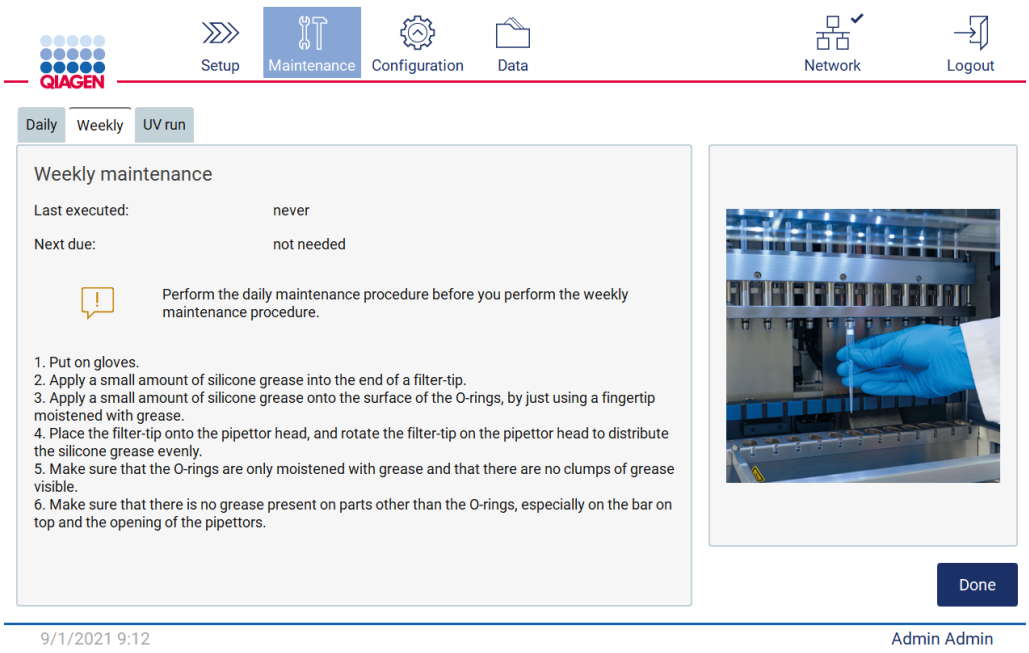

Figure 78. Weekly maintenance screen.

3. Put on gloves.
4. Apply a small amount of silicon grease into the end of a filter-tip.
5. Apply a small amount of silicon grease onto the surface of the O-rings, by just using a fingertip moistened with grease.
6. Place the filter-tip onto the pipettor head and rotate the filter-tip on the pipettor head to distribute the silicon grease evenly.
7. Make sure that the O-rings are only moistened with grease and that there are no clumps of grease visible.
8. Make sure that there is no grease present on parts other than the O-rings, especially on the bar on top and the opening of the pipettors.

   Note: The filter-tips should sit flush against the upper white plastic bar if the O-rings are properly greased. There should not be a gap. Excess or insufficient grease can affect the performance of the EZ2.

