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QIAsymphony® SP/AS – General Description

For use with software version 5.0

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Sample to Insight

Contents

1 Safety Information

Before using the QIAsymphony SP/AS instruments, it is essential that you read this user manual carefully and pay particular attention to the safety information. The instructions and safety information in the user manual must be followed to ensure safe operation of the instruments and to maintain the instruments in a safe condition.

The following types of safety information appear throughout the QIAsymphony SP/AS user manuals.

WARNING

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

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 the instruments** or other equipment.

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

Note: The advice given in this manual is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.

1.1 Proper use

WARNING/ CAUTION

Risk of personal injury and material damage
Improper use of the QIAsymphony SP/AS may cause personal injuries or damage to the instruments.
The QIAsymphony SP/AS must only be operated by qualified personnel who have been appropriately trained.
Servicing of the QIAsymphony SP/AS must only be performed by QIAGEN Field Service Specialists.

Note: Do not place items on top of the QIAsymphony SP/AS hoods.

Note: Perform the maintenance as described in Section 9. QIAGEN charges for repairs that are required due to incorrect maintenance.

CAUTION

Damage to the instrument

Avoid spilling water or chemicals onto the QIAsymphony SP/AS. Instrument damage caused by water or chemical spillage will void your warranty.

In case of emergency, switch off the QIAsymphony SP/AS instruments at the power switch at the front of the QIAsymphony SP and unplug the power cord from the power outlet.

CAUTION

Damage to the instrument

Do not lean on the touchscreen when it is folded down.

1.2 Electrical safety

Note: If operation of the instruments is interrupted in any way (e.g., due to interruption of the power supply or a mechanical error), first switch off the QIAsymphony SP/AS instruments, then disconnect the electrical cord from the power supply and contact QIAGEN Technical Services.

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. Opening covers or removing parts is likely to expose live parts.

When working with the QIAsymphony SP/AS instruments:

- The line power cord must be connected to a line power outlet that has a protective conductor (earth/ground).
- Do not adjust or replace internal parts of the instruments.
- Do not operate the instruments with any covers or parts removed.
- If liquid has spilled inside the instruments, switch off the instruments, disconnect them from the power outlet, and contact QIAGEN Technical Services.
- The instrument shall be installed in a way that the power cord is accessible.

If the QIAsymphony SP/AS becomes electrically unsafe, prevent other personnel from operating them, and contact QIAGEN Technical Services.

The instruments may be electrically unsafe when:

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

1.3 Waste disposal

Used consumables, such as sample tubes, sample prep cartridges, 8-Rod Covers, disposable filter-tips, reagent tubes, and elution racks, may contain hazardous chemicals or infectious agents from the purification or assay setup process. Such wastes must be collected and disposed of 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.

For disposal of waste electrical and electronic equipment (WEEE), see Appendix A, page 202.

1.4 Environment

WARNING

Explosive atmosphere
The QIAsymphony SP/AS is not designed for use in an explosive atmosphere.

WARNING

Risk of overheating
To ensure proper ventilation, maintain a minimum clearance of 5 cm (1.97 in.) at the rear of the QIAsymphony SP/AS.
Slits and openings that ensure the ventilation of the QIAsymphony SP/AS must not be covered.

1.5 Biological safety

Note: 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 (**www.cdc.gov/biosafety.htm**).

WARNING

Sample containing infectious agents

Some samples used with this instrument may contain infectious agents. Handle such samples with the greatest of care and in accordance with the required safety regulations. Always wear safety glasses, gloves, and a lab coat.

The responsible body (e.g., 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 infectious agents as defined in the applicable Safety Data Sheets (SDSs) or 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.

Note: Samples may contain infectious agents. You should be aware of the health hazard presented by such agents and should use, store and dispose of such samples in accordance with the required safety regulations.

1.6 Chemical safety

WARNING

Hazardous chemicals

Some chemicals used with the QIAsymphony SP/AS instruments may be hazardous or may become hazardous after completion of the protocol run. Always wear safety glasses, gloves, and a lab coat.

The responsible body (e.g., 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 Safety Data Sheets (SDSs) or 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

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

WARNING **Toxic fumes**

Do not use bleach to clean or disinfect QIAsymphony SP/AS instruments. 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.

1.7 Mechanical hazards

The hoods of the QIAsymphony SP/AS instruments must remain closed during operation. Only open the hoods when instructed to do so by the software.

WARNING **Moving parts**

To avoid contact with moving parts during operation of QIAsymphony SP/AS instruments, the instruments must be operated with the hoods closed. If the hood sensors are not functioning correctly, contact QIAGEN Technical Services.

1.8 Magnetic hazard

The QIAsymphony SP uses magnetic rods for processing magnetic particles. These magnetic rods generate a strong magnetic field.

WARNING **Strong magnetic field**

Do not place QIAsymphony SP/AS instruments near magnetic storage systems (e.g., computer discs).
Do not use metal tools when handling the magnetic rods.
Do not allow the magnetic rods to come into contact with other magnets.

WARNING

Damage to the instrument(s)

Make sure to install the magnetic-head guards before operating the QIAsymphony SP.

1.9 Heat hazard

The QIAsymphony SP supports a lysis station that can be heated, if required by the protocol. In addition, both the QIAsymphony SP and the QIAsymphony AS support a UV lamp.

WARNING

Hot surface

The lysis station and the UV lamps can reach temperatures of up to 90°C (194°F). Avoid touching them during, and immediately after, operation.

1.10 Maintenance safety

WARNING/ CAUTION

Risk of personal injury and material damage

Only perform maintenance as described in this user manual.

Note: Perform the maintenance as described in Section 9. QIAGEN charges for repairs that are required due to incorrect maintenance.

WARNING/ CAUTION

Risk of personal injury and material damage

Improper use of QIAsymphony SP/AS instruments may cause personal injuries or damage to the instruments.

QIAsymphony SP/AS instruments must only be operated by qualified personnel who have been appropriately trained.

Servicing of QIAsymphony SP/AS instruments must only be performed by QIAGEN Field Service Specialists.

CAUTION

Damage to the instrument(s)

Do not use bleach, solvents, or reagents containing acids, alkalis, or abrasives to clean QIAsymphony SP/AS instruments.

CAUTION

Damage to the instrument(s)

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAsymphony SP/AS instruments. Spray bottles should be used only to clean items that have been removed from the worktables.

CAUTION

Damage to the instrument(s)

After wiping the drawers, the perforated metal plate and lysis station with paper towels, make sure that no bits of paper towel remain. Pieces of paper towel remaining on the worktable could lead to a worktable collision.

CAUTION

Damage to the instrument hood(s) or side panels

Never clean the instrument hood(s) or side panels with alcohol or alcohol-based solutions. Alcohol will damage the hood and the side panels. To clean the hood(s) and side panels, use distilled water.

WARNING/ CAUTION

Risk of electric shock

Do not open any panels on the QIAsymphony SP/AS instruments.
Only perform maintenance as described in this user manual.

CAUTION

Risk of fire

When cleaning QIAsymphony SP/AS instruments with alcohol-based disinfectant, leave the instrument hoods open to allow flammable vapors to disperse.
Only clean QIAsymphony SP/AS instruments with alcohol-based disinfectant when worktable components have cooled down.

CAUTION

Damage to the instrument(s)

Make sure to install the tip guards correctly before operating QIAsymphony SP/AS instruments.

CAUTION **Damage to the instrument**

Make sure to install the magnetic-head guards before operating the QIAsymphony SP.

CAUTION **Damage to the instrument(s)**

Make sure not to damage the cables and the electronic board when wiping the magnetic head.

1.11 Symbols for the QIAsymphony SP/AS instruments

The following symbols appear on the QIAsymphony instruments and in this user manual. The heat hazard symbol appears only on the QIAsymphony SP.

Symbol	Location	Description
	Lysis station	Heat hazard — the temperature of the lysis station can reach up to 90°C (194°F).
	QIAsymphony SP — near the tip rack slots/tip disposal bag QIAsymphony AS — on the worktable, near the magnetic lock of the hood	Biohazard — the tip rack slots, waste, and the worktable may be contaminated with biohazardous material and must be handled with gloves.
	Robotic arm	Avoid looking directly into UV light. Do not expose your skin to UV light.
	Robotic arm	Moving parts – make sure to keep the hood and drawers closed during operation.
	Next to the type plate on the back of the instrument	Laser radiation — do not stare into beam.

Symbol	Location	Description
	Type plate on the back of the instrument	CE mark for Europe.
	Type plate on the back of the instrument	FCC mark of the United States Federal Communications Commission.
	Type plate on the back of the instrument	RCM (former C-Tick) for Australia.
	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.
	On the worktable	Consult instructions for use.
Rn	User manual cover	R is the revision of the user manual; n is the revision number

2 Introduction

Thank you for choosing the QIAsymphony SP/AS instruments. We are confident they will become an integral part of your laboratory.

Before using the QIAsymphony SP/AS instruments, it is essential that you read the user manuals carefully and pay particular attention to the safety information. The instructions and safety information in the user manuals must be followed to ensure safe operation of the instruments and to maintain the instruments in a safe condition.

2.1 Provided user documents

The QIAsymphony SP/AS instruments are provided with the *QIAsymphony — Pure Performance* CD-ROM, which contains the following documents:

QIAsymphony SP/AS – General Description (this user manual)

- Features of the QIAsymphony SP/AS instrument(s)
- Functions (e.g., handling files) that are the same for the QIAsymphony SP and the QIAsymphony AS
- Maintenance (including cleaning)
- Troubleshooting

QIAsymphony SP/AS – Operating the QIAsymphony SP

- Provides details about how to operate the QIAsymphony SP instrument and a description of the QIAsymphony software required for operating the QIAsymphony SP.

QIAsymphony SP/AS – Operating the QIAsymphony AS

- Provides details about how to operate the QIAsymphony AS instrument and a description of the QIAsymphony software required for operating the QIAsymphony AS.

QIAsymphony SP/AS Consolidated Operating Guide

- Provides details about how to operate the QIAsymphony SP/AS instrument and a description of the QIAsymphony software required for operating the QIAsymphony SP/AS.

QIAsymphony Management Console User Manual

- Provides details about how to use the QIAsymphony Management Console. This includes how to use the **File Transfer**, **Checksum Validation**, **Process Definition** editor tool, **CSV Conversion** and **Automatic File Transfer** tools.

QIAsymphony Cabinet SP/AS User Guide

- Features of the QIAsymphony SP/AS Cabinet
- Maintenance (including cleaning)

2.2 General information

2.2.1 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 QIAsymphony SP/AS instruments 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 contact QIAGEN Technical Services (see the back cover or visit **www.qiagen.com**).

2.2.2 Policy statement

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

2.3 Intended use of the QIAsymphony SP

The QIAsymphony SP instrument is designed to perform automated purification of nucleic acids.

It is intended to be used only in combination with QIAsymphony kits indicated for use with the QIAsymphony SP for the applications described in the kit handbooks.

The QIAsymphony SP is intended for use by professional users, such as technicians and physicians trained in molecular biological techniques and the operation of the QIAsymphony SP instrument.

2.4 Intended use of the QIAsymphony AS

The QIAsymphony AS instrument is designed to perform automated assay setup.

If used in combination with QIAGEN Kits indicated for use with the QIAsymphony AS instrument it is intended for the applications described in the respective QIAGEN kit handbooks. If the QIAsymphony AS instrument is used with kits other than QIAGEN kits, it is the user's responsibility to validate the performance of such product combination for any particular application.

The QIAsymphony AS instrument is intended for use by professional users trained in molecular biology techniques and the operation of the QIAsymphony AS instrument.

2.5 Requirements for QIAsymphony SP/AS users

The following table covers the general level of competence and training necessary for transportation, installation, use, maintenance and servicing of QIAsymphony SP/AS instruments.

Task	Personnel	Training and experience
Delivery	No special requirements	No special requirements
Installation	QIAGEN Field Service Specialists only	Regularly trained, certified, and authorized by QIAGEN
Routine use (running protocols)	Laboratory technicians or equivalent	Professional users, such as technicians and physicians, trained in molecular biology techniques
Routine maintenance	Laboratory technicians or equivalent	Professional users, such as technicians and physicians, trained in molecular biology techniques
Servicing and annual maintenance	QIAGEN Field Service Specialists only	Regularly trained, certified and authorized by QIAGEN

2.5.1 Training for QIAsymphony SP/AS users

Customers are trained by a QIAGEN representative upon installation of the QIAsymphony SP/AS instrument(s). The training takes 1–3 days, depending on the subject and the knowledge level of the customer.

Basic training covers general operation of the system, user management, configuration, QIAsymphony Management Console (QMC) software, regular maintenance and basic troubleshooting. Application-specific topics will be addressed in an advanced training.

QIAGEN can also provide retraining, for example after software updates, or for new laboratory personnel. Please contact QIAGEN Technical Services to get more information about retraining.

3 General Description

The QIAsymphony SP performs sample preparation and the QIAsymphony AS performs assay setup. The QIAsymphony AS directly interfaces with the QIAsymphony SP, enabling automation of this complete workflow. Both instruments are operated using the built-in touchscreen located on the QIAsymphony SP.

3.1 QIAsymphony SP

The QIAsymphony SP performs fully automated purification of nucleic acids using magnetic-particle technology. Samples can be processed in batches of up to 24 samples. The instrument controls integrated components including a lysis station, 4-channel pipetting system, robotic gripper and an array of magnetic rods that are protected by rod covers. These rods can pick up or release magnetic particles in the wells of a sample prep cartridge, depending on whether the magnetic rods are inserted in the rod covers or not.

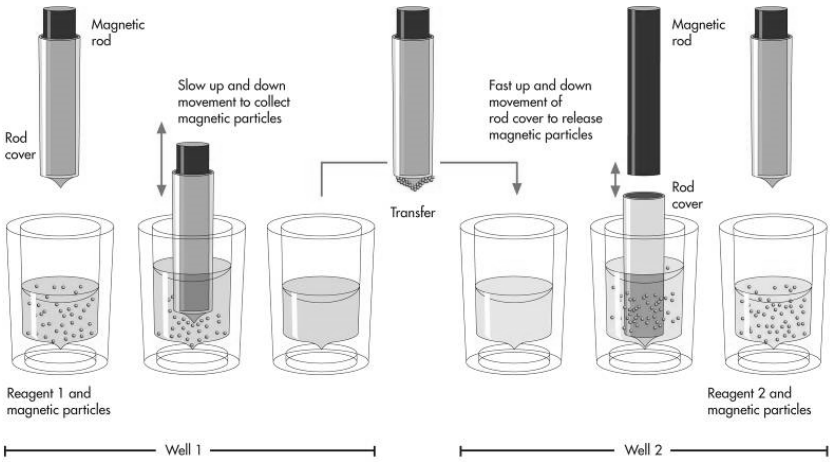
The QIAsymphony SP is preinstalled with various protocols and corresponding Assay Control Sets for purification of RNA, genomic DNA and viral and bacterial nucleic acids. The user loads reagents (in prefilled, sealed reagent cartridges) and consumables into the appropriate drawer, loads the samples and selects a protocol using the touchscreen. The user then starts the protocol, which provides all necessary commands for sample lysis and purification. A fully automated inventory scan (either after closing the individual drawers or before the run starts) helps to ensure that the QIAsymphony SP is correctly set up for the protocol.

There are 3 default software configurations that can be used for operating the QIAsymphony SP, see Section 6.2.1 for more details.

3.1.1 QIAsymphony SP principle

Sample preparation using the QIAsymphony SP usually consists of 4 main steps: lyse, bind, wash, elute.

- Samples are lysed in the lysis station, which can be heated, if required by the protocol.
- Nucleic acids bind to the surface of the magnetic particles and are washed to remove contaminants.
- Purified nucleic acid is eluted.



Schematic of QIAsymphony SP principle.

The QIAsymphony SP processes a sample containing magnetic particles as follows:

1. A magnetic rod protected by a rod cover enters a well containing the sample and attracts the magnetic particles.
2. Sample prep cartridges are positioned below the magnetic rod with cover.

The QIAsymphony SP uses a magnetic head containing an array of 24 magnetic rods, and can therefore process 24 samples simultaneously. Steps 1 and 2 are repeated several times during sample processing.

Attracting magnetic particles

To attract magnetic particles, the magnetic rod is first fully inserted into a rod cover. The magnetic rod with rod cover then moves slowly up and down in the well containing the sample to ensure maximal attraction of magnetic particles.

Releasing magnetic particles

To release magnetic particles, the magnetic rod with rod cover is first moved down into a well. The magnetic rod is then withdrawn from the rod cover, and the rod cover is lowered into the well. The rod cover is moved quickly up and down to ensure maximal release and mixing of magnetic particles in the solution in the well.

Washing magnetic particles

The QIAsymphony SP washes magnetic particles by transferring them from one solution to another. To improve washing efficiency, the rod covers are designed so that minimal liquid is transferred along with the magnetic particles. To ensure that magnetic particles are evenly distributed in a solution during a long incubation, the QIAsymphony SP occasionally moves the rod cover (without magnetic rod) up and down in the well.

Concentrating magnetic particles

The QIAsymphony SP concentrates magnetic particles by attracting magnetic particles from a solution of large volume, and releasing the particles in a solution of low volume.

3.2 External features of the QIAsymphony SP

1 Hood
2 Touchscreen
3 "Sample" drawer
4 "Reagents and Consumables" drawer
5 "Waste" drawer
6 "Eluate" drawer
7 Power switch
8 USB port
9 Network interface
10 Appliance inlet
11 Adjustable feet
12 Handheld bar code scanner
13 QIAsymphony Cabinet SP
14 LED lights (blue)

Instrument panels and hood

Parts of the side panels and the hood are made of acrylic glass. Acrylic glass is sensitive to UV light. To avoid damage to the instrument, do not expose the QIAsymphony SP to UV light. If the room in which the QIAsymphony SP is placed needs to be decontaminated with UV light, cover the instrument. Decontamination of the QIAsymphony SP using the integrated UV light will not damage the acrylic glass.

Hood

The instrument hood protects users from the moving robotic arm and from potentially infectious material on the worktable. The hood can be manually opened to gain access to the worktable (e.g., for cleaning). During operation of the QIAsymphony SP, the hood of the instrument must remain closed and should only be opened when instructed to do so by the software. During sample preparation, the QIAsymphony SP hood is locked. If force is used to open the hood during a run, the run will be paused.

Important: If the hood is opened during sample processing, the instrument will not immediately stop. The instrument will stop when processing of the current protocol step is finished. In some cases, this may take some time.

Power switch

The power switch is located at the front-left of the QIAsymphony SP. To switch the QIAsymphony SP on, press the power switch. The startup screen appears; this may take some time. The instrument then automatically performs initialization tests.

To conserve energy, the QIAsymphony SP can be switched off when not in use. To do this, press the power switch.

Note: After the QIAsymphony SP is switched off, the power switch flashes a few times. When the power switch stops flashing it is safe to switch the QIAsymphony SP on again.

Touchscreen

The QIAsymphony SP is controlled using a swivel-mounted touchscreen. The touchscreen allows the user to, for example, select and run protocols, and upload/download files (e.g., Assay Control Sets) from/to a USB stick (for more details, see Section 8). During sample processing, the touchscreen displays the sample preparation user interface, providing information about each of the sample batches, including batch status.

Drawers

The QIAsymphony SP contains 4 drawers:

- "Sample" drawer
- "Reagents and Consumables" drawer
- "Waste" drawer
- "Eluate" drawer

For more information about the drawers, see Section 3.3.

USB ports

The USB ports at the front-left and front-right of the QIAsymphony SP allow connection of the QIAsymphony SP to a USB stick and a handheld bar code scanner (supplied with the QIAsymphony SP). New protocols, Assay Control Sets, new labware files (e.g., files enabling new types of tube to be used with the QIAsymphony SP) and work lists can be uploaded to the QIAsymphony SP via the USB port. Data files, such as system log files, report files, loading information files and rack files can also be transferred via the USB port from the QIAsymphony SP to the USB stick.

Important: The USB port is only for use with the USB stick provided by QIAGEN.

Important: Do not remove the USB stick while downloading or uploading files.

Network interface

The network interface allows connection of the QIAsymphony SP to a network via a CAT5 Ethernet network cable.

QIAsymphony status LEDs

Light-emitting diodes (LEDs) at the front of the QIAsymphony SP are illuminated when sample preparation is in progress. The status LEDs flash when a batch/run is finished or if an error occurs. Touching the screen turns off the flashing.

QIAsymphony Cabinet SP (optional)

The QIAsymphony Cabinet SP is an optional accessory for the QIAsymphony SP. The QIAsymphony Cabinet SP is specially designed for positioning the QIAsymphony SP in your laboratory. For more information, contact QIAGEN Technical Services.

3.3 QIAsymphony SP drawers

Samples, reagents and consumables, eluates and waste are separated in different drawers in the QIAsymphony SP. When a drawer is opened and then closed, the user confirms whether an inventory scan of the drawer should be performed. During sample preparation, the QIAsymphony SP drawers are locked.

Inventory scan

An inventory scan of each drawer of the QIAsymphony SP must be performed before a sample preparation protocol can be run. The QIAsymphony SP uses a laser to check the type and number of consumables, and the type and location of adapters loaded in each drawer. A bar code detection system recognizes and scans 1D or 2D bar codes (e.g., on the reagent cartridge). The laser and bar code camera are integrated in the robotic arm. This ensures that positions over the whole worktable can be scanned. The inventory scan is drawer specific. This means that only the drawer that has been opened will be scanned for changes.

3.3.1 "Sample" drawer

Interior of the "Sample" drawer.

The sample input drawer is located at the front-left of the QIAsymphony SP. Samples can be loaded into the drawer in either primary or secondary tubes or multi-well sample racks. For more information about compatible tubes and plates, see **www.qiagen.com/goto/QIAsymphony**.

Use of tube and plate carriers enables samples to be loaded in a variety of formats. Two types of sample carrier can be used with the QIAsymphony SP.

- Tube carrier for up to 24 primary tubes or tubes containing internal controls with diameters of 8–16 mm

- Plate carrier for up to four 24-, or 96-well plates or for up to 4 racks of tubes, each containing up to 24 tubes

Note: It is not possible to use tube and plate carriers at the same time.

Plate and tube carriers.

The QIAsymphony SP has an integrated bar code reader that can read bar codes on the tube and plate carriers and also on sample tubes and plates. This enables the QIAsymphony SP to identify the type of sample carrier being used.

Primary tubes can be labeled with 1D bar codes. For samples in 96-well plates, a bar code can be used for identification of the complete set of samples, but information about each individual sample must be entered by the user.

The bar code reader of the "Sample" drawer scans:

- The position bar codes of the tube carriers
- The bar code labels on sample tubes
- The bar code on the adapter or sample plate

Each slot in a tube carrier has a bar code at the back of the slot. If the position is empty, the bar code at the back of the slot can be read by the bar code reader. This enables the QIAsymphony SP to detect which positions in the tube carrier contain a tube and which are empty.

If you are using sample tubes that are not labeled with bar codes and your QIAsymphony SP has a configuration other than configuration 3, tubes containing clear liquids, or volumes of liquid with a liquid height lower than the bottom edge of the bar code on the tube carrier may not be detected. In this case, use a blank bar code label to enable detection of the sample tube. See Section 6.2 for more details about the different software configurations that are possible.

The scanned sample ID lists can be manually corrected (depending on the software configuration of the QIAsymphony SP) and assigned into batches based on existing sample information or following user input.

Four tube carriers are available for use with sample tubes. In some protocols, samples may also be processed with positive or negative controls. A fifth tube carrier accommodates tubes containing internal controls that will be added to the samples.

Note: Be sure to use the correct tube inserts and adapters. For information about compatible tubes and plates, visit **www.qiagen.com/goto/QIAsymphony**.

Note: Some protocols provide a clot detection function which is only active when the correct tubes are used. For detailed information about which tubes to use with each protocol, visit **www.qiagen.com/goto/QIAsymphony**.

Note: With some software configurations of the QIAsymphony SP, bar code labeled sample tubes or plates must be used. If other tubes or plates are used, a batch or run cannot be defined.

Note: Be sure to support the tube carrier with your second hand during the loading process. Otherwise, there is a risk of handle breakage.