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

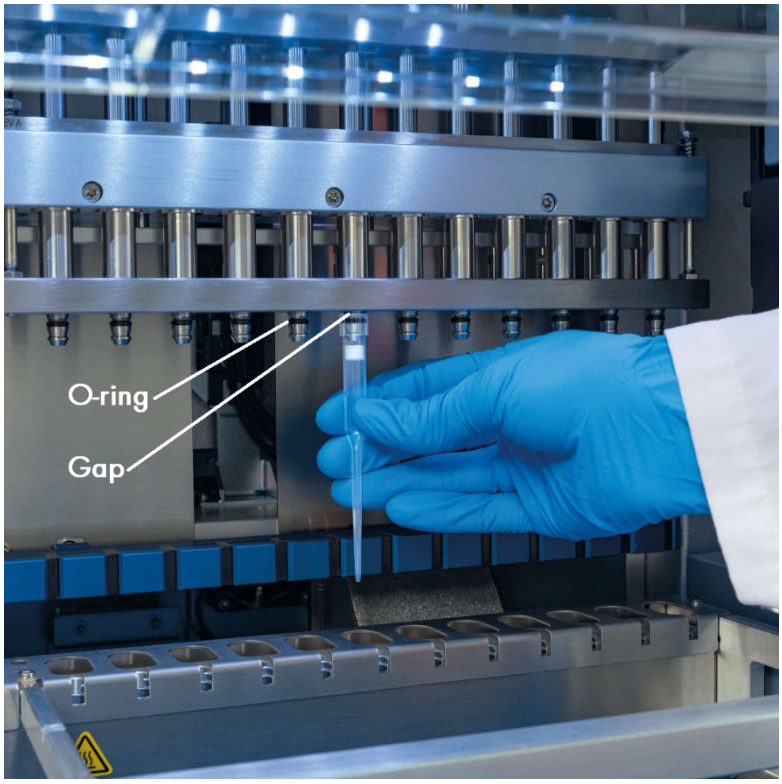

Figure 79. Placing a filter-tip onto the pipettor head.

6.5 UV decontamination

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument.

WARNING 	**Samples combining 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 instrument 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 After run maintenance.

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

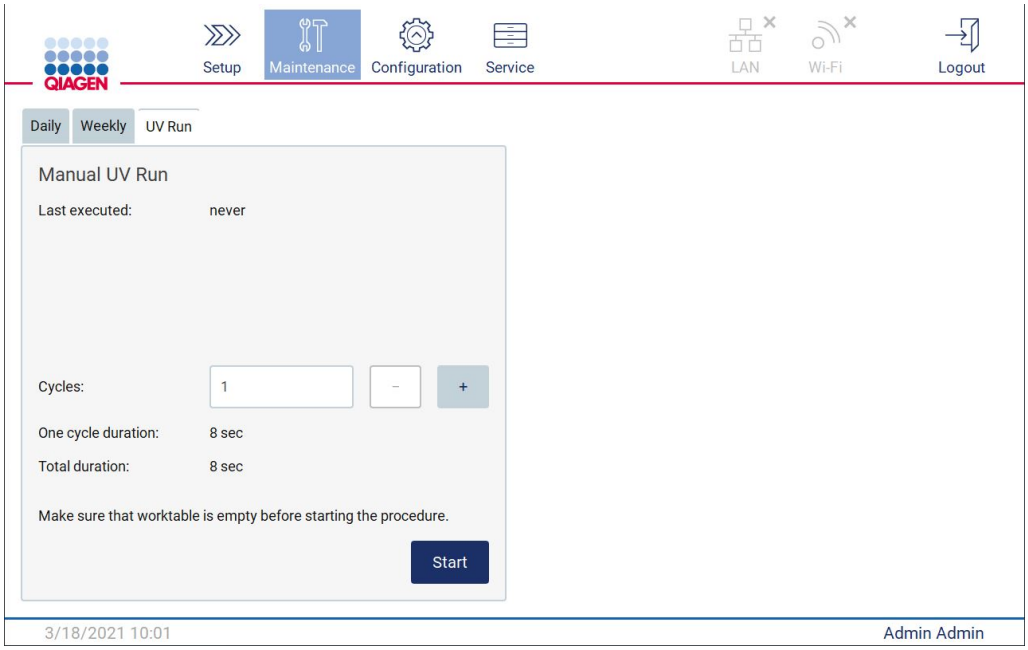

Figure 80. Manual UV Run screen.

3. Select the number of decontamination cycles. The required decontamination time depends on the biological material processed on the device.
4. To begin the procedure, tap **Start**.

6.6 Servicing

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

WARNING/ CAUTION 	**Risk of personal injury and material damage** Improper use of the EZ2 may cause personal injuries or damage to the instrument. The EZ2 must only be operated by qualified personnel who have been appropriately trained. Servicing of the EZ2 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 instrument.

7.1 Contacting QIAGEN Technical Services

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

Note: Much 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 or in each run report
- Sample input material and sample pre-treatment
- Detailed description of the error situation
- Support package

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 can create a support package containing information about the device and the device status. This can help the product support to find issues.

1. Plug in a USB flash drive.
2. Tap **Data** on the toolbar.

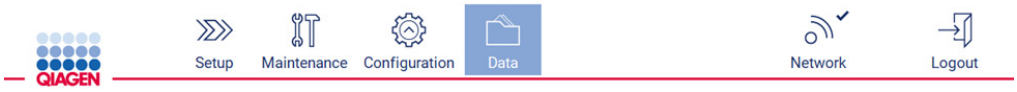

Figure 81. Data button on the toolbar.

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

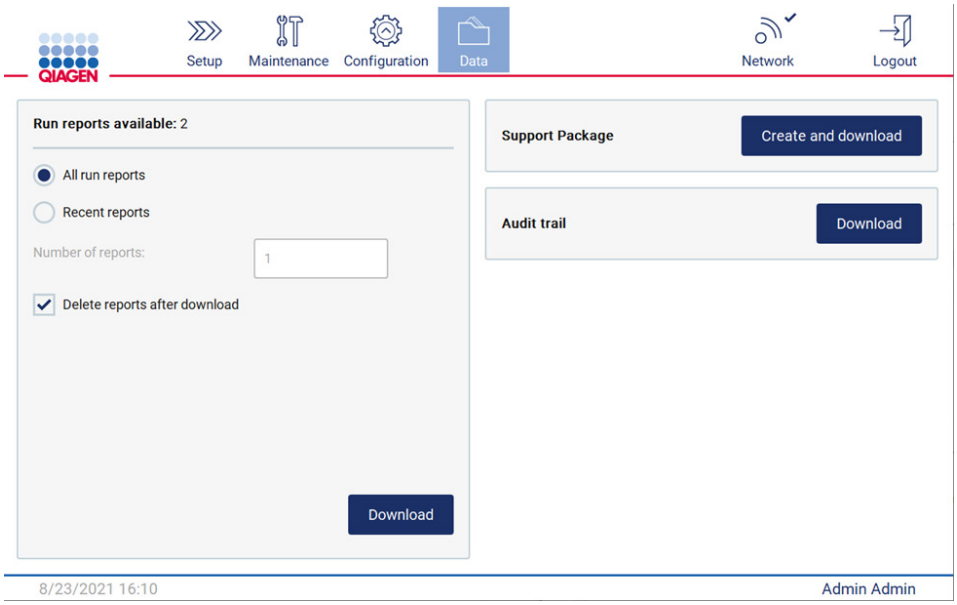

Figure 82. Data tab.

4. The support package is now saved on the USB flash drive.

7.2 Operation

	Comments and suggestions
Load check failed	Perform camera exposure calibration according to Section 4.3.6. Both racks must be loaded, even if just one 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. Perform load check again.
Hood lock Error	Check if the hood is firmly closed. Confirm by pressing down the hood with light force.
Heater Fuse Error	Restart the device (several times if necessary).
Pipetting tips sticking to pipettor	Use lab tissue to wipe the O-rings and make sure weekly maintenance was performed correctly.
Pipette tip was crushed	Tip may have been stuck to pipettor. See "pipetting tip sticking to pipettor".
Imprecise pipetting	If imprecise pipetting appears over several runs (elution volume): Make sure weekly maintenance was performed. Check if the tips sits firmly at the pipettor adapter.
Leaking pipette tips	Ensure weekly maintenance was performed. Check if the tips sit firmly at the pipettor adapter.
Pipette tips not picked up by automatic pipettor	Make sure that the tip rack is not damaged and is correctly positioned on the worktable.
Cross-contamination	Ensure maintenance was performed. Clean the piercer and worktable with 70 % ethanol. Start UV decontamination. Make sure samples and cartridge rack were handled properly.
Update fails	Restart the device and try to start the update again. Make sure you use the QIAGEN USB flash drive. USB flash drive should stay plugged in during the whole update procedure.
USB device not detected	Restart the device. Save the file(s) to the USB stick again. Check the USB stick on a PC to ensure it is functional. If the error persists, contact QIAGEN Technical Services.
Connection problem	Check if the ethernet cable is connected correctly. Check the Wi-Fi and LAN settings (Section 5.3.8).
No W-LAN connection	Check the Wi-Fi setting (Section 5.3.8). W-LAN adapter should be connected before you start the device. Reboot the device.
Freeze during run	Reboot the device. Restart the protocol run.
Surface damaged	Ensure that only the cleaning agents as assumed 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.