LEDs on the inside of the "Sample" drawer simplify sample loading and unloading. The color of the LEDs denotes the status of sample loading.

- Green – slot is free and ready for loading
- Orange – tube or plate carrier is loaded
- Red – tube or plate carrier is currently locked (carrier is currently in use, or the carrier has been incorrectly inserted)

Note: If the tube/plate carrier has been incorrectly inserted, take the carrier out of the "Sample" drawer and reinsert.

For increased process safety, each sample slot is equipped with a lock. This prevents accidental unloading of sample racks that will be processed in the batch currently running.

Tube carrier

The QIAsymphony SP tube carrier can accommodate up to 24 sample tubes with the following outer diameters:

- 14–16 mm (no insert required)
- 13 mm (tube insert 1A; cat. no. 9242058)

- 11.5 mm (tube insert 2A; cat. no. 9242057)
- Insert Sarstedt® tube 2 ml (insert 3B; cat. no. 9242083)
- Insert snap cap tube (insert 5A; cat. no. 9244701)

Example of insert for tube carrier.

The instrument detects tube size by reading the bar code on the insert or on the tube carrier. If a tube is used that is not the default tube type, the user must specify the tube type when defining the sample batch. For more information about compatible and default tubes, visit **www.qiagen.com/goto/QIAsymphony**.

Note: Default tubes can be configured. For more details, see Section 6.1.3.

Plate carrier

The plate carrier has 4 slots that can accommodate up to 4 sample racks. Sample plates in 24- and 96-well format can be used. The plate carrier can also be loaded with tubes in an adapter. Different plate formats can be used within the same carrier at the same time. For more information about compatible plates and tubes, visit **www.qiagen.com/goto/QIAsymphony**.

3.3.2 "Reagents and Consumables" drawer

The "Reagents and Consumables" drawer accommodates all consumables and reagents required for the protocol run. Before starting a protocol run, the drawer must be loaded with the appropriate reagents in prefilled, sealed reagent cartridges, sample prep cartridges, 8-Rod Covers, and disposable filter-tips. In some cases, an Accessory Trough and buffer bottle may be required. For more information, refer to the handbook of the QIAsymphony Kit you are using.

Consumables

Unit boxes

Consumables required for sample preparation are placed onto the QIAsymphony SP worktable in unit boxes. Unit boxes are provided with a lid. Simply remove the lid, and place unit boxes containing either unused 8-Rod Covers or sample prep cartridges into the "Reagents and Consumables" drawer. Unit boxes are designed so that they fit into the instrument drawer only in the correct orientation.

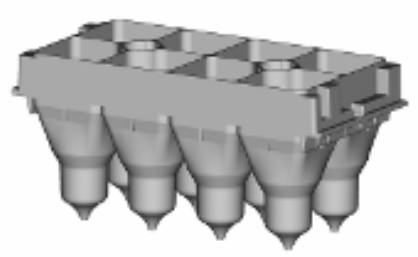
The lids can be reused to close unit boxes containing clean or used sample prep cartridges or 8-Rod Covers.

Consumables used in sample preparation on the QIAsymphony SP.

Sample prep cartridges

Sample prep cartridges are the vessels used by the QIAsymphony SP during purification of nucleic acids. Each well of a sample prep cartridge can hold up to 3 ml of liquid.

Sample prep cartridges are provided in sealed unit boxes. Each unit box can hold a maximum of 28 cartridges. A specific pattern on the top and bottom edge of a sample prep cartridge enables automatic detection by the QIAsymphony SP during the inventory scan. The number of sample prep cartridges in a unit box is also detected during the inventory scan. The robotic handling system can pick up a maximum of 3 sample prep cartridges simultaneously.



Purification of nucleic acids takes place in sample prep cartridges.

8-Rod Covers

An 8-Rod Cover is an array of 8 rod covers that cover the magnetic rods of the magnetic head. 8-Rod Covers are provided in sealed unit boxes. Each unit box can hold a maximum of twelve 8-Rod Covers. There is a spacer between the bottom of the unit box and the last 8-Rod Cover. A specific pattern on the top and bottom edge of an 8-Rod Cover enables automatic detection by the QIAsymphony SP during the inventory scan. The number of 8-Rod Covers in a unit box is also detected during the inventory scan.

8-Rod-Covers cover the magnetic rods of the magnetic head.

Filter-tips

The QIAsymphony SP uses 1500 µl filter-tips and 200 µl filter-tips. Filter-tips are provided in sealed blister packs, with 32 filter-tips in one tip rack. For increased ease of use, racks containing 1500 µl filter-tips are black and racks containing 200 µl filter-tips are blue.

Note: Only use filter-tips designed for use with the QIAsymphony SP.

Note: Each tip type contains a filter to help prevent cross-contamination.

Each type of tip rack has a different pattern on the upper and lower side. This enables detection of the type of filter-tip during the inventory scan.

Note: Do not refill partially used tip racks. The number of filter-tips will be detected during the inventory scan.

Note: Do not refill partially used tip racks. A mixture of various tip sizes in one rack will result in an error during the run.

Reagent cartridges

Reagents required for the purification procedure are provided in prefilled, sealed reagent cartridges. Up to 2 reagent cartridges can be loaded into the "Reagents and Consumables" drawer. For increased ease of use, reagent cartridges fit only in the correct orientation. The user first removes the seal from the magnetic-particle trough. The reagent cartridge is then automatically opened by the QIAsymphony SP, which eliminates manual handling and pouring of reagents. Each individual reagent in the reagent cartridge is labeled with a 2D bar code, enabling tracking of reagents through the entire purification procedure.

Prefilled reagent cartridges eliminate manual pouring of reagents.

The reagent cartridge contains sufficient reagents for up to 192 samples, depending on the protocol being run. Troughs of partially used reagent cartridges should be sealed immediately after use with Reuse Seal Strips (provided in the QIAsymphony Kit).

Note: Do not refill partially used reagent cartridges as this may lead to performance and pipetting errors.

Important: The length of time that the reagent cartridge is open must be kept as short as possible. For more detailed information, refer to the handbook of the respective QIAsymphony Kit.

Components of the reagent cartridge

The reagent cartridge consists of 5 parts: reagent cartridge holder, magnetic-particle trough, reagent troughs, enzyme rack, and piercing lid.

Assembled reagent cartridge sealed with Reuse Seal Strips.

Reagent cartridge holder

The reusable reagent cartridge holder provided with the QIAsymphony SP holds the reagent cartridge and enzyme rack in the "Reagents and Consumables" drawer. The holder has a cut-out grip for easy handling. The holder can accommodate one reagent cartridge containing 7 buffer troughs, one magnetic-particle trough and one enzyme rack.

Note: The reagent cartridge holder has slots for holding the screw-caps of enzyme tubes. This helps to prevent mix-up of caps and subsequent contamination of reagents.

Reagent troughs and enzyme rack

The reagent cartridge consists of removable troughs containing buffers and magnetic particles and also a rack containing tubes of accessory enzymes (for more information, refer to the handbook of the QIAsymphony kit you are using). Reagent troughs and the magnetic-particle trough are prefilled and factory sealed.

Note: Be sure to remove the foil from the magnetic-particle trough before first use of the reagent cartridge.

All reagent troughs and enzyme racks are labeled at the side with the name of the buffer contained in the trough. A unique 2D bar code on top of each trough enables the QIAsymphony SP to detect the reagent cartridge and the contents of each trough.

Visually check all reagent troughs for precipitates. If precipitates are present, refer to the handbook of the QIAsymphony kit you are using for more information.

Note: Make sure that reagents and enzymes are at room temperature (15–25°C) before placing into the "Reagents and Consumables" drawer.

Note: Do not autoclave a prefilled reagent cartridge. Do not change the order of the troughs within the reagent cartridge.

Note: Do not refill partially used reagent cartridges.

Piercing lid

The piercing lid enables the buffer troughs to be automatically opened by the QIAsymphony SP during first use of the reagent cartridge. The piercing lid is placed on top of the reagent cartridge in the reagent cartridge holder. The piercing device of the QIAsymphony SP, which is integrated in the "Reagents and Consumables" drawer, presses the piercing lid into the troughs when the reagent cartridge is loaded in the drawer.

Note: Do not pierce the reagent cartridge manually.

Important: The piercing lid has sharp edges and can damage your gloves.

Buffer bottle

Depending on the kit protocol being used, an additional bottle of buffer may be provided. The bottle is prefilled with up to 60 ml of reagent. For more information about the provided reagent, refer to the corresponding kit handbook.

Accessory Trough

If the purification procedure requires additional ethanol, this must be poured by the user into an Accessory Trough, which is then placed into either tip rack slot 5 or 12 in the "Reagents and Consumables" drawer. Accessory Troughs are automatically detected during the inventory scan.

If additional ethanol is required, refer to the relevant kit handbook for the volume to be used.

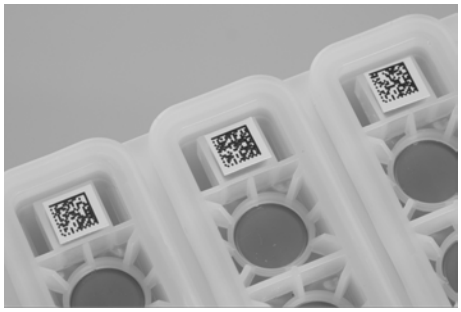
3.3.3 Inventory scan of "Reagents and Consumables" drawer

The inventory scan of the "Reagents and Consumables" drawer is divided into 2 main parts, each with several subparts.

Laser scan

1. Reagent cartridge slots are scanned.
    - If a reagent cartridge is detected by the QIAsymphony SP, the instrument will check first for sealed troughs in the respective reagent cartridge.

- 2D bar codes on reagent troughs, the magnetic-particle trough and the enzyme rack are checked. In addition, the piercing status of the reagent cartridge is checked.



Note: Ensure that all 2D bar codes are accessible by the sensor.

- If the reagent cartridge is sealed and not pierced, the liquid level of all reagents in the reagent cartridge is set to the original value. An additional liquid-level check will not be performed.
- Both reagent cartridge slots are scanned.

Note: Do not mix enzyme racks, buffer or magnetic-particle troughs from different reagent cartridges.

2. Tip rack slots are scanned.
   - All 18 tip rack slots are scanned to determine the type of tip rack loaded.
   - All tip rack slots in which a tip rack was detected are scanned to determine the number of tips. If a tip is detected in the first and last position of the tip rack, the tip rack will be categorized as full. If the first or last tip is missing, a full scan will be performed to determine the number of tips in the tip rack.
3. Unit box slots are scanned.
   - The unit box slots are scanned to detect the presence of unit boxes in the 4 slots.
   - Afterwards, the type (8-Rod Cover or sample prep cartridge) and number of consumables are determined.
4. Buffer bottle slot is scanned.
   - The buffer bottle slot is scanned to determine whether a buffer bottle has been loaded and to determine the loaded volume.

Note: The user also has the option of scanning the reagent cartridges and buffer bottle in the same scan. This option can be chosen when only the reagent cartridges have been exchanged and the rest of the inventory remains unchanged. This partial scan can also be chosen if an error occurred while scanning the reagent cartridges, which avoids having to perform another complete inventory scan.

Liquid-level scan of detected reagents

This scan is only performed if the liquid level is not known (e.g., for a partially used reagent cartridge).

1. Liquid-level scan of detected reagents.

   Note: The inventory scan will only enable detection of the liquid level of open and recognized vessels.
2. Liquid-level check of the buffer bottle (if detected).
3. Liquid-level check of the Accessory Trough (if detected).

   Note: These checks use 1500 µl and 200 µl filter-tips. If insufficient tips are available or if one of the tip types is missing, the inventory scan will be aborted and queued sample batches cannot be started.

Partial inventory scan

If you need to repeat an inventory scan for the "Reagents and Consumables" drawer (e.g., if a change has been made on the worktable), you can perform a partial inventory scan. You can choose to scan the following worktable items separately:

- Tip racks
- Unit boxes
- Reagents
- Accessory Trough
- Buffer bottle

3.3.4 "Waste" drawer

Used 8-Rod Covers and sample prep cartridges are discarded by the robotic gripper into the "Waste" drawer and are collected in 4 unit boxes in the drawer.

A container in the "Waste" drawer collects liquid waste from the sample preparation procedure. It is not possible to close the "Waste" drawer if this liquid waste container is not installed. Used disposable filter-tips are discarded into a tip disposal bag. A tip park station in the waste drawer allows used tips to be temporarily stored on the worktable for reuse in a later protocol step.

Note: If using the QIAsymphony SP in combination with the QIAsymphony Cabinet SP, see the *QIAsymphony Cabinet SP/AS User Guide* for information about tip disposal.

Note: Do not autoclave the liquid waste container.

3.3.5 Inventory scan of the "Waste" drawer

The inventory scan of the "Waste" drawer consists of a laser scan. It does not perform 2D bar code scans, liquid-level detection or checks of the liquid waste container (either presence nor volume). It is therefore important that the user checks the liquid waste container and empties it before starting a batch.

Laser scan

1. The tip park station slot is scanned. This checks that the tip park station is mounted.
2. The tip chute slot is scanned. This checks that the tip chute is installed.
3. The unit box slots are scanned. First of all, each of the 4-unit box slots is scanned to detect whether a unit box is in the slot. Afterwards, the content of each box is determined (e.g., amount and type of consumables in each box).

3.3.6 "Eluate" drawer

Purified nucleic acids are transferred to the "Eluate" drawer. The "Eluate" drawer contains 4 slots that can be used for elution into plates or tubes. "Elution slot 1" enables eluate cooling and requires use of a specially designed cooling adapter for various plate formats (e.g., 96-well, PCR tubes). "Elution slot 2" and "Elution slot 3" can accommodate 96-well plates, 24-well plates and tubes. "Elution slot 4" can accommodate 24-well plates or tubes in special adapters only.

For technical reasons, 96-well elution racks cannot be used on "Elution Slot 4".

Adapters are available for the following types of consumables:

- Microplate, round bottom
- Sarstedt screw-cap tubes (2 ml)
- PCR plate
- 96-well plates
- Snap cap microtubes
- Elution Microtubes CL (cat. no. 19588)

For a complete list of 96-well plates and tubes that can be used in the "Eluate" drawer, and the corresponding names used in the QIAsymphony operating software, visit **www.qiagen.com/goto/QIAsymphony**.

If multiple sample batches are being processed, eluted nucleic acids can be removed from the "Eluate" drawer as soon as each batch is ready. The "Eluate" drawer will unlock and the **E** button will become green. The green color of the **E** button informs the user that eluates may be removed. For more information, see Section 3.3.1 of *Operating the QIAsymphony SP*.

A handheld bar code reader is used to identify bar codes on elution racks and elution slots in the "Eluate" drawer. The handheld bar code reader is connected to the QIAsymphony SP via the USB port at the bottom-right of the instrument.

If using the QIAsymphony SP/AS instruments in integrated mode (Section 3.5), elution racks can be automatically transferred via the transfer module from "Elution slot 1" of the "Eluate" drawer of the QIAsymphony SP to slot 2 of the "Eluate and Reagents" drawer of the QIAsymphony AS. To perform an automatic transfer, a transfer frame must be installed in the "Eluate" drawer. For more details about the transfer module and about how to install the transfer frame, see Sections 3.8.2 and 3.8.3.

3.3.7 Inventory scan of the "Eluate" drawer

The QIAsymphony SP checks the elution slots to make sure that selected elution slots contain an elution rack. It is possible to select the elution slots on which the bar codes of adapters will be scanned in the **Process SP 1** tab of the **Configuration** menu (i.e., none or 1–4).

If the QIAsymphony SP detects a discrepancy between the expected and actual elution rack(s) that are loaded in the "Eluate" drawer, a message appears in the touchscreen prompting the user to correct the problem. Open the "Eluate" drawer and place the elution rack(s) onto the correct position(s) or edit the slot/rack assignment in the touchscreen.

A message appears in the following situations:

- The detected bar code and the adapter bar code specified in the labware file are different.
- A bar code is detected but the selected labware file does not specify an adapter bar code.
- No bar code is detected, but the selected labware file specifies an adapter bar code that is required.

Note: The QIAsymphony SP only detects whether an elution slot is occupied by an elution rack or adapter and is not able to identify the elution rack type on the respective elution slot.

3.4 Internal features of the QIAsymphony SP

3.4.1 Lysis station

The lysis station, a heated orbital shaker, enables automated lysis of up to 24 samples in 1 batch. After sample lysis, the lysis station moves upward so that samples can be transferred for further processing.

3.4.2 Robotic arm

The robotic arm provides accurate and precise positioning of the robotic gripper and pipettor head. The robotic arm also includes an optical sensor, a 2D bar code camera, and a UV lamp.

Robotic gripper

The robotic gripper transfers consumables (8-Rod Covers and sample prep cartridges) to the required position on the worktable during sample preparation.

Pipettor head

The pipettor head is mounted on the robotic arm and moves in the X, Y, and Z directions in order to reach different locations on the worktable.

The pipettor head contains 4 pipetting channels with high-precision syringe pumps that are connected to tip adapters. The tip adapters can be attached to disposable filter-tips. The syringe pumps can operate simultaneously to allow aspiration and dispensing of small volumes of liquid (20–1500 µl, application- and liquid-dependent) via the attached disposable filter-tips.

Each pipetting channel can perform two types of liquid-level detection: capacitive-based liquid-level detection (cLLD) and pressure-based liquid-level detection (pLLD). To detect the liquid level, changes in capacitance or pressure between the disposable filter-tip and the liquid are measured (application- and liquid-dependent).

Tip guards

Each pipettor head is equipped with 4 tip guards. During a run, the tip guards are positioned below the disposable tips to catch any drops of liquid that may fall. This helps to minimize the risk of cross-contamination.

Tip guards help to prevent cross-contamination.

Optical sensor

During an inventory scan, the optical sensor checks that the consumables are correctly loaded in the drawers and that there are sufficient consumables loaded for the run.

2D bar code camera

As part of the inventory scan of the "Reagents and Consumables" drawer, the 2D bar code camera on the QIAsymphony SP identifies the different reagents in the reagent cartridge and also checks that the correct reagent cartridge has been loaded.

Bar code types

The bar code reader can read the following types of bar codes:

- Code 39
- Code 128 and subtypes
- Codabar

Important: Do not use the bar code Interleaved 2 of 5. This bar code type has a high information density and no checksum. It can therefore generate errors.

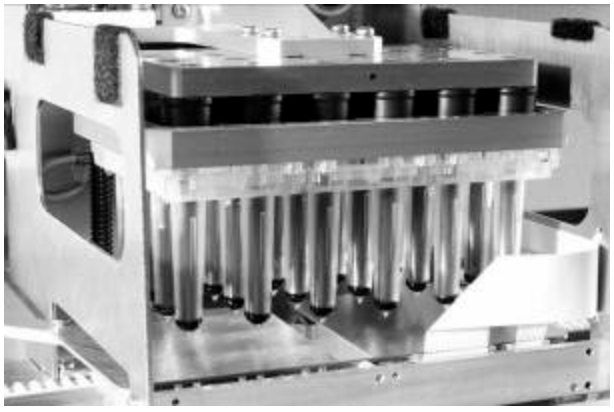
For information about attaching 1D bar code labels to tubes, see Appendix A.

UV lamp

A UV lamp is mounted on the robotic arm and is used to decontaminate the worktable of the respective instrument. See Section 9.7 for information about operation of the UV lamps.

3.4.3 Magnetic head

The magnetic head is comprised of an array of 24 magnetic rods for processing magnetic particles, a conveyor, and magnetic-head guards.



Magnetic head of the QIAsymphony SP.

The magnetic head comprises a rod-cover drive for mixing samples and a magnetic-rod drive for separation and resuspension of magnetic particles.

The conveyor moves the sample prep cartridges from the start position to the processing position and finally to the output position.

The magnetic-head guards move underneath the magnetic head and help to prevent contamination of the worktable or samples by any liquid that may drip from the rod covers.

Important: To prevent liquid from entering the QIAsymphony SP, only operate the instrument with the magnetic-head guard installed.

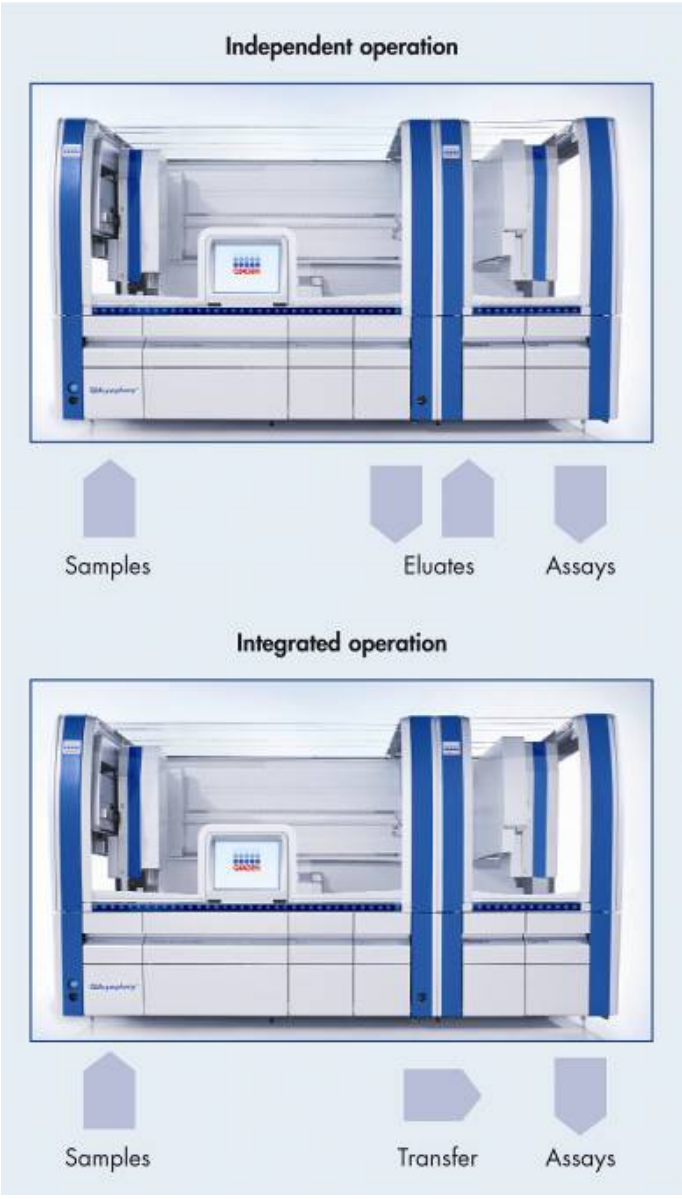
3.5 QIAsymphony AS

The QIAsymphony AS performs fully automated assay setup using a 4-channel pipetting system, and is operated using the built-in touchscreen located on the QIAsymphony SP. The QIAsymphony AS is switched on using the power switch on the QIAsymphony SP. During assay setup, the touchscreen displays the assay setup user interface, providing information about assay runs, including their progress.

Single or multiple assays can be set up in a single assay run, and master mix can be premixed or can be prepared by the instrument. The QIAsymphony AS is provided with predefined protocols, specifically designed for use with QIAGEN kits. These protocols are called Assay Definitions. Assay Parameter Sets define the parameters for a protocol. These files, including other QIAsymphony AS files (e.g., cycler files, result files, loading information), can be transferred to/from the QIAsymphony SP/AS instruments via the USB ports on the QIAsymphony SP.

When an assay run has been defined using the touchscreen, the software automatically calculates the worktable requirements for a defined run (e.g., number and type of filter-tips, volume of reagent). An automated inventory scan (performed when the drawers are closed, or before an assay run starts) ensures that each drawer is correctly set up for the defined assay run. It is possible to reload filter-tips during a run.

There are 2 modes of system operation to suit your workflow requirements – integrated and independent. In integrated mode, samples processed on the QIAsymphony SP are transferred directly to the QIAsymphony AS via an internal transfer module, reducing manual handling steps and documentation. For added flexibility, the QIAsymphony SP and QIAsymphony AS can also be operated independently of each other in independent mode.



Independent and integrated operation.

After assay setup, assays are removed from the QIAsymphony AS and can be manually transferred to a PCR cycler for detection. A choice of output formats enables use of different PCR cyclers (e.g., Rotor-Gene® Q MDx instruments, 96-well cyclers, 32-capillary cyclers) for detection. Cycler files can be exported from the QIAsymphony SP/AS instruments to selected PCR cyclers.

3.5.1 QIAsymphony AS principle

An assay setup run using the QIAsymphony AS usually consists of 3 main steps – master mix preparation, master mix distribution and transfer of templates (e.g., samples, assay controls and assay standards).

1. Master mix is prepared with the required reagents. The volume of each master mix component depends on the number of reactions to be set up. After preparation, a mixing step is performed to ensure that the master mix is homogeneous.

   Note: If using ready-to-use master mix, this step will not be performed.

2. Master mix is distributed to the appropriate plate/tube positions in the "Assays" drawer.
3. Assay controls, assay standards and samples are transferred to the appropriate plate/tube positions in the "Assays" drawer.

Note: For further information about the pipetting order, see Section 2.9 of *Operating the QIAsymphony AS*.

3.6 External features of the QIAsymphony AS

1 "Eluate and Reagents" drawer
2 "Assays" drawer
3 Hood
4 Adjustable feet
5 LED lights (blue)
6 QIAsymphony Cabinet AS

Instrument panels and hood

The instrument panels and hood of the QIAsymphony AS are manufactured from the same materials as for the QIAsymphony SP and should be treated in the same way (see page 25). Additional information is provided in the following section.

Hood

The QIAsymphony AS hood functions in the same way as the QIAsymphony SP hood. During an assay run, the QIAsymphony AS hood is locked. If force is used to open the hood during an assay run, the run will be paused.

Important: If the QIAsymphony AS hood is opened, the instrument will not immediately stop. The instrument will stop when processing of the current protocol step is finished. In some cases, this may take some time.

Drawers

The QIAsymphony AS contains 2 drawers:

- "Eluate and Reagents" drawer
- "Assays" drawer

For more information about the drawers, see Section 3.7.

QIAsymphony status LEDs

Light emitting diodes (LEDs) at the front of the QIAsymphony AS are illuminated when an assay run is in progress. The status LEDs flash when an assay run is finished, or if an error occurs. Touching the screen turns off the flashing.

QIAsymphony Cabinet AS

The QIAsymphony Cabinet AS is an optional accessory, specially designed for positioning the QIAsymphony AS in your laboratory. For more information, visit **www.com/goto/QIAsymphony** or contact QIAGEN Technical Services.

Note: The QIAsymphony Cabinet AS is specially designed for use in combination with the QIAsymphony Cabinet SP.

3.7 QIAsymphony AS drawers

Eluates and reagents, and assays are separated in 2 different drawers in the QIAsymphony AS. When a drawer is opened and then closed, the user confirms whether an inventory scan of the drawer should be performed. During assay setup, the QIAsymphony AS drawers are locked.

Inventory scan

An inventory scan of each drawer of the QIAsymphony AS must be performed before an assay run can be started. This is performed in the same way as for the QIAsymphony SP drawers.

3.7.1 "Eluate and Reagents" drawer

Purified nucleic acids can be transferred to the "Eluate and Reagents" drawer from the "Eluate" drawer of the QIAsymphony SP by automatic transfer (via the transfer module; adapter dependent), or by manual transfer. The "Eluate and Reagents" drawer has 3 positions – slots 1, 2 and 3 – that have options for cooling and can accommodate plates and tubes in special adapters. Slots 1 and 2 can be used to accommodate sample racks and slots 1 and 3 can be used to accommodate reagent racks. Slot 1 can be defined as a sample or reagent slot as required. In addition, there are 6 positions that can be used to accommodate disposable filter-tips in tip racks.

It is possible to use the following combinations of sample and reagent racks in the "Eluate and Reagents" drawer:

- One sample rack and one reagent rack
- Two sample racks and one reagent rack
- One sample rack and two reagent racks

Adapters are available for the following types of consumables:

- 96-well plates
- Microplates
- Sarstedt screw-cap tubes
- PCR plates
- Snap cap microtubes
- Elution Microtubes CL (cat. no. 19588)

For more information about the types of 96-well plates and tubes that can be used in the "Eluate and Reagents" drawers, and the corresponding names used in the software, visit **www.qiagen.com/goto/QIAsymphony**.

Reagent holders are available for holding reagents in 2 ml tubes, 5 ml tubes and 30 ml bottles:

- Reagent holder 1 (18 x 2 ml tubes, 6 x 5 ml tubes)
- Reagent holder 2 (18 x 2 ml tubes, 2 x 5 ml tubes, 2 x 30 ml bottles)
- Micro Tube Screw Cap QS (24 x 2 ml tubes)

Filter-tips

The QIAsymphony AS uses the same disposable filter-tips as the QIAsymphony SP (see page 32 for more information). In addition to 200 µl and 1500 µl filter-tips, the QIAsymphony AS also uses 50 µl filter-tips. Tip racks containing 50 µl filter-tips are gray.

Note: Only use filter-tips designed for use with the QIAsymphony AS.

3.7.2 Inventory scan of "Eluate and Reagents" drawer

The inventory scan of the "Eluate and Reagents" drawer consists of the following steps in the following order:

1. Bar codes of slots 1–3 or bar codes of adapters on slots 1–3 are scanned.

   Note: For a particular slot, either the bar code of the slot is scanned or, if an adapter is present on the slot, the bar code of the adapter is scanned.

   - Bar codes of slots 1–3 are scanned to determine whether the slots are empty or occupied.
   - Bar codes of adapters on slots 1–3 are scanned to determine whether a particular adapter type is present on a particular slot.
   - If the expected and actual status of the slots/adapters does not match, a message will appear to prompt the user to correct the problem.

Note: The QIAsymphony AS only detects whether a slot is occupied by an adapter and the adapter type. The QIAsymphony AS is not able to identify the type of consumables on the adapter. It is therefore important that the correct plates/tubes are loaded on the adapters, as defined on the touchscreen.

2. Tip rack slots are scanned.
   - The disposable filter-tips are scanned to ensure that the correct tip type has been loaded and that there are sufficient filter-tips available for the defined assay run.
   - All tip rack slots in which a tip rack was detected are scanned to determine the number of tips. If a tip is detected in the first and last position of the tip rack, the tip rack will be categorized as full. If the first or last tip is missing, a full scan will be performed to determine the number of tips in the tip rack.

- If there are not enough filter-tips of the correct type available, a message will appear on the touchscreen prompting the user to load more tips.

Note: If there are insufficient tips available for the defined assay run and it is not possible to load more tips before starting the run, tips can be reloaded during the assay run. This will be documented in the loading information file, and in the result file if user interaction was required. Pausing the run to reload tips will result in the samples being flagged as "unclear".

Partial inventory scan

If you need to repeat an inventory scan for the "Eluate and Reagents" drawer (e.g., if a change has been made on the worktable), you can perform a partial inventory scan. You can choose to scan the following worktable items separately:

- Tip Racks left
- Tip Racks right
- Adapters left
- Adapters right
- Reagents LLD

3.7.3 "Assays" drawer

Assays are set up in plates or tubes in the "Assays" drawer. The "Assays" drawer has 3 positions – slots 4, 5 and 6 – that can be cooled and used to accommodate assay racks in special adapters. It also has 6 positions that can be used to accommodate disposable filter-tips in tip racks (see page 32 for more information about disposable filter-tips).

Note: For subsequent analysis on Rotor-Gene Q MDx instruments, assays can also be set up in Rotor-Discs. In this case, slots 4–6 must be covered with the Rotor-Disc® Adapter Base Unit QS and up to 2 Rotor-Disc 72 Loading Blocks. Rotor-Disc 72 can then be placed onto each Rotor-Disc 72 Loading Block.

Note: Assays that include a normalization step can use slot 6 (and optionally, slot 4) for positioning a normalization rack. The slots needed for normalization racks cannot be used for an assay rack.

Adapters are available for the following types of consumables:

- 96-well PCR plates
- Rotor-Gene Strip Tubes
- Rotor-Disc 72
- Glass capillaries (20 µl) (for use with the LightCycler®)

For more information about the types of plates and tubes that can be used in the "Assays" drawer, and the corresponding names used in the software, visit www.**qiagen.com/goto/QIAsymphony**.

3.7.4 Inventory scan of "Assays" drawer

The inventory scan of the "Assays" drawer is performed on slots 4–6 as for slots 1–3 of the "Eluate and Reagents" drawer. See Section 3.7.2 for a more detailed description.

If an inventory scan of the "Assays" drawer needs to be repeated, it is also possible to perform a partial inventory scan where tip racks and adapters can be scanned separately.

3.8 Internal features of the QIAsymphony AS

3.8.1 Robotic arm

This feature is the same as for the QIAsymphony SP, except it does not support a robotic gripper (see Section 3.4.2 for description). The QIAsymphony AS pipettor head can dispense 5–1500 µl (application- and liquid-dependent). As part of the inventory scan on the "Eluate and Reagents" and "Assays" drawers, the 2D bar code camera on the robotic arm identifies occupied/empty slots and the corresponding adapter types.

3.8.2 Transfer module

The transfer module is a component of the QIAsymphony AS and is located at the interface between the QIAsymphony SP and QIAsymphony AS instruments, under the separation window. Use of the transfer module is optional. It enables automatic transfer of an elution rack (placed in the appropriate adapter) from slot 1 of the "Eluate" drawer of the QIAsymphony SP to slot 2 of the "Eluate and Reagents" drawer of the QIAsymphony AS.

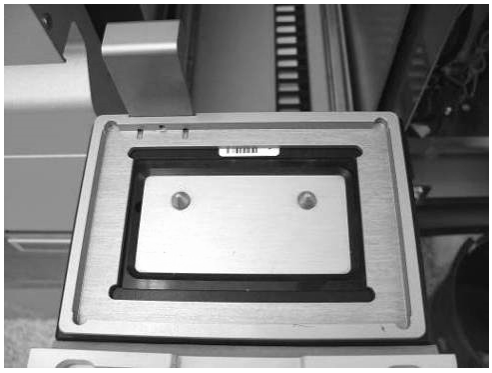
Note: To transfer an elution rack to the QIAsymphony AS from any slot other than slot 1 of the QIAsymphony SP, a manual transfer must be performed.

For automatic transfer using the transfer module, a transfer frame must be inserted between slot 1 and the cooling adapter. Before performing an automatic transfer, the QIAsymphony SP/AS instruments check whether the transfer frame is present. In order to save time, the presence check of the transport frame is executed in parallel with the plate carrier inventory scan. An error message appears if the frame is not present. The frame is lifted by the transfer module, with the adapter on top, and is then transferred to the QIAsymphony AS and positioned on slot 2.

3.8.3 Transfer frame

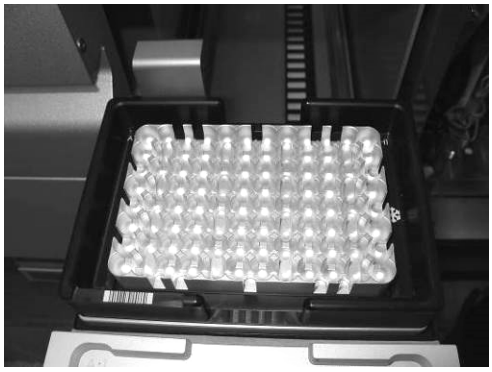
The transfer frame consists of a base frame and a handle. If you intend to use automatic transfer of an elution rack to the QIAsymphony AS via the transfer module, ensure that the transfer frame is installed before placing the relevant adapter onto slot 1 of the "Eluate" drawer.

To do this, place the transfer frame onto slot 1, so that the 4 pins under the base frame fit into the screw holes of slot 1. The handle should face toward the back-left corner of slot 1.



Transfer frame placed onto slot 1 of the "Eluate" drawer.

Place the appropriate adapter and elution rack on top of the transfer frame and continue as described in Section 2.5 of *Operating the QIAsymphony SP*.



Adapter placed onto the transfer frame on slot 1 of the "Eluate" drawer.

4 Installation Procedures

4.1 Instrument delivery and installation

The unpacking and installation of the QIAsymphony SP/AS instruments is carried out by a certified QIAGEN Field Service Specialist. A member of your group who is familiar with laboratory and computer equipment should be present during the installation.

Note: See "Packing List QIAsymphony SP" and "Packing List QIAsymphony AS" for a full list of components that are supplied with each instrument. These lists are delivered with the instruments.

4.2 Requirements

Site

The QIAsymphony SP/AS instruments must be located out of direct sunlight, away from heat sources, and away from sources of vibration and electrical interference. Refer to Appendix A — Technical Data for the operating conditions (temperature and humidity). The site of installation should be free of excessive drafts, excessive moisture, excessive dust, and not subject to large temperature fluctuations.

We recommend positioning the QIAsymphony SP/AS instruments on the QIAsymphony Cabinet SP/AS. For more information about the QIAsymphony Cabinet SP/AS, visit **www.qiagen.com/goto/QIAsymphony**.

If you choose to position the QIAsymphony SP/AS instruments on an alternative workbench, ensure that it is large enough and strong enough to accommodate the instruments. Refer to Appendix A — Technical Data for the weight and dimensions of the QIAsymphony SP/AS instruments. Ensure that the workbench is dry, clean, vibration proof, and has additional space for accessories. For further information about required specifications of the workbench, contact QIAGEN Technical Services.

Note: It is extremely important that the QIAsymphony SP/AS instruments are placed on a stable surface.

If you need to move your QIAsymphony SP/AS instruments, contact QIAGEN Technical Services.

The QIAsymphony SP/AS instruments must be placed within approximately 1.5 m (59 in.) of a properly grounded (earthed) AC power outlet.

WARNING **Explosive atmosphere**

The QIAsymphony SP/AS is not designed for use in an explosive atmosphere.

WARNING **Risk of overheating**

To ensure proper ventilation, maintain a minimum clearance of 5 cm (1.97 in.) at the rear of the QIAsymphony SP/AS.
Slits and openings that ensure the ventilation of the QIAsymphony SP/AS must not be covered.

4.3 AC power connection

Power requirements

The QIAsymphony SP operates at:

- 100–240 V AC, 50/60 Hz
- 800 VA

If your QIAsymphony SP is connected to a QIAsymphony AS, your instruments operate at:

- 100–240 V AC, 50/60 Hz
- 1400 VA

Ensure that the voltage rating of the instrument(s) is compatible with the AC voltage available at the installation site. Mains supply voltage fluctuations are not to exceed 10% of nominal supply voltages.

Grounding requirements

To protect operating personnel, the QIAsymphony SP/AS instruments must be correctly grounded (earthed). The QIAsymphony SP is equipped with a 3-conductor AC power cord. To preserve this protection feature, do not operate the instruments from an AC power outlet that has no ground (earth) connection. The QIAsymphony AS does not have an external power cord.

Installation of AC power cord

Connect one end of the AC power cord to the socket located at the left side of the QIAsymphony SP, and the other end to the AC power outlet.

5 General Operation

5.1 Switching on the QIAsymphony SP/AS instruments

The power switch is located at the bottom-left corner of the QIAsymphony SP.

1. Make sure that all drawers and the hoods are closed.

   If the hood(s) are opened during instrument startup, the system test will fail.
2. Press the power switch at the bottom-left corner of the QIAsymphony SP.
3. The startup screen appears. The screen displays the progress of instrument startup.

4. The QIAsymphony SP/AS instruments initialize. During initialization, the instruments carry out a self-test routine to check that the electronics and mechanics are functioning properly.

During initialization, the following visible actions occur on the QIAsymphony SP:

- The lysis station moves down and up until it reaches its home position.
- The conveyor moves left and right until it reaches its home position.
- The magnet/rod-cover plate of the magnetic head moves down and up until it reaches its home position.
- The bar code camera and LEDs of the sample input drawer initialize.
- The robotic arm moves to the tube waste (sample prep cartridges or 8-Rod Covers) at position 4 in case cartridges need to be released from the handler. Please note that the unit box in position 4 must be empty. Afterwards, the robotic arm moves to the tip disposal chute. The syringes are initialized and any tips that are attached are removed. The robotic arm moves to its home position.

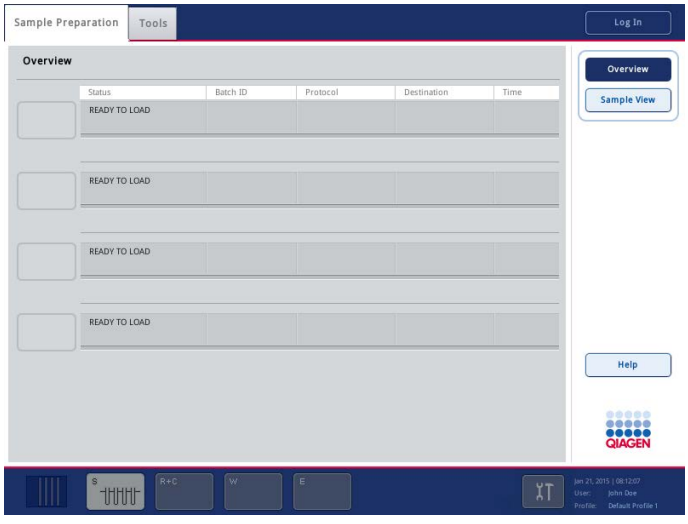
The following visible actions occur on the QIAsymphony AS:

- The robotic arm moves to the back, then to the front, then to the left, and then to the right.
- The robotic arm then moves to the tip disposal chute. The syringes are initialized and any tips that are attached are removed. The robotic arm moves to its home position.

Note: If there are any problems during the initialization phase, a warning will appear. Refer to the Troubleshooting section, page 168.

Note: An empty unit box must be placed into slot 4 of the "Reagents and Consumables" drawer because during initialization the handler goes down into the unit box in position 4. If it was not empty, the handler would crash.

5. After successful startup, the QIAsymphony SP/AS instruments are ready for use, and the sample preparation user interface appears on the touchscreen.



5.2 Getting started

IMPORTANT: After a new installation or software upgrade, the annual maintenance schedule has to be set in the **Configuration** menu.

Before operating the QIAsymphony SP/AS instruments, the user with the "Supervisor" user ID needs to manage the user accounts for the other users. If necessary, the "Supervisor" can also adjust the configuration settings.

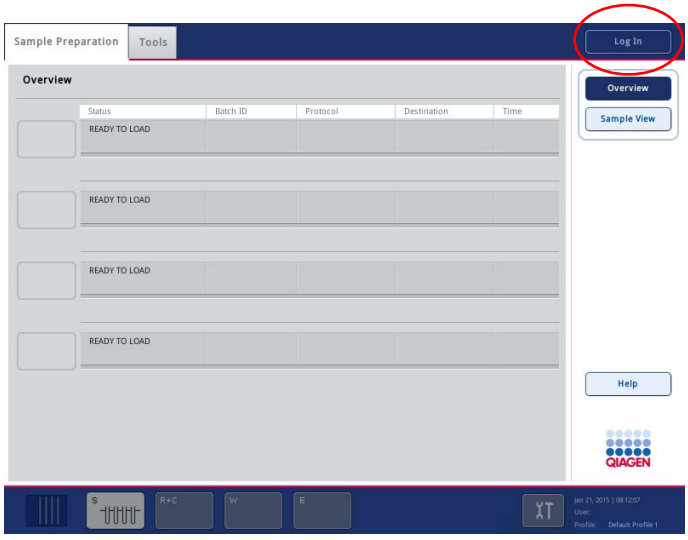
1. User with the "Supervisor" ID logs in using the default password (**iue2ad**). See Section 5.3 for further details about logging in.
2. Change the default password to a new, secure password. Depending on system configuration, a stronger password policy may be required. See Section 6.1.5 for more information.
3. Because login names cannot be changed, we recommend creating a new user with a new login name who has "Supervisor" rights. For further information about adding users, see Section 7.1.
4. After the new user account with "Supervisor" rights has been created, the old "Supervisor" user ID can be inactivated. For further information, see Section 7.

   Note: When only one "Supervisor" is currently enabled, and he/she exceeds the maximum number of attempts for a password authentication from the QMC, the account is disabled for 30 seconds. When the 30 second block has expired, the last enabled "Supervisor" can try again to enter a password.
5. Log out then log in again using the name and password for the new user account with "Supervisor" rights.
6. Assign the "Operator" role to all users who will operate the QIAsymphony SP/AS instruments; assign the user ID "Supervisor" to all users who should have the user rights to manage other users or to transfer files.
7. Optional: If the **Automatic File Transfer** tool included in the QIAsymphony Management Console is to be used, select the User "FileTransfer" and provide a password for this user. This user password will not expire, but can be changed if desired. For more information about the **Automatic File Transfer** tool, refer to the *QIAsymphony Management Console User Manual*.
8. Optional: The "Supervisor" can change the configuration settings. See Section 6 for more details about configuring the QIAsymphony SP/AS instruments. If the configuration is not changed, **Default Profile 1** will be used.
9. The QIAsymphony SP/AS can now be operated by the users.

5.3 Logging in

In order to be able to operate the QIAsymphony SP/AS instruments, you must first log in. If no user is logged in, all drawers are locked.

After startup of the instruments, the sample preparation user interface is displayed in the touchscreen.



Sample Preparation screen.

To log in, follow the instructions below.

1. Press the **Log In** button at the top right of the screen.

   Note: The **Log In** button is also available in the **Assay Setup** screen.
2. Select your login name in the list.
3. The **Keyboard** screen appears.
4. Enter your specific password to log in and press **OK**.

   You are now logged in and your user name is displayed in the status bar at the bottom right of the screen.

Note: After successful login, you may be prompted by the software to enter a new password. This is due to the date that has been set for the password expiry date. This can be configured in the software by the "Supervisor".

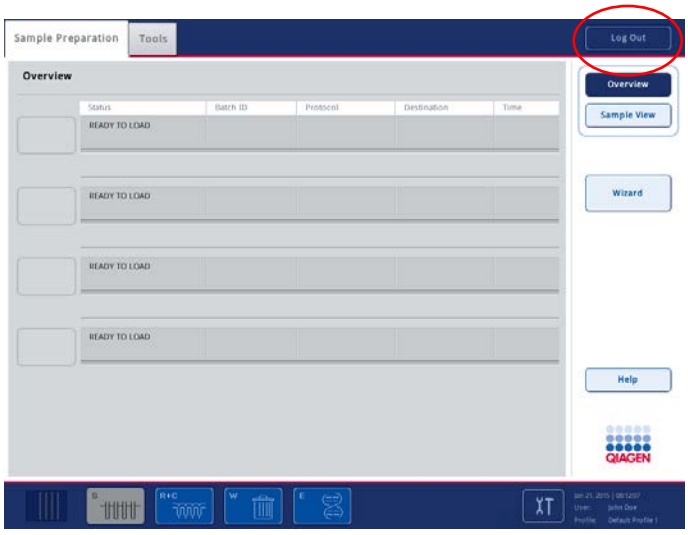
If no user is logged in, the instruments cannot be operated. But when the operator presses a disabled button on the touchscreen, you will be informed by the software that no user is logged in. The information also explains how to login.

5.4 Logging out

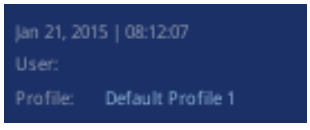
To operate the QIAsymphony SP/AS instruments, you must first log in with either a "Supervisor" or "Operator" user ID. After performing a task, you can log out so that another user can log in. After pressing the **Run** button, you have the option to log out. The run will continue.

5.4.1 Active logout

To log out, press the **Log Out** button at the top of the **Sample Preparation** or **Assay Setup** screen.



You are logged out. The status bar only displays the date and time.



5.4.2 Automatic logout

After a defined period of user inactivity, the user currently logged in is automatically logged out. The default setting for this period of user inactivity is 15 minutes. Ask the "Supervisor" to adjust the time period to suit your needs or to switch it off, if required. See Section 6.1.5 for more details about how to do this.

Note: Automatic logout does not work if a message box remains open on the touch screen and/or a batch definition workflow is active.

We do not recommend leaving the instrument with an open message box and/or active batch definition workflow.