8 Glossary

Term	Definition
Bar code reader	A handheld device that enables scanning of bar codes and conversion of them into data that is transmitted to the EZ2.
EZ2 Connect Cartridge Rack	A metal rack that accommodates reagent cartridges on the worktable.
Connector panel	The panel on the rear of the EZ2. It contains the power switch, the socket for the power cord, and the fuse box.
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 EZ2 kits.
Error code	A number that represents an error of the EZ2.
EZ2 kits	Kits supplied by QIAGEN containing reagents, reagent cartridges and plasticware for use with EZ2 instruments.
Filter-tip	Labware that is picked up by a tip adapter during operation of the EZ2. Liquid is aspirated into and dispensed from a filter-tip. A filter-tip is also the location where separation of magnetic particles occurs.
Heating system	A component of the EZ2 that accommodates the heating positions of the reagent cartridges and heats samples.
Hood	The main door at the front of the EZ2. When open, it provides complete access to the worktable.
O-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.
Pipettor head	The component of the EZ2 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 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 EZ2 kits.
Report file	A file generated by the EZ2 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 EZ2 kits.
Tip adapter	One of 24 metal probes installed on the pipettor head. During operation of the EZ2, 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.
EZ2 Connect 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.
Tray	A metal tray that is located under the worktable. It collects any drops of liquid that may spill.
UV LED lamp	A light source of ultraviolet light for decontamination.
Worktable	The surface of the EZ2 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

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): 10A 250V 117C
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

Air temperature	–25–60°C (–13–140°F) in manufacturer's package
	Note: If the EZ2 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

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

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 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	Bar code 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 20–1000 µl.
	The EZ2 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: 253.7 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.)

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 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.

Appendix B – EZ2 Accessories

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, bar code 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 bar code and sample barcode scanning	9027101

For up-to-date licensing 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 peut entraîner des blessures corporelles ou une détérioration de l'instrument. L'EZ2 ne doit être utilisé que par du personnel qualifié ayant été convenablement formé. L'entretien de l'instrument EZ2 ne doit être effectué que par un spécialiste de l'entretien sur site QIAGEN.

AVERTISSEMENT 	**Risque de blessure personnelle** L'EZ2 est trop lourd pour être soulevé par une seule personne. Afin d'éviter tout accident corporel et détérioration du matériel, ne pas soulever l'instrument seul. Utilisez la poignée fixée à la boîte pour soulever l'EZ2. Une fois que l'EZ2 a été déballé, il faut deux personnes pour le soulever. Attrapez l'instrument par dessous pour le soulever.

AVERTISSEMENT 	**Risque de dommages corporels et matériels** Ne pas essayer de déplacer l'EZ2 pendant qu'il est en marche.

Procéder à la maintenance comme décrit à la section Maintenance Procedures. QIAGEN facture les réparations dues à une maintenance inappropriée.

En cas d'urgence, éteindre l'EZ2 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. 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, 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 ouvert pour que les vapeurs inflammables puissent s'évaporer.

AVERTISSEMENT 	**Risque d'explosion** L'EZ2 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, 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.

ATTENTION 	**Détérioration de l'instrument** Assurez-vous que l'EZ2 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 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. **Risque de dommages corporels et matériels** Effectuer uniquement la maintenance spécifiquement décrite dans le présent manuel d'utilisation.

Afin que l'EZ2 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 ou le câble d'alimentation semblent être détériorés ;
- l'EZ2 a été stocké dans des conditions défavorables pendant une longue période ;
- l'EZ2 a été soumis à de sévères contraintes de transport ;
- des liquides ont été en contact direct avec des composants électriques de l'EZ2 ;
- le câble d'alimentation a été remplacé par un câble d'alimentation non authentique.

AVERTISSEMENT 	**Danger électrique** Ne touchez pas l'EZ2 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 Technical Specification.

AVERTISSEMENT 	**Atmosphère explosive** L'EZ2 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. Les fentes et les ouvertures qui garantissent la ventilation de l'instrument ne doivent pas être obstruées.

AVERTISSEMENT 	**Risque d'explosion** L'EZ2 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 doit être tenu à l'abri de la lumière directe du soleil.

ATTENTION 	**Détérioration de l'instrument** Ne pas utiliser l'EZ2 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.

AVERTISSEMENT 	**Échantillons contenant des agents infectieux** Certains échantillons utilisés avec l'instrument EZ2 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 (Organisation pour la santé et la sécurité du travail) (États-Unis d'Amérique)
† ACGIH – American Conference of Government Industrial Hygienists (Conférence américaine des hygiénistes industriels gouvernementaux) (États-Unis d'Amérique).
‡ COSHH – Control of Substances Hazardous to Health (Contrôle des substances dangereuses pour la santé) (Royaume-Uni).

Produits chimiques

AVERTISSEMENT 	**Produits chimiques dangereux** Certains produits chimiques utilisés avec l'instrument EZ2 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 Administration (Administration pour la santé et la sécurité du travail) (États-Unis d'Amérique).

† ACGIH : American Conference of Government Industrial Hygienists (Conférence américaine des hygiénistes industriels gouvernementaux) (États-Unis d'Amérique).

‡ COSHH : Control of Substances Hazardous to Health (Contrôle des substances dangereuses pour la santé) (Royaume-Uni).

Vapeurs toxiques

AVERTISSEMENT 	**Vapeurs toxiques** N'utilisez pas de javellisant pour nettoyer ou désinfecter l'appareil EZ2. 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, 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 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 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, 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 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 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 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 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 Maintenance Procedures. QIAGEN facture les réparations dues à une maintenance inappropriée.

AVERTISSEMENT/ ATTENTION 	**Risque de dommages corporels et matériels** L'utilisation inappropriée de l'instrument EZ2 peut entraîner des accidents corporels ou une détérioration de l'instrument. L'EZ2 ne doit être utilisé que par un personnel dûment qualifié. L'entretien de l'instrument EZ2 ne doit être effectué que par des spécialistes de l'entretien sur site QIAGEN.

AVERTISSEMENT 	**Risque d'incendie** Lorsque l'instrument EZ2 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 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.

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. 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. 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.
	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.

Symbole	Emplacement	Description
	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 Sicherheits-anforderungen 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 des EZ2 kann zu Verletzungen des Benutzers oder zur Beschädigung des Geräts führen. Die Bedienung des EZ2 darf nur durch qualifiziertes, entsprechend geschultes Personal erfolgen. Die Instandhaltung des EZ2 Geräts darf nur durch Service-Spezialisten des QIAGEN Außendienstes durchgeführt werden.

WARNUNG 	**Verletzungsgefahr** Der EZ2 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 mithilfe des Handgriffs am Verpackungskarton an. Nachdem der EZ2 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 auf keinen Fall während des Betriebs.