5.5 Switching off the QIAsymphony SP/AS instruments

To switch off the QIAsymphony SP/AS instruments, press the power switch at the front of the QIAsymphony SP in the lower-left corner. We recommend switching off the instruments after use.

The power switch is also the emergency stop of the QIAsymphony SP/AS instruments. In case of emergency, switch the instruments off using the power switch.

Note: Do not switch off the instruments during sample preparation or assay setup unless you need to stop the instruments due to an emergency. You will not be able to resume the protocol or assay run and the samples cannot be processed further by the QIAsymphony SP/AS instruments.

Note: The QIAsymphony SP/AS instruments will lose all inventory information when the instruments are switched off.

Note: After the QIAsymphony SP/AS instruments are switched off, the power switch flashes a few times. When the power switch stops flashing it is safe to switch the QIAsymphony SP/AS instruments on again.

6 Configuration

The user with the "Supervisor" user ID can change a range of configuration settings using the **Configuration** menu.

To configure a parameter, proceed as follows:

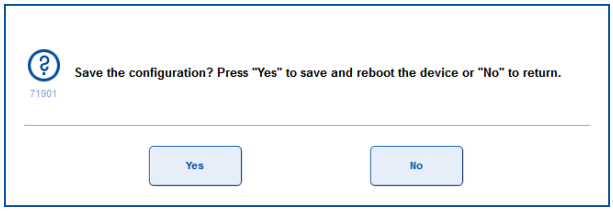
1. Log in with the "Supervisor" account details.
2. Press the **Tools** tab.
3. Press the **Configuration** button.
4. The **Configuration** menu appears.
5. Select the relevant tab and depending on which parameter will be modified (i.e., date and time, default tube types, system settings or process parameters), proceed as outlined in the following sections.

Tabs in the Configuration menu

Time/Language	Enables the user to configure the date and the time.
Adapters AS	Enables the user to configure the adapters and holders for the QIAsymphony AS.
Tubes	Enables the user to configure the default tube type for different tube inserts for the QIAsymphony SP.
System 1	Enables the user to configure system settings.
System 2	Enables the user to configure system settings.
Process Profiles	Only the "Supervisor" can change configuration settings.
Maintenance	Enables the user to configure maintenance settings.
General Process	Enables the user to configure individual process parameters that affect operation of both the QIAsymphony SP and the QIAsymphony AS.
Process SP 1	Enables the user to configure individual process parameters that affect operation of the QIAsymphony SP.
Process SP 2	Enables the user to configure individual process parameters that affect operation of the QIAsymphony SP.
Process SP 3	Enables the user to configure individual process parameters that affect operation of the QIAsymphony SP.

Process AS	Enables the user to configure individual process parameters that affect operation of the QIAsymphony AS.

Command bar

Tools	Press the **Tools** button to access the **Tools** menu.
Cancel	Press to close the **Configuration** menu without saving changes.
Save	Press to save changes made to parameters in the individual tabs. If only the settings for the default tubes were changed, there is no need to restart the QIAsymphony SP/AS instruments.
Save + Reboot	Press to save changes made to parameters in the individual tabs, and to restart the QIAsymphony SP/AS instruments. The button is only active if the changes require a reboot of the instruments. Upon pressing a button, a warning message appears. Press **Yes** to continue.  A second message then appears to inform you that the change is not part of a software configuration. See Section 6.2.1 for details about software configuration profiles.

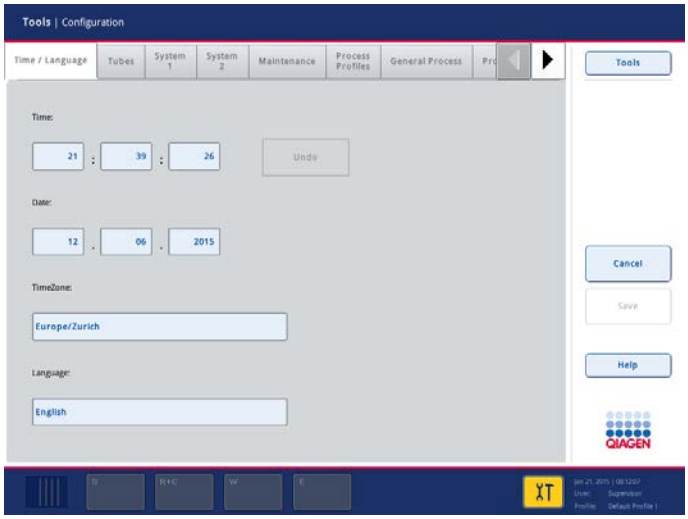
6.1 Configuring the QIAsymphony SP/AS instruments

6.1.1 Date and time

The current date and time is displayed in the status bar and also appears in run documentation such as the result file.

To configure the date and time, proceed as follows:

1. Select the **Time/Language** tab in the **Configuration** screen.



Time/Language tab.

2. Change the time and date settings by pressing the corresponding text fields.
3. The **Keyboard** screen will appear where values need to be entered.
4. If necessary, select a city in the **Available time zones** list by pressing the **TimeZone** text field.
5. Press the **Save + Reboot** button to save the changes.
   The QIAsymphony instrument(s) will restart.

6.1.2 Language

The default language is English. It is possible to change the language of the system.

To configure the language, proceed as follows:

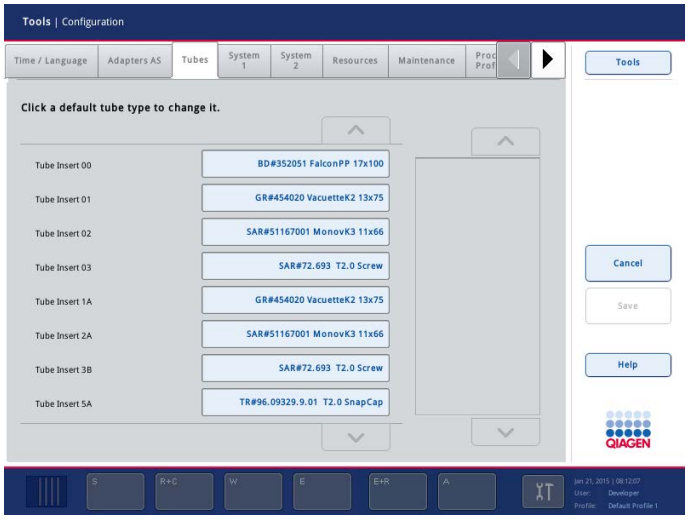
1. Select the **Time/Language** tab in the **Configuration** screen.
2. Change the language by pressing the corresponding text fields.
3. Select the desired language in the drop down menu.
4. Press the **Save + Reboot** button to save changes.
   The QIAsymphony instrument(s) will restart.

6.1.3 Default tube types

The default tube type for different tube inserts can be configured for the QIAsymphony SP. This function is particularly relevant when using **Fast Setup**, see Section 2.12 of *Operating the QIAsymphony SP*.

To set the default tube types, proceed as follows:

1. Select the **Tubes** tab.



Tubes tab.

2. Change the default tube type for the different tube inserts by pressing the corresponding text fields.
3. Select the tube type from the list on the right.
4. If necessary, repeat steps 2–3 for the other tube inserts.
5. Press **Save** to save the changes.

Note: Changing the default tube type for the different tube inserts affects the default tube type for internal control (IC) tubes. A limited number of tube types can be used with internal controls (see the handbooks of the corresponding protocols for details). In some cases, the "Supervisor" may wish to change the default tube type to a tube type that cannot be used with the IC. The user must then manually override the default IC tube type (see Section 2.8.5 of *Operating the QIAsymphony SP*).

6.1.4 Adapters and holders (QIAsymphony AS only)

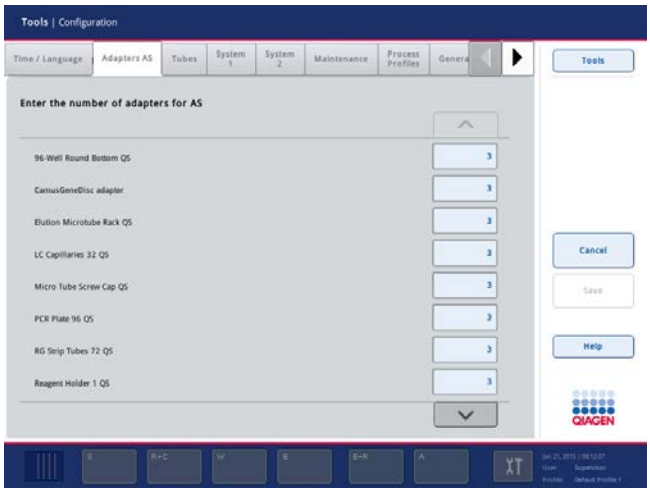
If you have a QIAsymphony AS, available adapters and the available quantities must be configured. The software requires this information to determine which reagent holders are needed and how many sample and assay adapters can be used for a defined run.

Note: At installation, the QIAGEN Field Service engineer will set up the numbers of available adapters.

Note: If a new adapter or an additional adapter is received, ensure that this adapter is configured in the software. If it is not configured, it will not be recognized by the software.

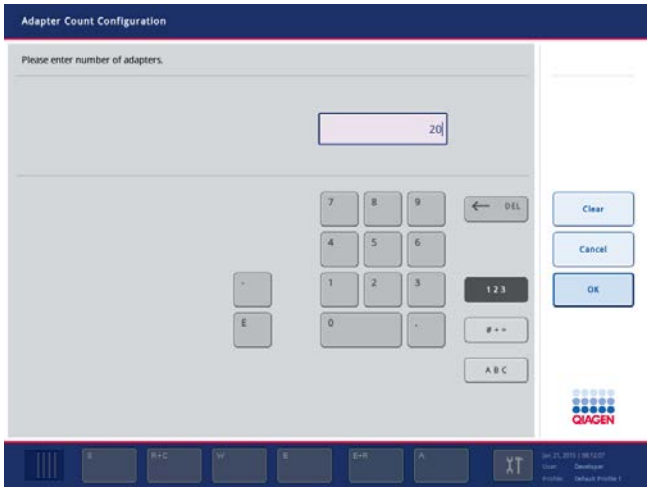
To configure available adapter(s) and holder(s), proceed as follows:

1. Select the **Adapters AS** tab. A list of adapters and holders is displayed.



Adapters AS tab.

2. Enter the available number of adapters and holders. To do this, press on the associated field for a particular adapter or holder.
3. The **Adapter Count Configuration** screen will appear.



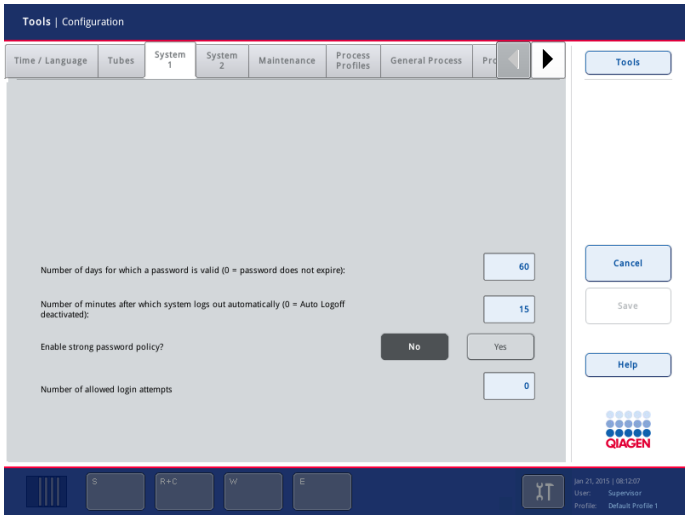
4. Enter the correct number using the keyboard.
5. Press **OK** to continue.
6. Repeat steps 2–5 for all adapters and holders.
7. Press **Save**.

6.1.5 System settings

The "Supervisor" can configure system settings in the **System 1** and **System 2** tabs.

To change any of the settings, proceed as follows:

1. Select the **System 1** or **System 2** tab.
2. Press on a field to modify it, or press **Yes** or **No**.
3. When all required changes have been made, press **Save + Reboot**. The QIAsymphony instrument(s) will restart.

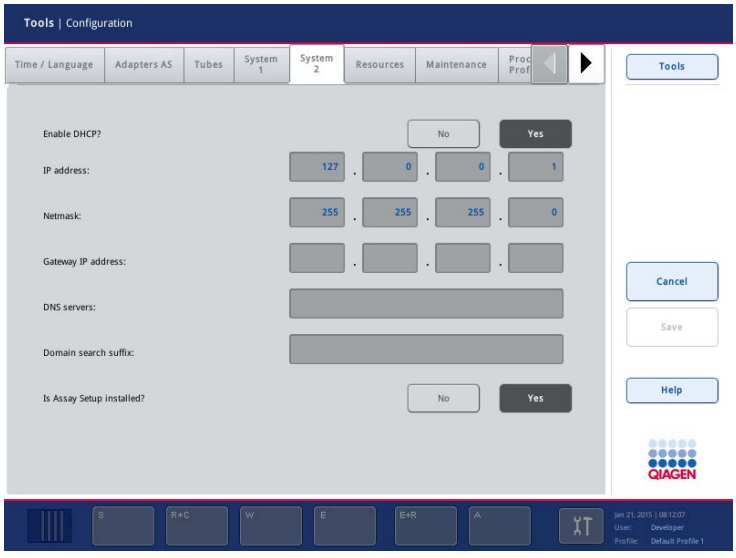


System 1 tab.

Dialog panel (System 1)

Number of days for which a password is valid (0 = password does not expire)	Specifies the number of days for which the password is valid. If "0" is entered, the password will not expire.
Number of minutes after which system logs out automatically (0 = Auto Logoff deactivated)	Indicates the number of minutes of inactivity until the user is logged off automatically. If "0" is entered, automatic log off is deactivated and the user will not be logged out automatically.

Enable strong password policy	Defines whether the standard password policy is used or if a stronger password policy is used. If **No** is selected, the standard password policy is used. For **Yes**, the restrictive password policy is set. A password for the restrictive password policy must fulfill the following requirements: • At least 8 characters • Different than user name • Differs from the last 10 recent user passwords • Contains at least two upper case, two lower case, two numeric and two special characters
Number of allowed login attempts	Defines how many login attempts are allowed before a user is deactivated. **Note**: Only the "Supervisor" is able to reactivate a deactivated user. If "0" is entered the number of allowed login attempts is deactivated.



System 2 tab.

Dialog panel (System 2)

Enable DHCP?	Defines whether the dynamic host control protocol (DHCP) is enabled. Set to **Yes** if you are using a dynamic IP address. In this case, the system retrieves an IP address during start up and transmits the host name to the local name server. The IP address value is ignored. Set to **No** if you are using a static IP configuration. In this case, enter the IP address in the following **IP address** field. Check with your local network administrator that the DHCP server is running in the local area network.
IP address	If you are not using the DHCP, enter the static IP network address provided by your IT department. It is important to ensure that any IP address is coordinated with the local network administrator. It can cause network failures if an IP address is duplicated.
Netmask	Enter the netmask IP settings provided by your IT department. If the DHCP is not used, the IP-Netmask defines the size of the subnet where the system is located.
Gateway IP address	Enter the IP address of the network node provided by your IT department. This is usually a router or a bridge that connects the local network to another network.
DNS servers	Enter the list of name servers provided by your IT department. Multiple servers can be entered, separated by spaces.
Domain search suffix	The primary search domain is usually the same as the domain name of the system. There may be additional search domains; these can be separated with commas or spaces. This option has to be set together with the local network administrator.
Is Assay Setup installed?	Select **No** if the QIAsymphony SP is not connected to a QIAsymphony AS. Select **Yes** if the QIAsymphony SP is connected to a QIAsymphony AS.

6.2 Process settings

The "Supervisor" can modify the software configuration of the QIAsymphony SP/AS instruments in the **Process** tabs of the **Configuration** menu. A range of configuration parameters can be adjusted, and these changes can be saved in configuration profiles so that it is possible to switch between different configurations.

6.2.1 Changing the software configuration

Process configuration settings are saved in a single file called a process configuration file.

There are 3 default process configuration profiles, also called software configurations:

- **Default Profile 1** – Restrictive (IVD profile)
- **Default Profile 2** – Open with bar codes
- **Default Profile 3** – Open without bar codes

Note: **Default Profile 1** is the software configuration that is automatically preselected.

Note: These default software configurations do not affect operation of the QIAsymphony AS.

Profile descriptions

	Default Profile		
Configuration: General Process	**1**	**2**	**3**
Enable use of expired reagents	No	Yes	Yes
Number of days for which a work list is valid	1	1	1
Allow information for single samples in work list to be overwritten	Yes	Yes	Yes
Frequency of temperature recording	300	300	300
Use magnetic head sensors (8-rod covers)	No	No	No
Use magnetic head sensors (sample prep cartridges)	No	No	No
Process when mandatory task is due	No	Yes	Yes
Validate eluate racks with bar coded tubes	No	No	No

	Default Profile		
Configuration: Process SP1	**1**	**2**	**3**
Enable use of sample racks without bar codes	Yes	Yes	Yes
Enable use of sample tubes without bar codes	Yes	Yes	Yes
Automatically assign a randomly-generate ID to samples which are not read or without bar codes	No	No	Yes
Enable use of duplicate bar codes in a run	No	Yes	Yes
Enable leading and/or trailing whitespaces in sample IDs	No	No	No
Allow assignment of randomly-generated IDs to elution racks	No	Yes	Yes
Confirm bar code of elution rack before removing	No	No	No
On which elution slots should adapter bar codes be scanned	1	1	1

	Default Profile		
Configuration: Process SP2	**1**	**2**	**3**
Enable use of reagent cartridges with different lot numbers in the same SP batch	No	Yes	Yes
Check combination of protocol and recommended labware during run definition	Yes	Yes	Yes

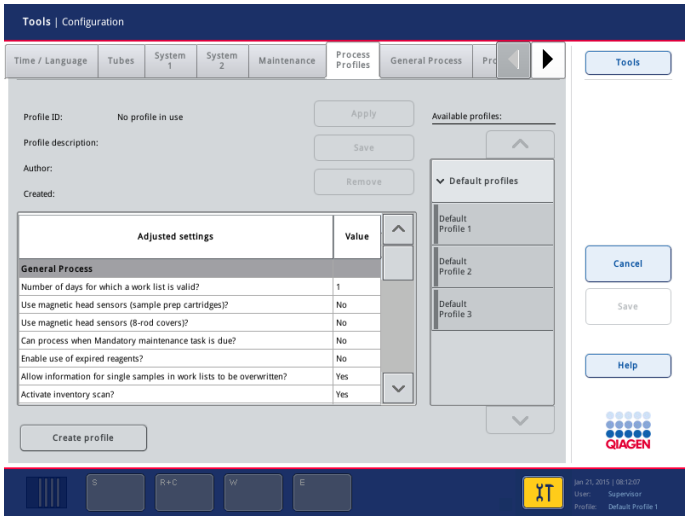
	Default Profile		
Configuration: Process SP3	**1**	**2**	**3**
Number of seconds enabled for user intervention before batch suspension	0	0	0
Enable operator to change default tube types	Yes	Yes	Yes
Write start batch confirmation files	No	No	No
Allow processing of samples without a work list entry	Yes	Yes	Yes
Allow combination of multiple work lists for one batch	Yes	Yes	Yes
Allow partial use of work lists	Yes	Yes	Yes
Warn, if sample sequence differs from work list entry sequence	No	No	No
Check sample tube type required by work list	No	No	No
Check elution rack ID required by work list	No	No	No

	Default Profile		
Configuration: Process AS	**1**	**2**	**3**
Force eluate rack ID confirmation for loading	No	No	No
Time frame for acceptable delay of downstream processing (minutes)	30	30	30
Require kit bar code scan for AS reagents	Yes	Yes	Yes

Additional custom process configuration profiles can be created on the instrument and saved. It is also possible to create custom process profiles on a different QIAsymphony SP instrument, and then transfer these profiles to your instrument using the USB stick or QIAsymphony Management Console. See Section 6.3 for more details about custom process profiles.

Selecting a process profile

1. Select the **Process Profiles** tab.



Process Profiles tab.

2. Select the process profile to be applied in the **Available profiles** list on the right. Profiles are listed under the categories **Default profiles** and **Custom profiles**. If there are no custom profiles available, this category will not be available. Use the up and down arrows to scroll through the list.
3. Optional: Review the individual process parameters in the displayed table.
4. Press **Apply**.
5. Press **Save + Reboot**.

6.2.2 Changing individual configuration parameters

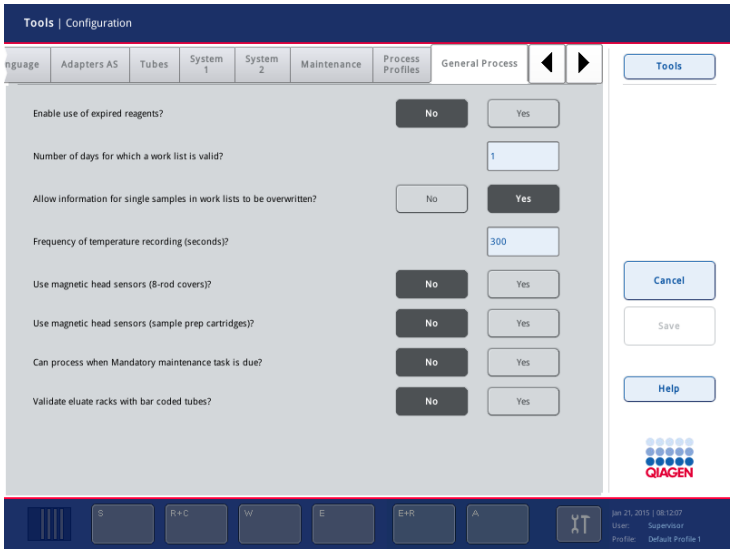
The "Supervisor" can configure individual process parameters in the **General Process**, **Process SP 1**, **Process SP 2**, and **Process SP 3** tabs. They can also configure parameters in the **Process AS** tab if a QIAsymphony AS is installed.

Parameters in the **General Process** tab affect operation of the QIAsymphony SP and/or the QIAsymphony AS. Parameters in the **Process SP 1**, **Process SP 2**, and **Process SP 3** tabs only affect operation of the QIAsymphony SP. Parameters in the **Process AS** tab only affect operation of the QIAsymphony AS.

To change any of the settings, proceed as follows:

1. Select the relevant tab.
2. Modify the parameter(s) in the screen.
3. When all changes have been made, press **Save + Reboot**.

General Process tab



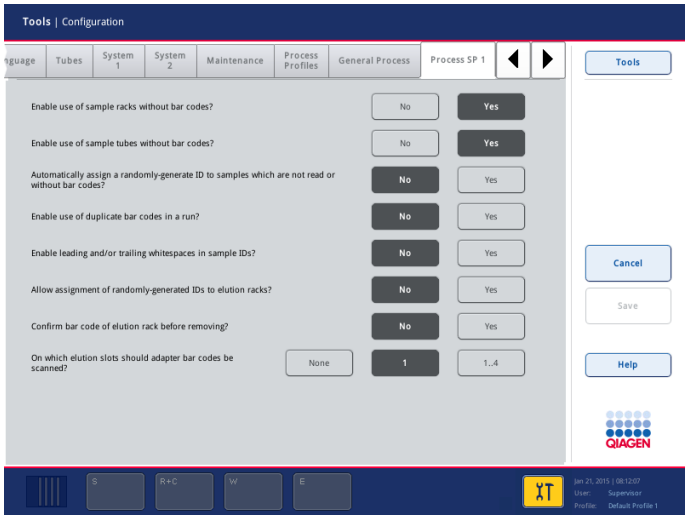
Enable use of expired reagents? This parameter only affects operation of the QIAsymphony SP.

If **Yes** is selected, use of expired reagents is allowed.

If **No** is selected, use of expired reagents is not allowed.

Number of days for which a work list is valid?	Specifies the number of days after a work list is last modified that this work list expires. If "0" is entered, work lists will not expire.
Allow information for single samples in work lists to be overwritten?	If **Yes** is selected, assignments that have been made by a work list during run/batch definition can be changed. If **No** is selected, this is not possible.
Use magnetic head sensors (8-rod covers)?	If **Yes** is selected, the system checks whether the correct number of 8-Rod Covers have been taken. When **No** is selected, these sensors are deactivated. This parameter only affects operation of the QIAsymphony SP
Use magnetic head sensors (sample prep cartridges)?	If **Yes** is selected, the system checks whether the correct number of sample prep cartridges is taken. When **No** is selected, these sensors are deactivated. This parameter only affects operation of the QIAsymphony SP.
Can process when mandatory maintenance task is due?	If **No** is selected, it is not possible to process samples if a mandatory maintenance task is due. If **Yes** is selected, it is possible to process samples even if a mandatory maintenance task is due. Depending on the operating mode, it is allowed to proceed without sample flagging for non-IVD sample processing, and with an error message and "unclear" sample flagging for IVD sample processing.
Validate eluate racks with bar coded tubes?	If **Yes** is selected, it is not possible to use racks with 2D bar coded tubes without 2D bar codes (reading file used to create a rack file) on the eluate slots. If **No** is selected, it is possible to use racks with 2D bar coded tubes without 2D bar codes.

Process SP1 tab



Enable use of sample racks without bar codes?

Specifies whether sample racks can be processed if they do not have a rack ID.

If **Yes** is selected, samples can be assigned to sample racks that do not have a rack ID.

If **No** is selected, samples can only be assigned to sample racks that have an ID that is either entered by the "Supervisor", or is read by the bar code scanner.

Enable use of sample tubes without bar codes?

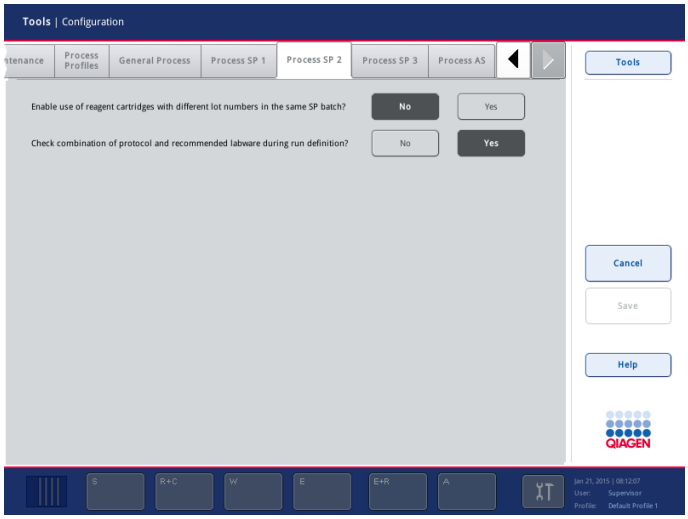
Specifies whether the "Operator" can enter/modify sample IDs manually.

If **Yes** is selected, the "Operator" can enter/modify sample IDs manually.

If **No** is selected, only sample tubes with bar codes that are read automatically by the bar code scanner can be used.

Automatically assign a randomly-generate ID to samples which do not have readable bar codes?	If **No** is selected, processing proceeds in following manner: If the bar code is readable, then the original bar code is used. If the bar code is not readable, or there is no bar code, the positions will be reported as errors. It is then possible to edit the positions using the **Automatic ID** button in the **Define Samples** dialog. Empty positions will stay empty. If **Yes** is selected, a randomly-generated ID is assigned to samples that did not have readable bar codes. If the bar code is readable, then the original bar code is used. If the bar code is not readable, then a bar code will be generated. If the tube does not have a bar code, then the bar code will be generated. Empty positions will stay empty.
Enable use of duplicate bar codes in a run?	Specifies whether duplicate sample IDs can be used. If **Yes** is selected, duplicate sample IDs can be used. If **No** is selected, duplicate sample IDs are not allowed.
Enable leading and/or trailing whitespaces in sample IDs?	If **Yes** is selected, it is allowed to use leading and/or trailing whitespaces in sample IDs.
Allow assignment of randomly generated IDs to elution racks?	If **Yes** is selected, a virtual rack ID is assigned to the elution rack when it is loaded in the "Eluate" drawer.
Confirm bar code of elution rack before removing?	Specifies whether an elution rack ID must be entered when removing an elution rack from the "Eluate" drawer. This is used as confirmation of removal of the rack.
On which elution slots should adapter bar codes be scanned?	Specifies on which elution slots adapter bar codes should be scanned. **None**, **1**, or **1..4** can be selected.

Process SP2 tab



Enable use of reagent cartridges with different lot numbers in the same SP batch?

If **Yes** is selected, a run with 2 reagent cartridges with different lot numbers can be performed if allowed by the application process files.

If **No** is selected, it is not possible to use different lot numbers in the same SP batch.

Check combination of protocol and recommended labware during run definition?

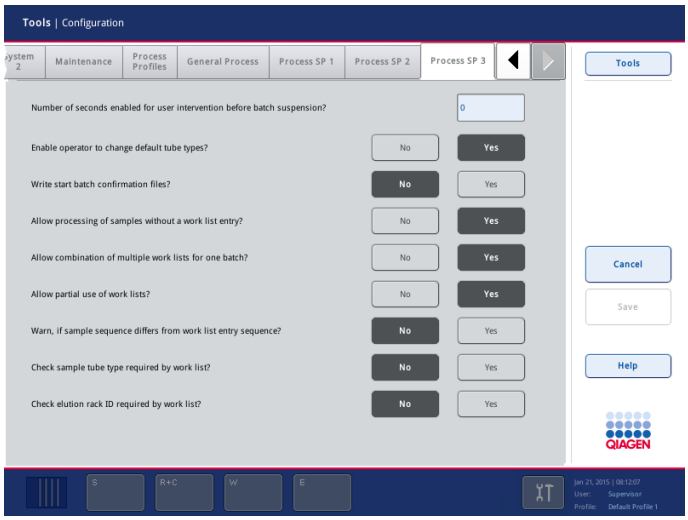
If **Yes** is selected, the combination of labware and protocol is checked during batch/run definition. If a combination of protocol and labware is "not recommended", a warning is shown.

The recommendation of labware/protocol combinations is controlled by the file **data/Labware/SP/ProtocolLabwareMapping.xml**.

The check is performed when:

- Assay Control Sets or Assay Parameter Sets are assigned to samples
- The eluate slot is selected, and when an elution rack is loaded on a slot that has batches assigned
- Internal Controls are assigned after starting the run

Process SP3 tab



Number of seconds enabled for user intervention before batch suspension?

Specifies the number of seconds for which a message appears if validation errors (e.g., internal control missing) occur. During the time that the message is displayed, the "Operator" can correct the issue. After the defined time period, the message box is closed, the batch is suspended, and processing of the next batch is started automatically.

If this field is set to "0", the next batch is started immediately and there is no time period in which the error can be corrected.

Enable operator to change default tube types?

If **Yes** is selected, any user can change the default tubes that are selected when using a particular tube insert.

If **No** is selected, only the "Supervisor" can modify default tube types.

Write start batch confirmation files?

If **Yes** is selected, a start batch confirmation file is generated when processing of a batch is started. See Section 8.7 for more details about start batch confirmation files.

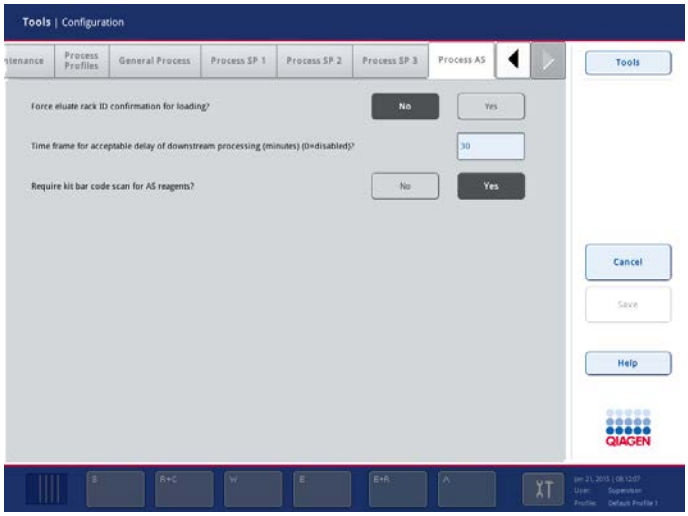
Allow processing of samples without a work list entry?

If **Yes** is selected, samples that are not defined in a work list can be manually defined.

If **No** is selected, all samples in a batch/run must be defined using a work list.

Allow combination of multiple work lists for one batch?	If **Yes** is selected, more than one work list can be used to define one batch. If **No** is selected, only one work list can be used to define one batch.
Allow partial use of work lists?	If set to **Yes**, it is still possible to use the work list and to process the batch even if there are samples that are defined in the work list, but are not present. Entries for missing samples will be ignored. If set to **No**, it is not possible to process a batch if there are samples that are defined in the work list that are not present. It is not possible to ignore missing samples.
Warn, if sample sequence differs from work list entry sequence?	If set to **Yes**, the sequence recognized in the sample carrier has to be the same as the sequence of samples in the work list. If the sequence is not the same and the work list is unique, a warning is shown.
Check sample tube type required by work list?	If **Yes** is selected, the work list must specify the required sample tube type for a particular sample to be processed on the QIAsymphony SP. The used sample tubes must therefore match the sample tubes that are defined in the work list. **Note**: If **Yes** is selected, it is not possible to use the plate carrier for loading samples. If **No** is selected, required sample tube types for particular samples must not be specified in work lists.
Check elution rack ID required by work list?	If **Yes** is selected, the work list must specify the required elution rack ID for a particular sample to be processed on the QIAsymphony SP. It is therefore only possible to start processing of a batch if the rack ID of the loaded elution rack matches the elution rack ID that is specified in the work list. If **No** is selected, a required elution rack ID must not be specified in the work list for particular samples.

Process AS tab



Force eluate rack ID confirmation for loading?

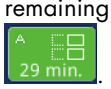
Specifies whether sample rack bar code must be scanned when loading or unloading sample rack in **Assay setup/Loading Information** screen.

If **Yes** is selected, when pressing **Load** or **Unload** in **Assay Setup/Loading Information** for a sample rack the **Manual Input** screen opens. Enter a sample ID using the keyboard or enter a sample ID using the bar code scanner.

If **No** is selected, the **Manual Input** screen is skipped when loading or unloading a sample rack,

This parameter only affects operation of the QIAsymphony AS.

Time frame for acceptable delay of downstream processing (minutes) (0 = disabled)?

Specifies the acceptable delay of downstream processing time in minutes. It is just a hint for the user and does not lead to any flagging of assay points. The remaining minutes are shown in the **A** drawer button 

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This parameter only affects operation of the QIAsymphony AS.

Require kit bar code scan for AS reagents?	If **Yes** is selected, a kit bar code must be scanned when loading reagent rack in **Assay Setup/Loading Information** screen. This parameter only affects operation of the QIAsymphony AS.

6.3 Using process configuration profiles

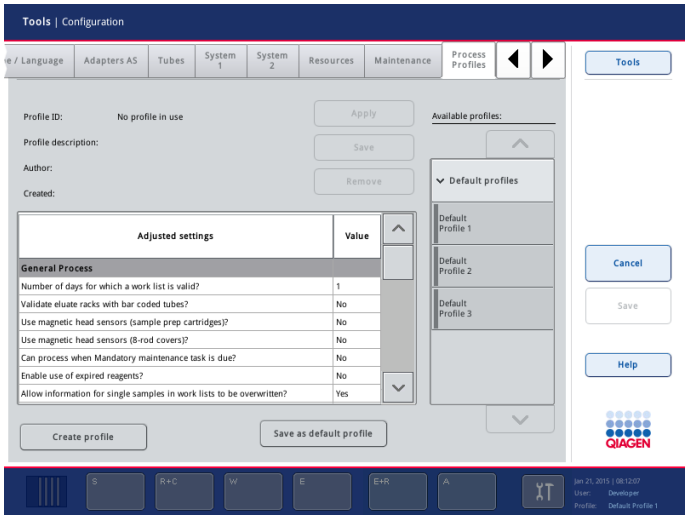
Current process configuration settings can be saved as a process configuration profile. A process configuration profile defines all process configuration parameters in both *.xml format and in an easy-to-read *.html format.

Note: Only parameters that can be modified under the **Process Profiles**, **General Process**, **Process SP 1**, **Process SP 2**, **Process SP 3**, and **Process AS** (if a QIAsymphony AS is installed) tabs are saved in a process configuration profile.

Process configuration profiles can be transferred to and from the USB stick and the QIAsymphony Management Console, if available.

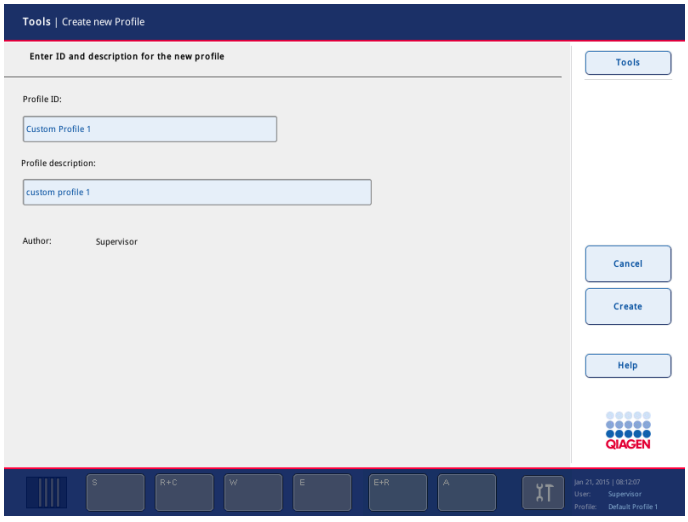
6.3.1 Creating a custom process configuration profile

1. Modify the process configuration parameters as desired.
2. Select the **Process Profiles** tab.



3. Press the **Create profile** button to create a new profile.

4. Press the **Profile ID** field and enter an ID for the new process profile using the keyboard screen that appears.
5. Press **OK** to close the keyboard screen.
6. Enter a description of the new process profile in the **Profile Description** field. Press **OK** to close the keyboard screen.
7. Press **Create**.
8. The new process profile has been saved and will now appear in the list of available profiles, in the **Custom profiles** category.

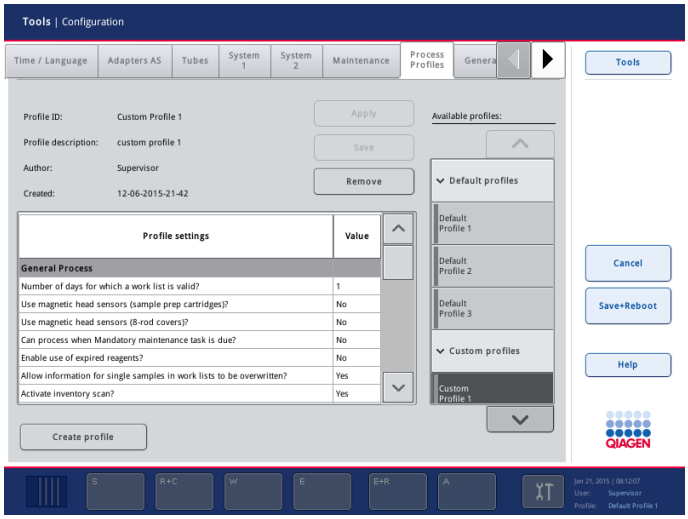


6.3.2 Modifying a process configuration profile

To change the settings in an existing process profile, proceed as follows:

Note: It is only possible to modify **Custom profiles**. The **Default profiles** cannot be modified.

1. Select the **Process Profiles** tab.
2. Select the process profile to be modified from the list of available profiles. Use the up and down arrows to scroll through the list.



3. Optional: To use the settings in the selected process profile as a base, press **Apply**. All process parameters will be set to the values specified in the selected process profile.
4. Modify the process parameters as required in the individual process tabs, as outlined in Section 6.2.2.
5. When all changes have been made, select the **Process Profiles** tab and the table shows the current changes made.
   - If a custom profile is selected, press **Save** to save the changes in the custom profile.
   - If no custom profile is selected, no profile is in use and a new profile must be created in order to save the new process parameters. Proceed as follows:

   5a. Press the **Create profile** button.
   5b. Select the **Profile ID** field and enter a new ID using the keyboard that appears.
   5c. Select the **Profile Description** field and enter a new description using the keyboard that appears.
   5d. Press **Create** to continue.

6.3.3 Removing a custom profile

There are 3 ways to remove custom profiles:

- Select the profile in the **Custom profiles** category in the **Process Profiles** tab of the **Configuration** menu, and then press **Remove**.
- Synchronize files on the QIAsymphony SP/AS with files on the USB stick; see Section 8.4 for more details.
- Use the QIAsymphony Management Console to remove individual process configuration profiles; see the QIAsymphony Management Console User Manual for more details.

6.3.4 Handling saved process configuration profiles

Process configuration profiles can be transferred to a PC using the USB stick or the QIAsymphony Management Console; see Section 8. Each process configuration profile is a *.zip archive that contains a *.xml and *.html file. The *.xml file is digitally signed by a checksum and cannot be changed. The *.html file contains an overview of the settings defined by the *.xml file.

Note: Process configuration profiles can only be modified using the **Configuration** menu, they cannot be manually modified.

7 Managing Users

The QIAsymphony SP/AS instruments recognize 2 different types of users:

- "Operator"
- "Supervisor"

Each type of user confers different access rights and allows the user to perform different types of action. See Section 8 for a detailed list of the file types that can be transferred by each user.

"Operator"

The "Operator" enables the preparation and running of batches and assay runs. In addition, the "Operator" can:

- Transfer input and output files from the QIAsymphony SP/AS instruments to a USB stick.
- Transfer rack files and work lists from a USB stick to the QIAsymphony SP/AS instruments.

"Supervisor"

The "Supervisor" enables the preparation and running of batches and assay runs. The "Supervisor" can configure the users, default tube types for the QIAsymphony SP and adapters/holders for the QIAsymphony AS. The "Supervisor" can also configure the system and define custom configuration profiles. In addition, the "Supervisor" can:

- Transfer input and output files, process files, and most instrument setup files from the QIAsymphony SP/AS instruments to the USB stick.
- Transfer rack files, work list files, process files and most instrument setup files from the USB stick to the QIAsymphony SP/AS instruments.
- Synchronize rack files, work list files, process files, and most instrument setup files between the QIAsymphony SP/AS instruments and the USB stick.

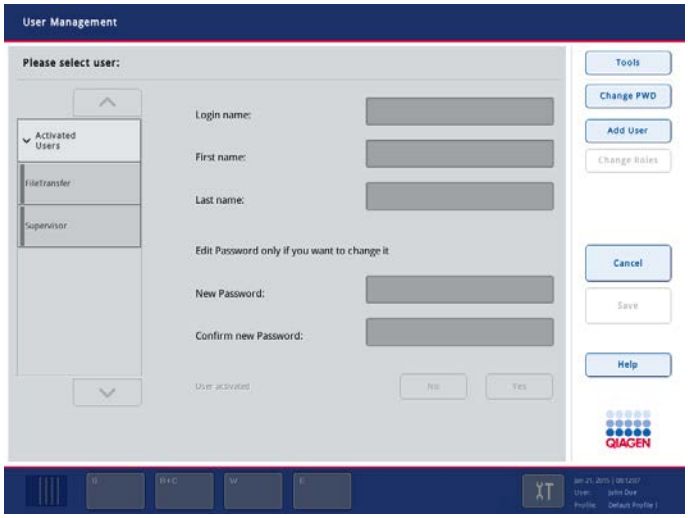
7.1 Create new users

Users with the "Supervisor" role can create accounts for new users. Therefore, the user with the "Supervisor" role is responsible for user management. The default password for the first log in is **iue2ad**.

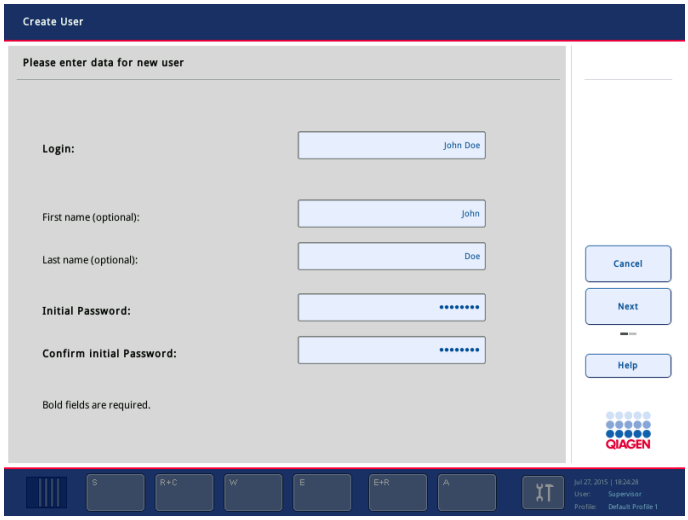
To create new users or to reset user passwords, follow the instructions below.

1. Log in with your password. If you log in for the first time as the user with the "Supervisor" role, enter the default password and then a new password.

2. Press the **Tools** tab.
3. Press the **User Management** button.
4. The **User Management/Please select user** ("Supervisor" log in) screen appears.

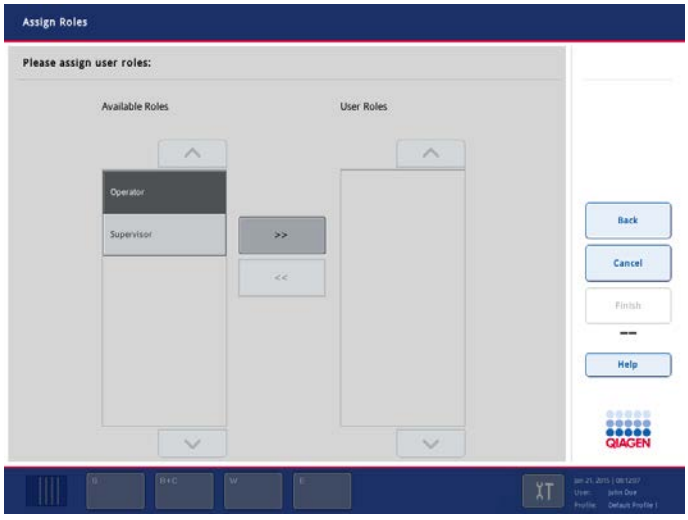


5. Press the **Add User** button.
6. The **Create User** screen appears.



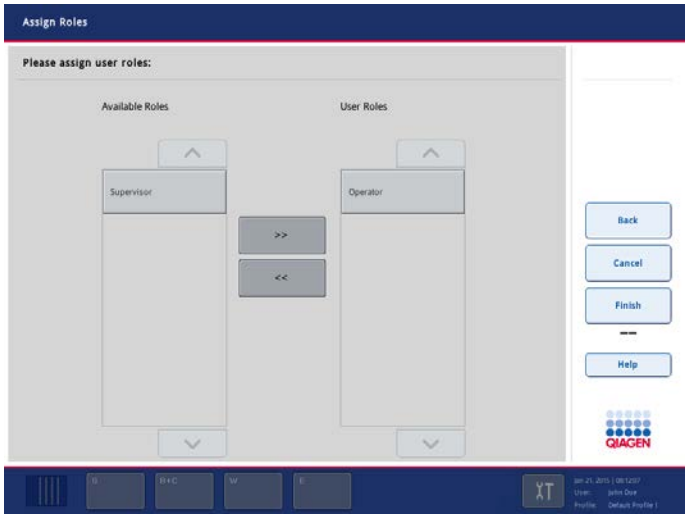
7. Press the **Login** text field and enter the user login name in the **Keyboard** screen.
8. Press **OK**.
9. Optional: Press the **First name (optional)** text field to enter a first name for the user account to be created. Enter the first name in the **Keyboard** screen and press **OK**.
10. Optional: Press the **Last name (optional)** text field to enter a last name for the user account to be created. Enter the last name in the **Keyboard** screen and press **OK**.

11. Press the **Initial Password** text field and enter the initial password for the user in the **Keyboard** screen. Press **OK**.
12. Press the **Confirm Initial Password** text field to confirm the initial password. Enter the password in the **Keyboard** screen again and press **OK**.
13. Press **Next** in the command bar.
14. The **Assign Roles** screen appears.