Führen Sie alle Wartungsarbeiten gemäß den Anweisungen im Abschnitt Maintenance Procedures dieses Handbuchs durch. QIAGEN stellt Reparaturen, die auf nicht fachgerecht durchgeführte Wartungsmaßnahmen zurückzuführen sind, in Rechnung.

Schalten Sie den EZ2 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. 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 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 geöffnet, sodass sich entzündbare Dämpfe verflüchtigen können.

WARNUNG 	**Explosionsgefahr** Der EZ2 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 verschüttet werden, ist der Benutzer für die Durchführung einer entsprechenden Dekontamination verantwortlich.

Hinweis: Stellen Sie keine Gegenstände auf den EZ2.

VORSICHT 	**Beschädigung des Geräts** Stellen Sie sicher, dass der EZ2 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 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 absichtliche Unterbrechung der Schutzleiterverbindung ist verboten. **Gefährliche Spannung im Gerät** 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. **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 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 oder das Netzkabel beschädigt erscheint;
- der EZ2 längere Zeit unter ungünstigen Bedingungen gelagert wurde;
- der EZ2 unsachgemäß transportiert wurde;
- Flüssigkeiten in direkten Kontakt mit elektrischen Komponenten des EZ2 gekommen sind;
- das Stromkabel durch ein nicht offizielles Stromkabel ersetzt wurde.

WARNUNG 	**Stromschlaggefahr** Fassen Sie den EZ2 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 Technical Specification beschrieben.

WARNUNG 	**Explosionsfähige Atmosphäre** Das EZ2 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 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 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 muss an einem Ort aufgestellt werden, an dem er vor direkter Sonneneinstrahlung geschützt ist.

VORSICHT 	**Beschädigung des Geräts** Der EZ2 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 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 Administration (USA)
† ACGIH: American Conference of Government Industrial Hygienists (USA)
‡ COSHH: Control of Substances Hazardous to Health (UK)

Chemikalien

WARNUNG 	**Gefährliche Chemikalien** Einige Chemikalien, die mit dem EZ2 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 Administration (United States of America) (Arbeitssicherheits- und Gesundheitsbehörde (Vereinigte Staaten von Amerika)).

† ACGIH: American Conference of Government Industrial Hygienists (United States of America) (Amerikanische Konferenz der Industriehygieniker der Regierung (Vereinigte Staaten von Amerika)).

‡ COSHH: Control of Substances Hazardous to Health (United Kingdom) (Kontrolle von gesundheitsgefährdenden Stoffen (Vereinigtes Königreich)).

Giftige Dämpfe

WARNUNG 	**Giftige Dämpfe** Verwenden Sie keine Bleichmittel zum Reinigen oder Desinfizieren des EZ2 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 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 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 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 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 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 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 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 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 Maintenance Procedures 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 Geräts kann zu Verletzungen des Benutzers oder zur Beschädigung des Geräts führen. Die Bedienung des EZ2 darf nur durch ausreichend qualifiziertes Personal erfolgen. Die Instandhaltung des EZ2 Geräts darf nur durch Service-Spezialisten des QIAGEN Außendienstes durchgeführt werden.

WARNUNG 	**Brandgefahr** Lassen Sie nach dem Reinigen des EZ2 Geräts mit einem Desinfektionsmittel auf Alkoholbasis die Gerätetür offen, damit sich entzündliche Dämpfe verflüchtigen können. Reinigen Sie das EZ2 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 Gerät zu reinigen.

VORSICHT 	**Beschädigung des Geräts** Verwenden Sie keine Sprühflaschen, die Alkohol oder Desinfektionsmittel enthalten, um die Oberflächen des EZ2 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 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

Symbol	Ort	Beschreibung
	Typenschild an der Geräterückseite	Unique Device Identifier (UDI) als 2D-Barcode im Data Matrix-Format.
	Typenschild an der Geräterückseite	Internationale Artikelnummer
	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

1124549 09/2021 HB-2908-001