15. In the **Available Roles** list, select the role of the user account to be created. Press the >> button to assign the selected role to the newly created user. For more information about the user rights of the different roles, see Section 7.

    The assigned role is displayed in the **User Roles** list.



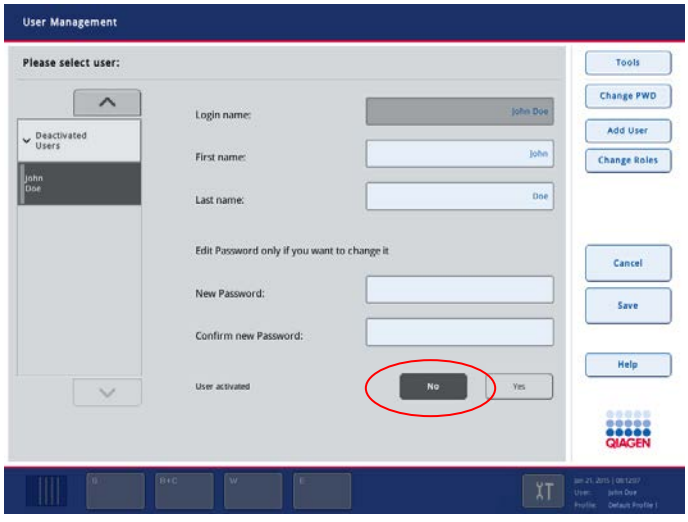
16. Press **Finish** to save the login information of the newly created user. The **User Management/Please Select User** screen appears again. The **Activated Users** list now contains the newly created user account.
17. Inform the user of their login name and password.
18. Create more new users, if required.

7.1.1 Activate/inactivate user accounts

User accounts cannot be deleted and must be deactivated instead. If a user account needs to be removed from the list of users, the user with the "Supervisor" user ID must deactivate the account so that it is no longer displayed in the **Activated Users** list. When the user account is deactivated, the user can no longer log in and operate the QIAsymphony SP/AS instruments.

To inactivate/activate a user account:

1. Log in with the "Supervisor" account details.
2. Press the **Tools** tab.
3. Press the **User Management** button.
4. The **User Management/Please select user** ("Supervisor" login) screen appears.
5. If the user account is active, select the user name from the list in the **Activated Users** package. If the user account has been deactivated, select the user name from the list in the **Deactivated Users** package.



6. To deactivate an active user account, press **No**. To reactivate a deactivated user account, press **Yes**.

7. Press **Save** in the command bar.
8. The user account now appears in the **Activated Users** or **Deactivated Users** package, respectively.

7.1.2 Change of user role

The user role of an existing user can be changed by the user with the "Supervisor" role.

To change a user role:

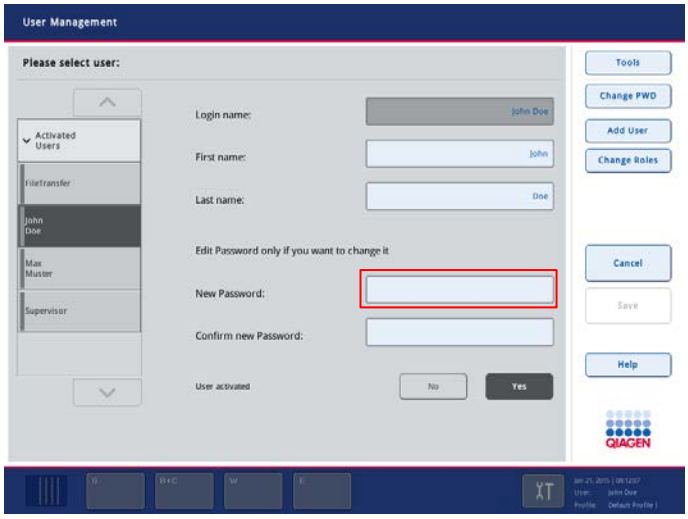
1. Log in with the "Supervisor" account details.
2. Press the **Tools** tab.
3. Press the **User Management** button.
4. The **User Management/Please select user** ("Supervisor" login) screen appears.
5. Select the appropriate user account from **Activated Users** or **Deactivated Users**.
6. Press the **Change Roles** button in the command bar.
7. The **Assign Roles** screen is displayed.
8. Change the role of the selected user.
9. Press **OK**.
   The **User Management/Please select user** screen is displayed again.
10. Press **Save** in the command bar to save the changes.

7.2 Change of password by the "Supervisor"

The "Supervisor" can change/reset the password for all users. This may be necessary if a user has forgotten their password. The "Supervisor" can exchange the old password for a new one so that the user is able to log in and enter a new password.

To change a password:

1. Log in with the "Supervisor" account details.
2. Press the **Tools** tab.
3. Press the **User Management** button.
4. The **User Management/Please select user** ("Supervisor" login) screen appears.
5. Select the user name from **Activated Users** or **Deactivated Users** for which the password should be changed.



6. Press the **New Password** text field and enter the new password in the **Keyboard** screen. Press **OK**.

   Note: The password must be a minimum of 8 characters. It should not be same as the login name and it must differ from the previous 10 passwords. If the strong password policy is enabled, the password must be a minimum of 8 characters — 2 upper case, 2 lower case, 2 numeric and 2 special characters. It should not be same as the login name and it must differ from the previous 10 passwords.

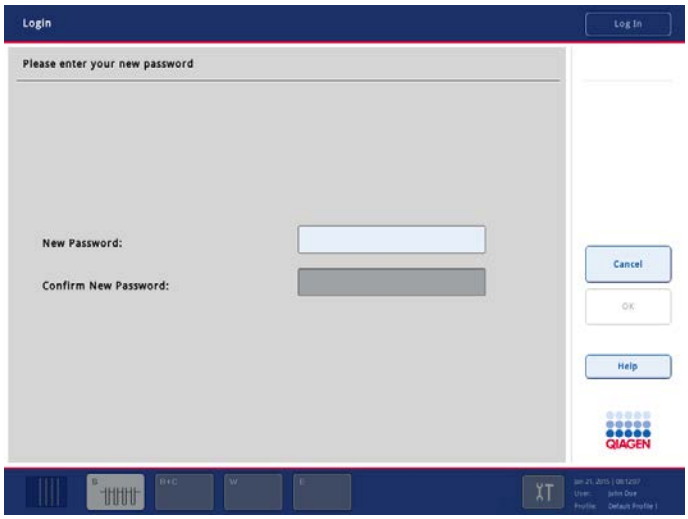
7. Press the **Confirm new Password** text field and enter the password again in the **Keyboard** screen. Press **OK**.
8. Press **Save** in the command bar to save the new password.

7.3 Change of password by "Operator"

7.3.1 Automatic request of new password

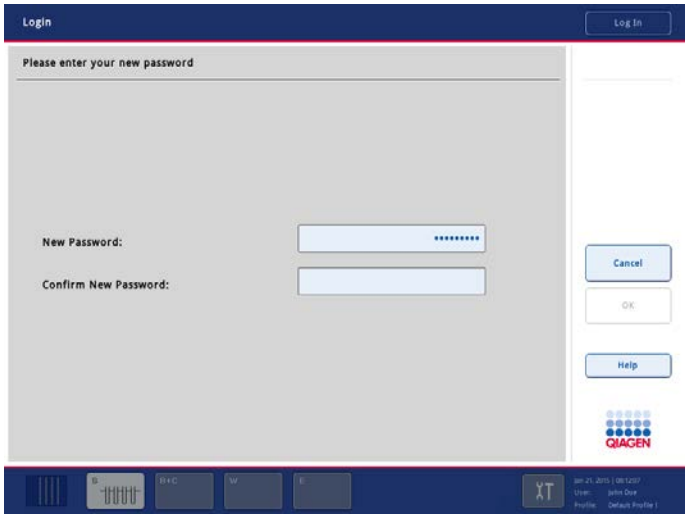
You may be prompted by the instrument software to enter a new password. This may happen the first time you log in, after the "Supervisor" resets your password, if the "Supervisor" switches from the standard password policy to a stronger (restrictive) password policy (**Tools** menu, **Configuration** in **System 1** tab) or if your password has expired. Passwords expire after 60 days by default. This setting can be changed by the "Supervisor" in the **Configuration** menu in the **System 1** tab (Section 6.1.5). It is also possible to deactivate the password expiration setting.

If a password has expired, you will be prompted to enter a new password after logging in.



To change your password:

1. Press the **New Password** text field.
2. The **Keyboard** screen appears.
3. Enter a new password and press **OK**.
4. The **Login/Please enter your new password** screen appears again.



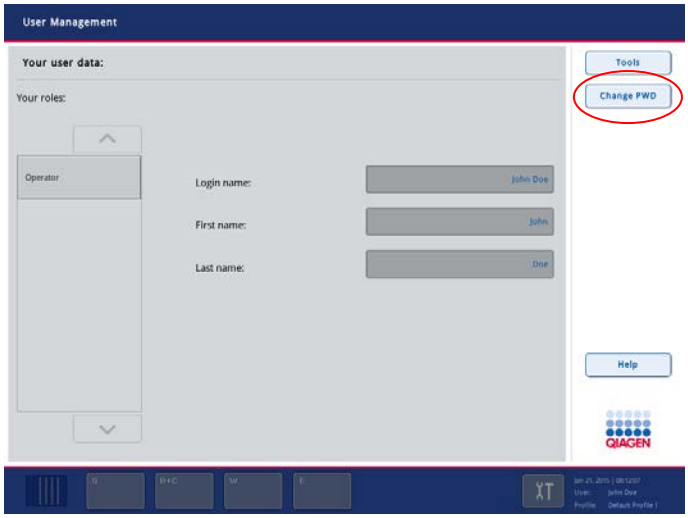
5. Press the **Confirm New Password** text field.
6. The **Keyboard** screen appears again. Enter the new password again to confirm it.
7. Press **OK**.

7.3.2 User request for password change (“Operator” role)

It is also possible to change your password independently from the password expiration.

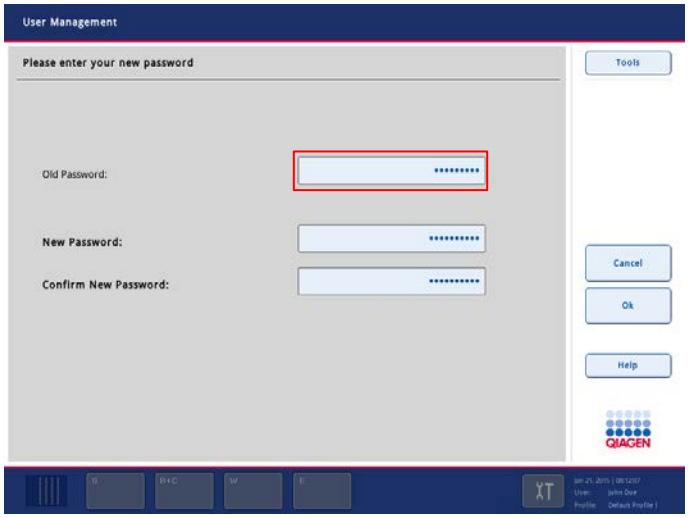
1. Log in using the old password.
2. Press the **Tools** tab.
3. Press the **User Management** button.

   The **User Management/Your user data** screen appears.



4. Press the **Change PWD** button in the command bar.

   The **User Management/Please enter your new password** screen appears.



5. Press the **Old Password** text field. The **Keyboard** screen appears.

6. Enter the old password and press **OK**.
7. Press the **New Password** text field. The **Keyboard** screen appears.
8. Enter a new password and press **OK**.
9. Press the **Confirm New Password** text field. The **Keyboard** screen appears.
10. Confirm the new password by entering it again and press **OK**.

8 Handling Files

The QIAsymphony SP/AS instruments recognize 2 different types of user — "Operator" and "Supervisor".

Note: The QIAsymphony SP/AS instruments are provided with one user account with "Supervisor" rights. The "Supervisor" has to create user accounts for users with the "Operator" role.

Each role confers different access rights and allows the user to perform different types of action.

"Operator"

The "Operator" enables transfer of the following file types from the QIAsymphony SP/AS instruments to the USB stick:

- Log files
- Result files
- Confirmation files
- Loading information files
- Cycler files
- Instrument report files
- Audit Trail files
- QDef files
- Rack files
- Work lists

The "Operator" enables transfer of the following file types from the USB stick to the QIAsymphony SP/AS instruments:

- Rack files
- Work lists
- Concentration data files

In addition, the "Operator" enables synchronization of the following file types between the QIAsymphony SP/AS instruments and the USB stick:

- Rack files
- Work lists
- Concentration data files

“Supervisor”

The “Supervisor” enables transfer of the following file types from the QIAsymphony SP/AS instruments to the USB stick:

- Log files
- Result files
- Confirmation files
- Loading information files
- Cycler files
- Instrument report files
- Audit Trail files
- QDef files
- Duration files
- Rack files
- Work lists
- Assay Control Sets
- Protocols (Bioscripts)
- Assay Parameter Sets
- Assay Definitions
- Normalization Definitions
- Process configuration profiles
- Reagent Definitions
- User information
- Maintenance Configuration
- Labware SP
- Service scripts SP
- Labware AS
- Service scripts AS

The “Supervisor” enables transfer of the following file types from the USB stick to the QIAsymphony SP/AS instruments:

- Concentration data files
- Duration files
- Rack files

- Work lists
- Assay Control Sets
- Protocols
- Assay Parameter Sets
- Assay Definitions
- Normalization Definitions
- Process configuration profiles
- Reagent Definitions
- Language Packages
- Maintenance Configuration
- Users
- Labware SP
- Service scripts SP
- Labware AS
- Service scripts AS

In addition, the "Supervisor" enables synchronization of the following file types between the QIAsymphony SP/AS and the USB stick:

- Rack files
- Work lists
- Concentration data files
- Duration files
- Assay Control Sets
- Protocols (Bioscripts)
- Assay Parameter Sets
- Assay Definitions
- Normalization Definitions
- Process configuration profiles
- Labware SP
- Labware AS
- Scripts SP
- Scripts AS

The" Supervisor" can also back up the file that contains information about all user accounts created.

Files can be handled directly using a USB stick or, alternatively, using the **File Transfer** tool in the QIAsymphony Management Console. Result files, work list files, loading information files, cycler files and log files can also be handled using the **Automatic File Transfer** tool. For more information about both tools refer to the *QIAsymphony Management Console User Manual*.

If the **Automatic File Transfer** tool is used, the user with the "Supervisor" user ID must assign a password to the **File Transfer** user. See the *QIAsymphony Management Console User Manual* for details about how to do this.

Note: For an independent run, an Assay Definition and Assay Parameter Set must be transferred. For successful transfer of the Assay Parameter Set, the Assay Definition must first be transferred.

Note: For an integrated run, a protocol, Assay Control Set, Assay Definition and Assay Parameter Set must be transferred. For successful transfer of the Assay Parameter Set, the protocol, Assay Control Set and Assay Definition must first be transferred.

8.1 Summary of QIAsymphony SP/AS files

Local requirements may require special protection that prevents accidental deletion of data files. Therefore, when the user requests to delete specific data file types, the system asks the user to explicitly confirm the deletion.

This protection is available in the following situations:

- QMC FileTransfer
- QMC Auto File Transfer
- FileTransfer Dialog (USB file transfer)
- Cleanup of outdated Result files

This table provides a summary of QIAsymphony SP/AS files, listed in alphabetical order.

File type	Description	Source
Assay Control Set (ACS)	The combination of a protocol for the QIAsymphony SP, plus additional parameters defined (e.g., internal control).	Provided by QIAGEN. Can be modified using the QIAsymphony Management Console.
Assay Definition (AD)	A set of instructions for the QIAsymphony AS that enables the instrument to perform an assay setup.	Provided by QIAGEN.
Assay Parameter Set (APS)	The combination of an Assay Definition with additional parameters defined (e.g., number of replicates and assay standards).	Provided by QIAGEN. Can be modified using the QIAsymphony Management Console.
Audit Trail	Data file that contains all events which create, modify or delete electronic records on the QIAsymphony.	Generated by QIAsymphony.
Concentration data file	A list of sample IDs with concentration values. Used to import the results of concentration measurements on eluates, which is needed for normalization on the QIAsymphony AS.	Raw data format is generated by external quantification device. File format is obligatory *.xml format in order to be used by the QIAsymphony AS. This can be created manually or by using Microsoft® Excel®.
Configuration profile	Defines the configuration settings (process and system) for the QIAsymphony SP and AS instruments.	Default profiles (1, 2 and 3) are supplied by QIAGEN. Custom profiles can be created by the system.
Cycler file	Contains sample information (e.g., sample ID, sample position) that can be transferred to selected PCR cyclers (i.e., Rotor-Gene Q MDx instruments, ABI PRISM® cyclers).	Generated by the QIAsymphony AS when an assay run is finished and the assays have been removed.
Duration file	Provides information on duration of script execution.	Created by the system when executing scripts. Can also be moved from one instrument to another.
Instrument report	Provides detailed logging information for service purposes	Manually created by customer.

Table continued on next page

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Task	Personnel	Training and experience
Labware AS	Provides information about consumables for use with the QIAsymphony AS.	Provided by QIAGEN.
Labware SP	Provides information about consumables for use with the QIAsymphony SP.	Provided by QIAGEN.
Language Package	Translates the text on GUI into respective language.	Provided by QIAGEN.
Loading information	Data file that contains detailed information about which reagents, sample rack(s), assay rack(s), and disposable filter-tips are required for setup of the QIAsymphony AS worktable.	Generated by the QIAsymphony AS, after pressing **Queue** in the assay definition process.
Log files	Data file(s) that contain general information about the QIAsymphony SP/AS instruments, user interactions, and details about the protocol being run.	Generated by the QIAsymphony SP/AS.
Maintenance Config.	Defines the required and optional configuration settings for maintenance of the QIAsymphony SP and AS instruments.	Default Maintenance Config provided by QIAGEN. Certain adaptions by customer possible.
Normalization Definition (ND)	A set of instructions for the QIAsymphony AS that enables the instrument to perform a normalization step as part of an assay run.	Provided by QIAGEN.
Process configuration profile	Contains all configured process parameters.	Default process profiles are provided by QIAGEN. Custom process profiles are generated by the QIAsymphony SP/AS.
Protocol	A set of instructions for the QIAsymphony SP that allows the instrument to perform automated purification procedure.	Provided by QIAGEN.

Table continued on next page

Table continued from previous page

Task	Personnel	Training and experience
QIAGEN Data Exchange Format file (QDef)	QIAGEN Data Exchange Format files (QDef) are XML-based files developed by QIAGEN. This file format facilitates the data exchange between various QIAGEN automated platforms.	Generated by QIAsymphony SP/AS instruments.
Rack file	Contains information about sample racks or assay racks (i.e., rack type, rack ID, sample volumes, and sample IDs).	Can be automatically generated by the QIAsymphony SP/AS instruments, or can be created and modified manually.
Reagent definition	The cartridge information/reagent definition files provide information that is required for recognizing the different reagent cartridges.	Provided by QIAGEN.
Result file	Data file that is generated for each protocol or assay run that is performed on the QIAsymphony SP/AS instruments.	The final result file is generated by the QIAsymphony SP/AS instruments when the protocol has finished, or when the assay run is finished and the assays have been removed.
Scripts AS	A set of instructions for maintenance procedures on the QIAsymphony AS.	Provided by QIAGEN.
Scripts SP	A set of instructions for maintenance procedure(s) on the QIAsymphony SP.	Provided by QIAGEN.
Start Batch Confirmation files	Provides information about samples that will be processed in a batch on the QIAsymphony SP/AS.	Generated by the QIAsymphony SP/AS when a batch changes its status from queued to running.
Users	Contains information about the users that have been configured and the corresponding access rights.	Updated by the QIAsymphony SP/AS instruments whenever the user configuration is updated.
Work list	Provides information that assigns specific samples to Assay Control Sets or Assay Parameter Sets.	Can be generated by a LIMS, or can be manually generated.

8.2 Using a USB stick with the QIAsymphony SP/AS instruments

The QIAsymphony SP/AS instruments have 2 USB ports enabling connection of USB devices. The USB ports are at the front of the QIAsymphony SP in the lower left and lower right corners.

A USB stick is supplied with the QIAsymphony SP. Only use the provided USB stick for transfer of files between the instruments and a PC.

Plugging in the USB stick

Plug the USB stick into one of the USB ports at the front of the QIAsymphony SP.

The QIAsymphony SP will automatically recognize the USB stick.

Removing the USB stick

The USB stick can be removed by simply unplugging it from the USB port.

Note: Do not remove a USB stick when it is in use (e.g., during file transfer). If the USB stick is removed while in use, loss of data may occur. Please note that data transfer may take some time.

8.3 Data transfer via the USB stick

8.3.1 Setting up the USB stick

Note: If you are using the QIAsymphony Management Console to synchronize your data, the file/folder structure of the USB stick is set up automatically.

Set up the following file/folder structure on the USB stick:

/data/AssayControlSets/	Directory for Assay Control Sets
/data/AssayDefinitions/	Directory for Assay Definitions
/data/AssayParameterSets/	Directory for Assay Parameter Sets
/data/BioScripts/	Directory for protocols
/data/ConcentrationData	Directory for concentration data files
/data/Config/Maintenance	Directory for QIAsymphony Maintenance config files
/data/Config/Profiles	Directory for process profiles
/data/Duration	Directory for duration files
/data/ICCalculatorReports	Directory for IC calculations
/data/KitSpecifications	Directory for QIAsymphony AS kit specifications
/data/Labware/AS	Directory for QIAsymphony AS labware files
/data/Labware/SP	Directory for QIAsymphony SP labware files
/data/NormalizationDefinitions	Directory for Normalization Definitions
/data/QDefFiles	Directory for QIAsymphony QDef files
/data/RackFiles/	Directory for rack files

/data/ReagentDefinitions	Directory for reagent definitions with cartridge information, as well as assay type list and component type list
/data/ServiceScripts/AS/operator	Directory for QIAsymphony AS operator service scripts
/data/ServiceScripts/SP/operator	Directory for QIAsymphony SP operator service scripts
/data/ServiceScripts/AS/maintenance	Directory for QIAsymphony AS maintenance scripts
/data/ServiceScripts/SP/maintenance	Directory for QIAsymphony SP maintenance scripts
/data/translation	Directory for QIAsymphony language packs
/data/Users/	Directory for user data
/data/Worklists/	Directory for work lists
/log/	Directory for log files
/log/AuditTrail	Directory for Audit Trail files
/log/CyclerExport	Directory for cycler files
/log/InstrumentReports/	Directory for instrument report files
/log/LoadingInformation/	Directory for loading information files
/log/Results/AS/	Directory for QIAsymphony AS result files
/log/Results/SP	Directory for QIAsymphony SP result files
/log/StartBatchConfirmation/AS	Directory for QIAsymphony AS batch confirmation files
/log/StartBatchConfirmation/SP	Directory for QIAsymphony SP batch confirmation files

Data can be transferred from the USB stick to the QIAsymphony SP/AS instruments (uploaded) and also from the QIAsymphony SP/AS instruments to the USB stick (downloaded).

8.3.2 Transferring files from the QIAsymphony SP/AS to the USB stick

Note: File transfer of both QIAsymphony SP and QIAsymphony AS files is performed using the **File Transfer** menu. For a summary of file types, see Section 8.1.

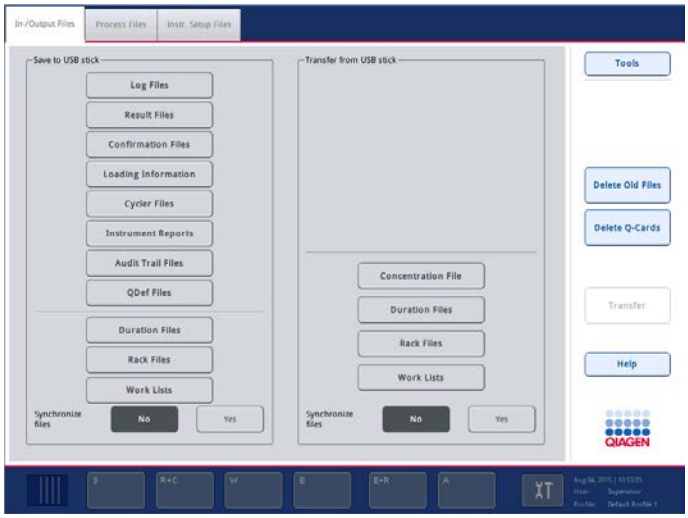
To store the data generated by the QIAsymphony SP/AS instruments, you can transfer files to the USB stick if the QIAsymphony Management Console is not available.

If the QIAsymphony SP/AS instruments are not connected to the network this function can also be used to supply the **Process Definition** editor tool of the QIAsymphony Management Console with the data required to create new Assay Control Sets and Assay Parameter Sets.

If you are using the QIAsymphony Management Console, refer to the *QIAsymphony Management Console User Manual* for more details.

To transfer files from the QIAsymphony SP/AS instruments to the USB stick, follow the steps below.

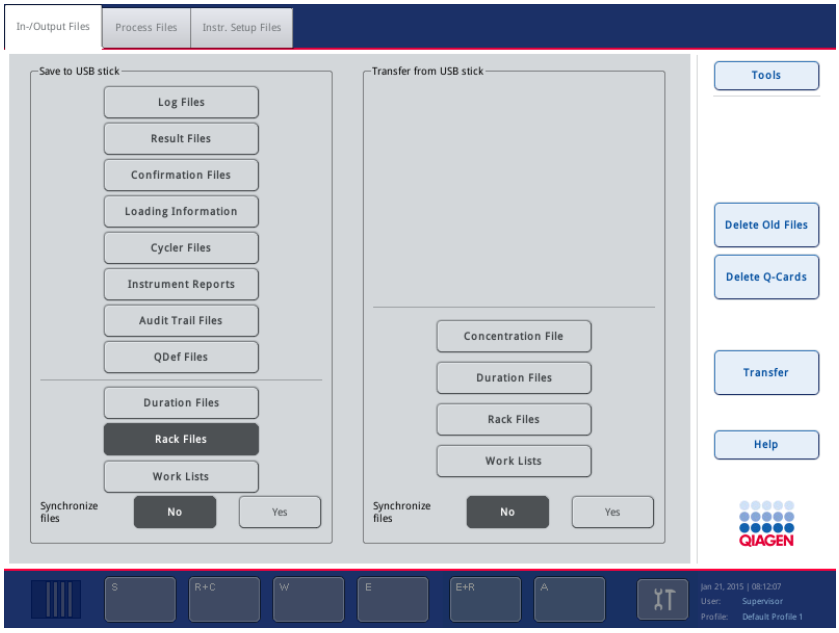
1. Log in to the QIAsymphony SP/AS instruments. See page 92 for a summary of which file types the “Supervisor” and “Operator” roles have access to transfer.
2. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP.
3. Press **File Transfer** in the **Tools** screen. The **In-/Output Files** tab of the **File Transfer** menu opens.



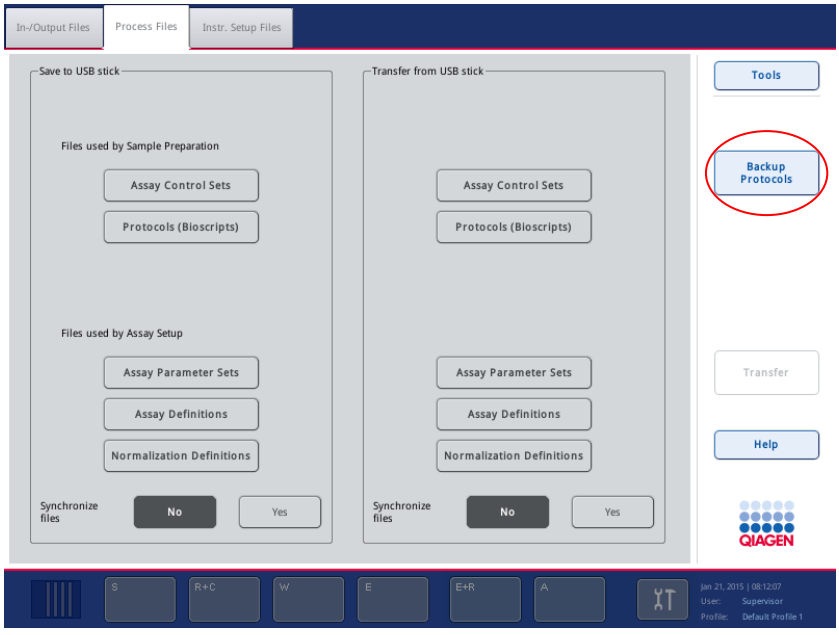
In-/Output Files tab of the **File Transfer** menu.

4. Select one of the file transfer tabs (**In-/Output Files**, **Process Files**, **Instr. Setup Files**). The following files can be transferred to the USB stick from the different tabs.

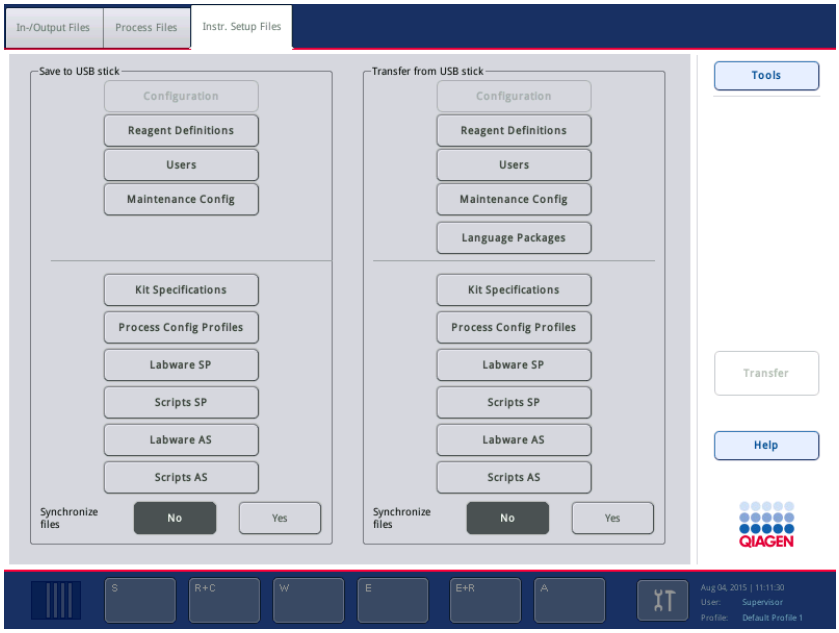
Tab	Files that can be transferred to the USB stick
In-/Output Files	Log files
	Result files
	Confirmation files
	Loading information files
	Cycler files
	Instrument Reports
	Audit Trail files
	QDef files
	Duration Files
	Rack files
	Work lists
Process Files	Assay Control Sets
	Protocols (Bioscripts)
	Assay Parameter Sets
	Assay Definitions
	Normalization Definitions
	Press **Backup Protocols** button in the command bar to download all process files with one click: Assay Control Sets, Protocols, Assay Parameter Sets, Assay Definitions and Normalization Definitions.
Instr. Setup Files	Configuration (there may be some entries that are not visible to all users)
	Reagent definitions
	Users
	Maintenance Config.
	Process configuration profiles
	Labware SP and AS files
	Scripts SP (service scripts)
	Scripts AS (service scripts)



In-/Output Files tab with **Rack Files** selected.



Process Files tab.



Instr. Setup Files tab.

5. Select the file type(s) to be downloaded to the USB stick by pressing the appropriate button in the **Save to USB stick** panel.

   Note: To save time, select more than one file type.

6. Press the **Transfer** button in the command bar of the screen to transfer the selected files to the USB stick.

7. A message appears informing you that the files will be transferred from the QIAsymphony SP/AS instruments to the USB stick. Press **Yes** to confirm that the files should be transferred.

   During data transfer, an information message will be displayed.

   After successful data transfer, a message will appear confirming data transfer.

8. Remove the USB stick.

   Note: Do not remove the USB stick during data transfer otherwise loss of data may occur.

8.3.3 Transferring files from the USB stick to the QIAsymphony SP/AS

Note: File transfer of both QIAsymphony SP and QIAsymphony AS files is performed using the **File Transfer** menu. For a summary of file types, see Section 8.1.

You can transfer files from the QIAsymphony Management Console to the QIAsymphony SP/AS instruments. Alternatively, if you are not connected to the network, you can transfer files using the USB stick.

Transfer files from the USB stick to the QIAsymphony SP/AS instruments as follows:

1. Copy the files to be uploaded to the corresponding directory on the USB stick. See Section 8.3.1 for the folder structure on the USB stick.
2. Log in to the QIAsymphony SP/AS instruments (for more information, see "Logging in", Section 5.3). See Section 8.1 for a summary of which file types the "Supervisor" and "Operator" have access to transfer.
3. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP.
4. Press **File Transfer** in the **Tools** screen to enter the **In-/Output Files** tab.
5. Select one of the file transfer tabs (**In-/Output Files**, **Process Files**, **Instr. Setup Files**).

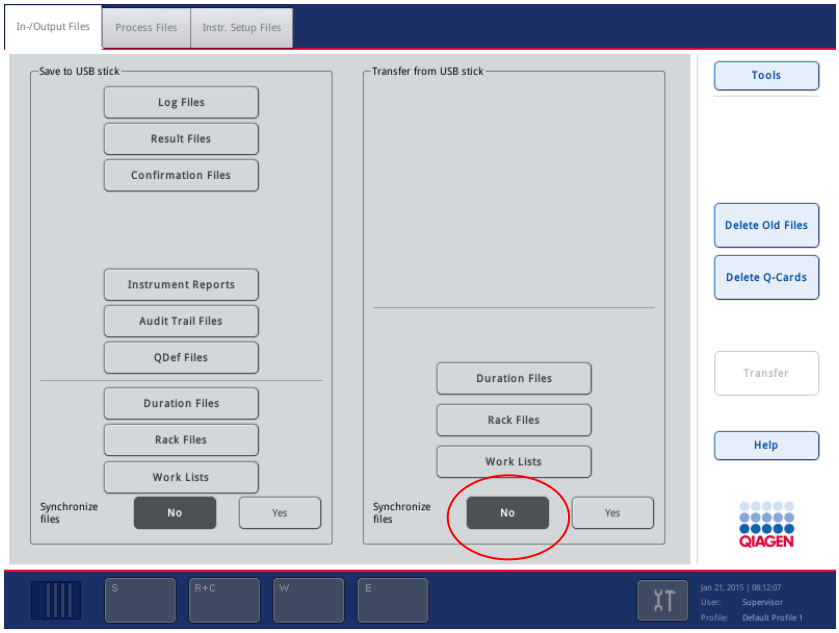
The following files can be transferred from the USB stick from the different tabs.

Tab	Files that can be transferred from the USB stick
In-/Output Files	Concentration data file
	Duration Files
	Rack files
	Work lists
Process Files	Assay Control Sets
	Protocols (Bioscripts)
	Assay Parameter Sets
	Assay Definitions
	Normalization Definitions
Instr. Setup Files	Configuration (there may be some entries that are not visible to all users)
	Reagent definitions
	Users
	Maintenance Config.
	Language Packages
	Process configuration profiles
	Labware SP and AS files
	Scripts SP (service scripts)
	Scripts AS (service scripts)

6. Select the file type(s) to be uploaded to the QIAsymphony SP/AS instruments by pressing the appropriate button(s) in the **Transfer from USB stick** panel.

   Note: You can select more than one file type at once.

   Important: Make sure that **Synchronize files** is set to **No**.



7. When the first file type has been selected, the **Transfer** button becomes active. Press the **Transfer** button to transfer all selected file types from the USB stick to the QIAsymphony SP/AS instruments.
8. A message appears informing you that the files will be transferred from the USB stick to the QIAsymphony SP/AS instruments. Press **Yes** to confirm that the files should be transferred.

   During data transfer, an information message will be displayed.

   After successful data transfer, a message will appear confirming the data transfer.
9. Remove the USB stick.

   Note: Do not remove the USB stick during data transfer otherwise loss of data may occur.

8.4 Synchronization of files

Files stored on the QIAsymphony SP/AS instruments can be synchronized with files on the USB stick.

- If the file already exists on the QIAsymphony SP/AS it will be overwritten.
- Files that exist on the QIAsymphony SP/AS instruments but do not exist on the USB stick are deleted from the QIAsymphony SP/AS instruments.

- After synchronization the content of files of the same type that are stored on the QIAsymphony SP/AS instruments and the USB stick are identical.

Users with "Supervisor" and "Operator" access rights are allowed to synchronize different file types, as outlined in the table below.

Operator	The "Operator" enables synchronization of the following file types between the QIAsymphony SP/AS instruments and the USB stick: • Rack files • Work lists
Supervisor	The "Supervisor" enables synchronization of the following file types between the QIAsymphony SP/AS instruments and the USB stick: • Duration files • Rack files • Work lists • Assay Control Sets • Protocols • Assay Parameter Sets • Assay Definitions • Normalization Definitions • Process configuration profiles • Labware SP • Scripts SP (service scripts) • Labware AS • Scripts AS (service scripts)

8.4.1 Synchronizing files on QIAsymphony SP/AS with files on the USB stick

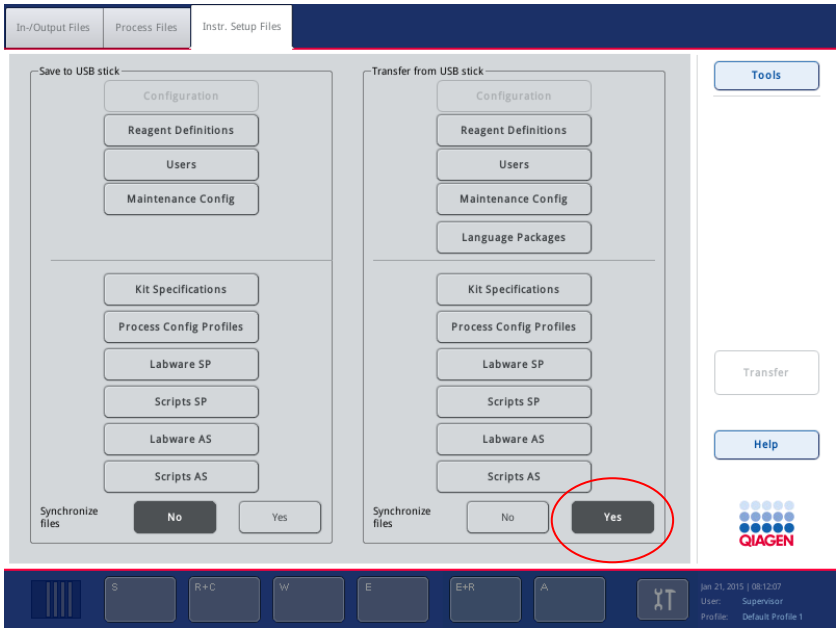
Files on the QIAsymphony SP/AS instruments can be synchronized with files on the USB stick.

To synchronize files on the QIAsymphony SP/AS instruments with files on the USB stick follow the steps below:

1. Log in to the QIAsymphony SP/AS instruments.
2. Prepare the USB stick with the files for synchronization. Store the files you want to upload to the QIAsymphony SP/AS instruments in their corresponding folders on the USB stick (e.g., a newly defined rack file in the folder **/data/Worklists/**).

3. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP.
4. Press **File Transfer** in the **Tools** screen to enter the **In-/Output Files** menu.
5. Select one of the file transfer tabs (**In-/Output Files**, **Process Files**, **Instr.Setup Files**). For example, to synchronize work lists, select the **In-/Output Files** tab.
6. Select the file type(s) on the QIAsymphony SP/AS instruments that should be synchronized with the files on the USB stick by pressing the appropriate button(s) in the **Transfer from USB stick** panel.

   Note: You can select more than one file type at the same time. The number of file types that can be selected by the user is limited by the user role.
7. Set **Synchronize files** to "Yes" by pressing the **Yes** button.



8. Press the **Transfer** button in the command bar of the screen to synchronize the selected files type(s).
9. A message appears informing you that the files will be synchronized. Check that the information is correct. To continue with the synchronization, press **Yes**.
10. After successful synchronization, a message will appear confirming synchronization. Press **OK** to continue.
11. Remove the USB stick.

    Note: Do not remove the USB stick during data transfer otherwise loss of data may occur.
12. Log out of the QIAsymphony SP/AS instruments (for more information, see Section 5.4).

8.4.2 Synchronizing files on the USB stick with files on QIAsymphony SP/AS

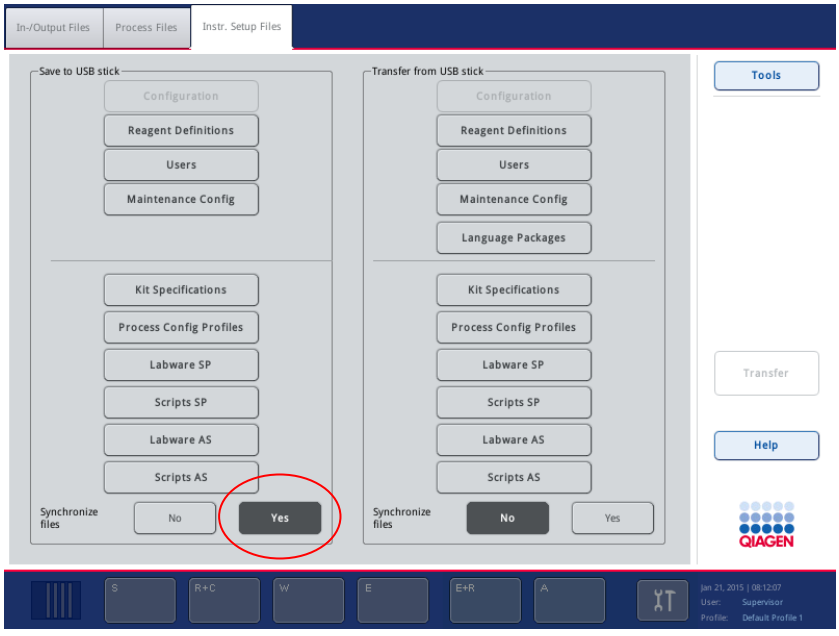
Files on the USB stick can be synchronized with files on the QIAsymphony SP/AS. This means that files stored on the QIAsymphony SP/AS are transferred to the USB stick.

- If the file already exists on the USB stick it will be overwritten by the file from the QIAsymphony SP/AS instruments.
- Files that exist on the USB stick but do not exist on the QIAsymphony SP/AS instruments are deleted from the USB stick.

To synchronize files on a USB stick with files on the QIAsymphony SP/AS follow the steps below.

1. Log in to the instrument with the "Supervisor" user ID.
2. Prepare the USB stick for synchronization. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP.
3. Press **File Transfer** in the **Tools** screen to enter the **In-/Output Files** tab menu.
4. Select one of the file transfer tabs (**In-/Output Files**, **Process Files**, **Instr. Setup Files**).
5. Select the file type(s) that should be synchronized by pressing the appropriate button(s) in the **Save to USB stick** panel.

   Note: You can select more than one file type at once.
6. Set **Synchronize files** to "Yes" by pressing the **Yes** button.



7. Press the **Transfer** button in the command bar of the screen to synchronize the selected files.

8. A message appears informing you that the files will be synchronized. Check that the information is correct. To continue with the synchronization, press **Yes**.

   After successful synchronization, a message will appear confirming synchronization.

9. Remove the USB stick.

   Note: Do not remove the USB stick during data transfer otherwise loss of data may occur.

10. Log out of the QIAsymphony SP/AS instruments.

8.5 Deleting files

Different tools can be used to delete files from the QIAsymphony SP/AS instruments. We recommend using the **File Transfer** tool of the QIAsymphony Management Console.

If the QIAsymphony SP/AS is not connected to the network, there is a method for deleting all input and output files, except log files (Section 8.5.1), and a method for deleting all other files (Section 8.5.2).

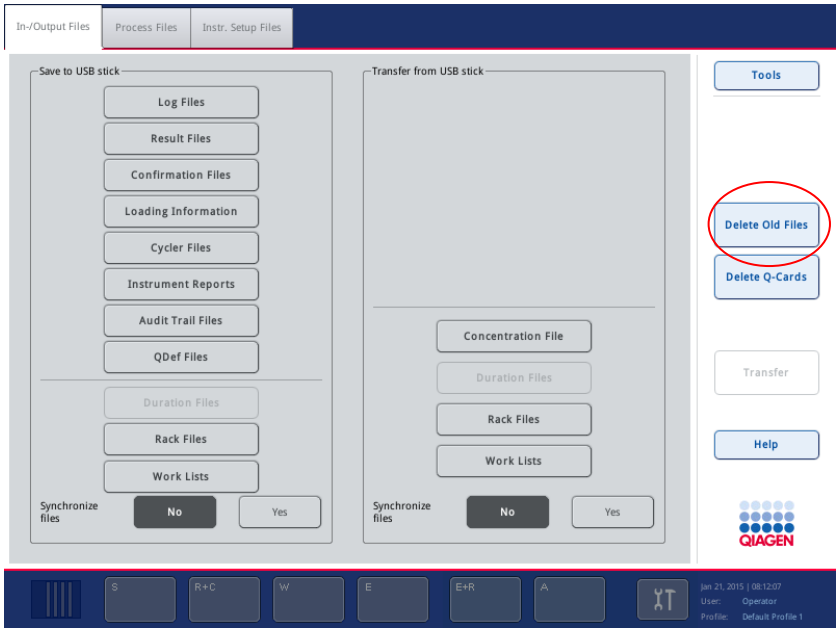
8.5.1 Deleting input and output files from the QIAsymphony SP/AS

The user will be notified when the QIAsymphony SP/AS instruments are short of storage space for output files (i.e., result, rack, work list, instrument report, loading information and cycler files).

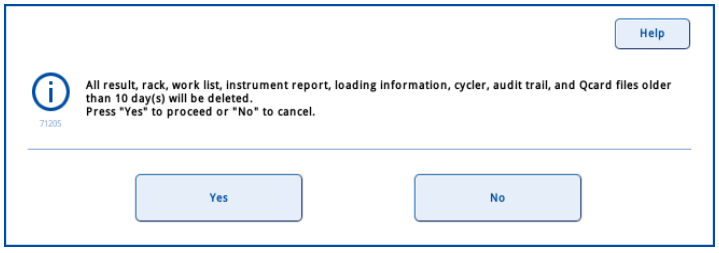
All input and output files, except log files, can be deleted from the QIAsymphony SP/AS instruments using the touchscreen. Follow the steps below to delete files older than 10 days. This time period is the default setting and can be adjusted upon request by QIAGEN Field Service.

To delete these files, follow the steps below.

1. Press **File Transfer** in the **Tools** screen.
2. Select the **In-/Output Files** tab.



3. Press **Delete Old Files** in the command bar of the screen. The following message appears.



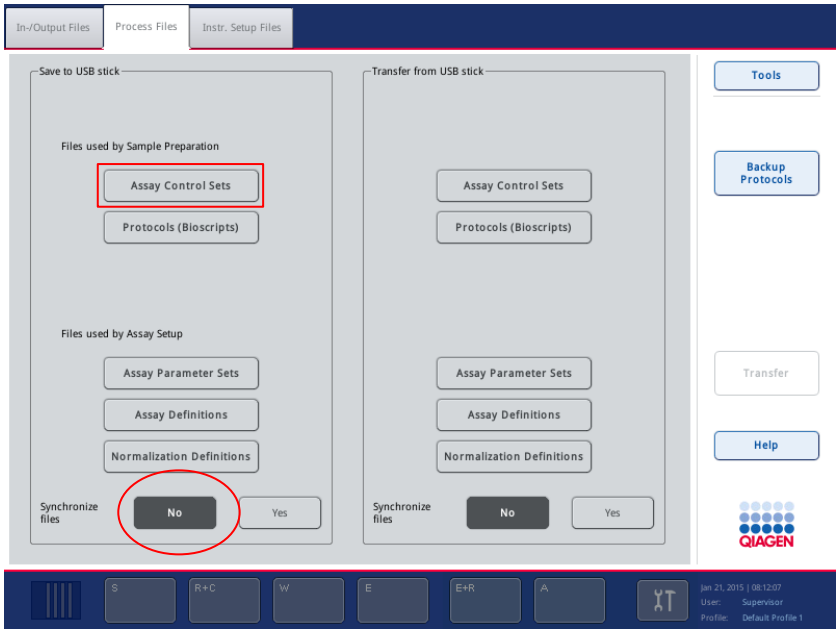
4. Press **Yes** to delete the old files.
5. After the files have been successfully deleted, a message will appear confirming the deletion. Press **OK** to confirm the message.

Note: The QIAsymphony will automatically delete the concentration data file after use (also see Section 2.4.4, "Import concentration data (only for run with normalization)" in *Operating the QIAsymphony AS*).

8.5.2 Deleting other files

If your QIAsymphony SP/AS is not connected to the network, use the synchronize function if you need to delete file types other than input and output files from the QIAsymphony SP/AS. With the synchronize function you can delete the file types in the table in Section 8.4. The following example guides you through the steps required to delete some of the Assay Control Sets from the QIAsymphony SP/AS.

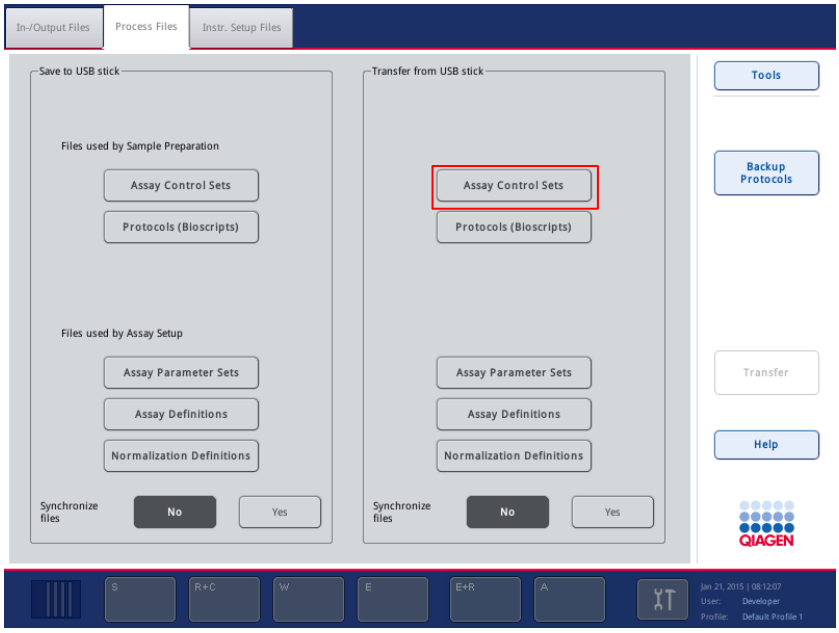
1. Delete all Assay Control Sets saved on the USB stick in **data/AssayControlSets**.
2. Log in to the instruments with the "Supervisor" user ID.
3. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP.
4. Press **File Transfer** in the **Tools** screen.
5. Select the **Process Files** tab.



6. Select Assay Control Sets by pressing the **Assay Control Sets** button in the **Save to USB stick** panel.

   Important: Make sure that **Synchronize files** is set to **No**.
7. Press the **Transfer** button in the command bar on the right side of the screen.
8. A message appears informing you how many files will be transferred from the QIAsymphony SP/AS instruments to the USB stick. To continue with file transfer, press **Yes**.

   After successful data transfer, a message will appear confirming data transfer.
9. Remove the USB stick.
10. Connect the USB stick to a PC.
11. Delete the Assay Control Sets that should be removed from the QIAsymphony SP/AS instruments. Access the files on the USB stick using Windows Explorer or the QIAsymphony Management Console.
12. Insert the USB stick into one of the USB ports at the front of the QIAsymphony SP again.
13. Press **File Transfer** in the **Tools** screen.
14. Select the **Process Files** tab.



15. Select Assay Control Sets as the file type by pressing the **Assay Control Sets** button in the **Transfer from USB stick** panel.
16. Set **Synchronize files** to "Yes" by pressing the **Yes** button.
17. Press the **Transfer** button in the command bar on the right side of the screen.
18. A message appears informing you how many files will be deleted from the QIAsymphony SP/AS instruments. To continue, press **Yes**.

    After the files have been successfully deleted, a message will appear.
19. Remove the USB stick.
20. Log out of the QIAsymphony SP/AS instruments

8.6 Process configuration profile

Process configuration settings can be saved in a single file called a process configuration profile. Each process configuration profile is provided as a *.zip file, containing the file in *.xml format and *.html format. The *.xml file is digitally signed with a checksum and cannot be changed. The *.html file contains an overview of the settings defined by the *.xml file.

Note: Process configuration profiles cannot be manually modified; this must be done using the **Configuration** menu.

Process profiles can be transferred to and from the QIAsymphony SP/AS instruments using the USB stick (Section 8.3.2) or the QIAsymphony Management Console.

8.7 QIAsymphony SP start batch confirmation file

The start batch confirmation file provides information about the samples that will be processed in a batch on the QIAsymphony SP.

This file contains information about:

- The elution rack
- The batch that will be processed to the elution rack
- Samples, including sample IDs
- The protocol and Assay Control Set used for processing

Start batch confirmation files are generated and saved on the QIAsymphony SP instrument in *.xml format. A start batch confirmation file is generated when a batch changes its status from queued to running. The start batch confirmation file does not contain information about the batch that is collected during the run, only information known about the batch until processing of the batch starts.

The file name is created automatically with the following nomenclature:

YYYYMMDDhhmmss_<BatchID>.xml

YYYY, MM, DD, hh, mm and ss are the year, month, day, hours, minutes and seconds in which the file was created. For example, 20091127125837_1000004.xml.

Note: Start batch confirmation files are only written if the process parameter **Write start batch confirmation files** is set to **Yes**. For more details about modifying process parameters, see Section 6.2.

8.8 QIAsymphony AS start batch confirmation file

The start batch confirmation file provides information about the samples that will be processed in a batch on the QIAsymphony AS.

This file contains information about:

- The sample, assay, reagent racks
- The batch that will be processed to the racks
- Positions, including IDs
- The Assay Definition and Assay Parameter Set used for processing

Start batch confirmation files are generated and saved on the QIAsymphony AS instrument in *.xml format. A start batch confirmation file is generated when a batch changes its status from queued to running. The content of a start batch confirmation file is similar to the QIAsymphony AS result file. The start batch confirmation file does not contain information about the batch that is collected during the run, only information known about the batch until processing of the batch starts.

The file name is created automatically with the following nomenclature:

YYYYMMDD_hhmmss_<BatchID>.xml

YYYY, MM, and DD are the year, month and day in which the file was created. For example, 20091127_142808_1000004.xml.

Note: Start batch confirmation files are only written if the process parameter **Write start batch confirmation files** is set to **Yes**. For more details about modifying process parameters, see Section 6.2.

8.9 QIAsymphony SP result file

Result files are generated for each elution rack. When the elution rack is removed from the "Eluate" drawer, the corresponding result file is generated and can be downloaded from the QIAsymphony SP/AS instruments.

The file name is created automatically with the following nomenclature:

YYYYMMDDHHMMSS_ElutionRackID.HTML

YYYYMMDDHHMMSS_ElutionRackID.XML

When downloading the result files, the *.html and *.xml files are available as zipped (*.zip) files on the USB stick.

When using the **File Transfer** tool, these files will be automatically unzipped.

8.9.1 Result file content (SP)

General information

Elution rack ID	ID of the elution rack used.
Elution rack type	Type of the elution rack used.
Elution slot number	Number of the elution slot used.

Overall status check	"Passed" if all samples have been processed correctly; "Unclear", if at least one sample is unclear, but there are no invalid samples; "Failed" if samples have not been processed correctly.
File	Name of the *.xml result file.
Start time	The time at which processing of the first batch started.
End time	The time at which processing of the last batch finished.
Eluate removed	Time at which the elution rack was removed.
QIAsymphony SP serial number	Serial number of the QIAsymphony SP on which the run was executed.
Software version	Current software version.
Process Configuration Profile	The process configuration profile that was used when the batch was processed. See Section 8.6 for details about process configuration profiles.

Reagent rack information

Reagent Rack Number	Number of the reagent rack used (i.e., 1, 2 or 3).
Reagent Rack Slot	Number of the reagent rack slot used. **Note**: In case that the buffer bottle is exchanged, the number is incremented. This means, in this case the number does not identify the slot.
Homogeneity check	"Passed" if the lot numbers/IDs of the reagent rack and enzyme rack are matching; "Failed" if they do not match.
Reagent Rack Description	Description of the reagent rack used.
Reagent Cartridge Lot Number	Lot number of the reagent cartridge used.
Enzyme Rack Lot Number	Lot number of the enzyme rack used.
Expiration Date	Expiration date of the reagent rack.

Reagent information

Position	The index of the reagent (i.e., 1, 2 or 3).
Buffer	Name of the buffer.
Lot Number	Lot number of the reagent.
Quantity	Volume of reagent used.
Expiration Date	Expiration date of the reagent.
Expired	"Yes" if the reagent has expired; "No" if the reagent has not expired.

The reagent information is listed for each reagent that is listed in the inventory before the start of the batch.

Batch information

Batch ID	Batch ID generated by the QIAsymphony SP.
Assay Control Set	Name of the Assay Control Set used.
Protocol name	Name of the protocol used.
User	Name of user who queued the batch.
Batch queuing time	Date and time at which the batch was queued by the user.
Start Time	Date and time at which the batch was started by the user.
End Time	Date and time at which processing of the batch finished.
Sample Rack Slot	The sample rack slot used. Number 1–4 for the tube carrier. Number 6–9 for the plate carrier, starting with the back position.
Carrier type	Type of carrier (i.e., "Tube" if a tube carrier was used) or the type of rack, if a rack carrier was used.
Sample Rack ID	ID of the sample rack.

Internal control information

IC	Name of the internal control.
Bar code	Bar code of the internal control.
Assay Control Set	Name of the Assay Control Set.
Tube position (labware)	Position of the internal control (IC) tube in the IC carrier, and the tube type.
Position/Level detection	Internal control position and aspiration mode for liquid-level detection: “C”=capacitive, “P”=pressure, “N”=none.
Time	Creation time.
Message ID	ID of the message.
Message	Message text.
Command	Defines the protocol command affected by the message.

The internal control information is listed for each internal control that is used during processing.

Assay control set information

In addition, information for each Assay Control Set that was used for processing is listed.

Batch ID	ID of the batch that uses the ACS.
Assay Control Set	Name of the ACS; each ACS is mentioned only once per batch.
ACS authentic	Specifies if the assay control set is a genuine QIAGEN-ACS: ● “QIAGEN file” if it is a genuine ACS ● “Custom file” otherwise
IC	Name of the IC that was used by the ACS.
Bar code	ID of the IC (bar code from IC tube).

The following user actions are listed in the messages table:

- Manual changes to sample bar codes
- Pause
- Continue
- Stop

“Sample” table information

Sample ID	ID of the sample. In case of using an eluate rack with 2D bar coded tubes, the eluate tube bar code is appended to the ID of the sample ID with a blank in between. See Section 6.2.2 (page 72) for details on enabling eluate racks with 2D bar coded tubes.
Labware	Input labware type. The carrier type is either “Tube” or “Rack”. In case of tube carriers, the labware of the tubes is shown. In case of a plate carrier, this column is not shown.
Input position	Name of the input position.
Type	Indicates the sample type, i.e., sample or extraction control.
Liquid-level detection	Aspiration mode for liquid-level detection: “C” = capacitive, “P” = pressure, “N” = none.
Output position	Name of the output position.
Assay Control Set	Name of the Assay Control Set.
Reagent rack (beads + reagents)	Number of the reagent rack for beads and reagents.
Regent rack (enzymes)	Number of the reagent rack for enzymes.
IC tube position/Liquid-level detection	Internal control position and aspiration mode for liquid-level detection: “C” = capacitive, “P” = pressure, “N” = none.
Eluate volume	Indicates the elution volume. Depending on the protocol, this field may or may not appear. If the elution volume is in bold font, the elution volume was defined by the user.
Minimal eluate volume	Indicates the minimum elution volume in the elution rack at the time of transfer. Depending on the protocol, this field may not be shown. If this field is in bold font, the elution volume was defined by the user.
Initial elution volume	The initial volume of buffer. This field is displayed depending on the protocol.
Validity of result	Result may be “valid”, “unclear” or “invalid”. If sample is “unclear” or “invalid”, error codes are listed.

Work list table information (optional)

Work list	List name of work list used.

Note: In addition to the result file, a QDef file is automatically generated and can be used for file exchange with other QIAGEN instruments.

The sample information is listed for each sample that is processed.

Abbreviations

S	Sample
EC+	Positive extraction control
EC–	Negative extraction control
C	Capacitive
P	Pressure
N	None

Temperature information

Batch	Batch ID.
Lysis temperature	Status information of the lysis temperature: "OK" or "not OK".
Cooling position temperature	Status information of the cooling position temperature: "OK", "not OK", "disabled" or "not required".

The temperature information is listed for each batch that is processed.

Deleting SP result files

The user will be notified when the QIAsymphony SP is short of storage space for result files. The user can then choose to delete files older than 10 days from the instruments. For more information, see Section 8.5.1.

The validity of result files can be checked using a **Checksum Validation** tool. This tool is part of the QIAsymphony Management Console. For detailed information, see the *QIAsymphony Management Console User Manual*.

Sample status (SP)

Samples are classified in one of three ways.

- "valid" — the sample was processed correctly.

  Note: Pipetting performance is not monitored.
- "unclear" — if the run was paused, the samples will be generally classified as "unclear".

  Furthermore, unclear classification is possible in some cases where insufficient sample volume is available or the cooling temperature is out of range.
- "invalid" — a serious error occurred during sample processing (e.g., the run may have stopped and could not be continued).

  If a sample is classified as "invalid", it will not be processed further. The sample will be removed from the sample prep cartridge and transferred to the liquid waste container.

Note: While the elution rack remains in the "Eluate" drawer and has not been removed, sample classifications can be viewed in the **Sample View** screen of the **Sample Preparation** menu. After the elution rack has been removed, sample classifications are documented in the result file.

8.10 QIAsymphony AS result file

A result file is generated for each assay run. It contains all information about the defined assay run and its parameters. For further details about the content of a result file, see the tables below.

A preliminary version of the result file is generated during the assay run. The final version of the result file is created when the run is removed from the "Assays" drawer (see Section 2.10 of *Operating the QIAsymphony AS* for details about how to do this). The result file can then be downloaded from the QIAsymphony SP/AS instruments.

The filename is generated automatically with the following nomenclature:

ResultFile_YYYYMMDD_HHMMSS_RunID.HTM

ResultFile_YYYYMMDD_HHMMSS_RunID.XML

When downloading the result files, the *.html and *.xml files are available as zipped (*.zip) files on the USB stick. When using the **File Transfer** tool, these files can be transferred individually and will be automatically unzipped.

Preliminary files are available as *.htm and *.xml files. The file name contains the suffix "_preliminary".

Note: A single result file is generated for each assay setup run for AS batches in Integrated mode. Therefore, each result file can contain information about up to 2 sample racks and more than one Assay Parameter Set.

Note: When performing an integrated run, one result file is generated for each AS batch. The "Sample rack ID" in the QIAsymphony AS result file is identical to the "Elution rack ID" in the corresponding QIAsymphony SP result file and in its file name. The run time and date in the AS result file and in the SP result file should be the same. If samples are classified as "invalid" or "unclear" in the QIAsymphony AS result file, the corresponding QIAsymphony SP result file will provide more information about the validity of the result.

Note: Preliminary result files contain the comment: "This is a preliminary result file. It will be overwritten with the final result file, when the last output plate is removed. Please note that final status information may deviate from preliminary status. For final sample assessment please use final result file." The comment is highlighted in yellow.

Note: In addition to the result file, a QDef file is automatically generated and can be used for file exchange with other QIAGEN instruments.

8.10.1 Result file content (AS)

General information

User	Name of user who defined the run.
Role	Role of the user who assigned the run (i.e., "Operator" or "Supervisor").
Run ID	Run ID generated by the QIAsymphony AS.
Overall status check	General information about the run status. If "Passed" is displayed, the run (including SP run for integrated run) was successful. "Unclear" is displayed if at least one sample is unclear, but there are no invalid samples. "Failed" is displayed if errors occurred during the run. See Section 10 for more details about how to deal with errors.
Start time (yyyy-mm-dd hh:mm:ss)	Time at which the AS run was started.
End time (yyyy-mm-dd hh:mm:ss)	Time at which the AS run (for integrated run) ended. This is defined as the time at which the last sample was transferred to the assay rack.
Duration (hh:mm:ss)	Duration of the AS run (for integrated run).
QIAsymphony AS SN	Serial number of the QIAsymphony AS.

Software Version	Current software version.
Process Configuration Profile	Configuration profile that was used when defining the run.
Loading file	File name of the *.xml loading information file.
Result file	File name of the *.xml result file.

Reagent information: Kit bar codes

Assay	Name of the selected Assay Parameter Set.
Bar code	Kit bar code for the used assay. QIAGEN bar code or custom bar codes can be entered, providing information about lot number and expiration date. See "Defining customized kit bar codes", Section 2.5.1 of the *Operating the QIAsymphony AS*. If no bar code was entered, this field will not be displayed in the result file.
Product No.	If a QIAGEN kit was used, the product number of the QIAGEN kit is displayed.
Lot. No.	Lot number of the used kit.
Expiration date	Expiration date of the used kit (mm/dd/yyyy).
Status	Status of the used kit. "Expired" indicates that a kit had passed the expiration date. "OK" indicates that the kit had not passed the expiry date.
Accepted	"Yes" indicates that an expired kit was accepted and used in the assay run. If no expired kits were used, "n/a" is displayed in this field.

Reagent slot information

Slot	Position of the adapter in the "Eluate and Reagents" drawer. This can be slot 1 or 3.
Adapter type	Name of the required reagent adapter. For a full list of available adapters, visit **www.qiagen.com/goto/QIAsymphony**.

Standard curves information (optional)

Name of standard curve	Name of the standard curve. This is used as prefix of the standard names.
Assay	Name of the assay.
No. of dilution concentrations (including first undiluted standard)	Number of the standards from the standard curve (including the first undiluted standard).
Dilution factor	Factor in format "1:x". Example: Dilution factor "1:100" means that 1 part of previous standard are added and 99 parts of diluent.

Detailed information for standard curve X (optional)

Slot of Reagent adapter	Position of the adapter in the "Eluate and Reagents" drawer. This can be slot 1 or 3.
Pos. on Reagent adapter	The position index.
Standard name	The name of the standard.
Dilution ratio	The ratio of the concentration of the predecessor standard and of this standard, in the form "1:x". For the initial standard, "None" instead. Example: Dilution ratio "1:100" means that 1 part of previous standard are added and 99 parts of diluent.
Concentration	The concentration of the standard.

Normalization information (optional): Normalization rack information

Normalization rack ID	The rack ID used for the normalization rack.
Slot	The slot number used for the normalization rack.
Rack type	The rack type used for the normalization rack.
Adapter type	The adapter type used for the normalization rack, if any.

Note: If a 2-step dilution is applied, an additional predilution rack might appear in the table. The rack ID of the predilution rack has the suffix "_predil" and the rack ID of the normalization rack has the suffix "_norm".

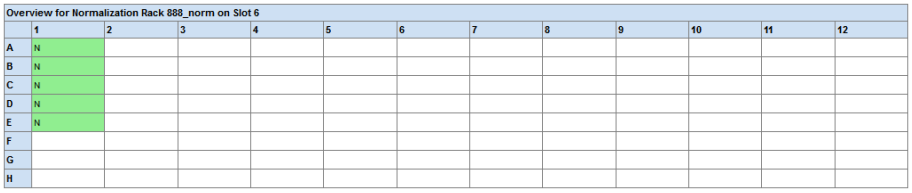
Normalization information (optional): Detailed information for Normalization Rack on Slot X

Dest. Pos.	Position on normalization rack.
Sample ID	ID of the input sample. In case of using an eluate rack with 2D bar coded tubes, the eluate bar code is appended to the ID of the input sample with a blank in between. See Section 6.2.2, page 72, for information on enabling eluate racks with 2D bar coded tubes.
Source Concentration	The concentration of the template.
Source Template slot	Slot from which template was taken.
Source Template pos.	Position on slot from which template was taken.
Source Diluent slot	Slot from which diluent was taken.
Source Diluent pos.	Position on slot from which diluent was taken.
Template Volume	Volume of transferred template. Format: #.1 µl.
Diluent Volume	Volume of transferred diluent. Format: #.1 µl.
Concentration	Concentration of the normalization and concentration unit.
Diluent transfer	Status of diluent transfer: "done", "failed" or "–" if the step was not performed.
Template transfer	Status of template transfer: "done", "failed" or "–" if the step was not performed.

Note: If a 2-step dilution is applied, the "Detailed information" section contains two separate tables. The first table contains data for the predilution rack and the second table contains data for the normalization rack. Below each table, an "Overview" table provides a visualization of the corresponding predilution/normalization rack. "N1" is the abbreviation for a prediluted eluate and "N2" is the notation used for a normalized eluate with two steps.

Overview for Normalization Rack on Slot X

This section is only available for 96-well formats. It displays a graphical overview of the normalization rack. Each used well contains the abbreviation "N" for normalized eluate.



Overview for Normalization Rack 888_norm on Slot 6												
	1	2	3	4	5	6	7	8	9	10	11	12
A	N											
B	N											
C	N											
D	N											
E	N											
F												
G												
H												

Sample rack information

Sample rack ID	ID of the sample rack used.
Slot	Position of the sample rack in the "Eluate and Reagents" drawer. This can be slot 1 or 2. **Note**: In an integrated run, this can only be slot 2.
Rack type	Name of the selected rack type.
Adapter type	Name of the required adapter for the selected rack type.
Rack file status	Name of the rack file and the status of the system-generated rack file for the sample rack is displayed here. "Signature valid" indicates that the rack file was created by the QIAsymphony SP/AS instruments, "Signature invalid" indicates that the rack file was manually modified, or "Signature unsigned" indicates that the rack file was not created by the QIAsymphony SP/AS instruments, or that the signature was removed. If not used a rack file: "created".

Assay rack information

Assay rack ID	ID of the assay rack used.
Slot	Position of the assay rack in the "Assays" drawer. This can be slot 4, 5 or 6. If a Rotor-Disc is used, this can be slot A or B.
Rack type	Name of the selected rack type.
Adapter type	Name of the required adapter for the selected rack type.
Cycler file	Name of the cycler file that is generated.

Detailed information for Assay Rack X on Slot Y

Dest. Pos.	Destination position of a specific template.
Sample ID	ID of the sample.

Source Concentration	Only visible if assay uses normalization. The concentration of the template.
Type	Defines the type of sample. For further details, see list of abbreviations in this section (below). If the type was changed automatically (e.g., for 2-step PCR), also indicates the original sample type.
IC SP	Name of the internal control (IC) that was used during sample preparation on the QIAsymphony SP. This is based on information defined in the rack file. For further details, see Section 8.12.
Source slot	Source slot of specific template (i.e., slot 1, 2 or 3). **Note**: If the assay uses a normalization source slot, slot 6 (and 4) (for the normalization rack) may also be used.
Source pos.	Source position of a specific template.
Assay	Name of the selected Assay Parameter Set (APS) for a specific template.
Work list	Index of the work list used. If a work list was not used, "n/a" is displayed in this field. A table below this one assigns an index to each used work list.
Template volume	Only visible if assay includes a normalization step. Amount of template volume transferred for normalization. This is set to "maximum template volume" if indirect normalization is performed and a normalization rack is in use for the position. A reference to a footer is displayed as ** after the value. The footer is shown below the table.
Total added amount of DNA	Only visible if assay includes a normalization step. Amount of DNA in ng transferred to assay output reaction (PCR setup).
Diluent volume	Only visible if assay includes a normalization step. Amount of diluent volume transferred for normalization. This is set to "–" if indirect normalization is done and normalization rack is in usage for the actual position.
MM transfer	Shows whether the master mix (MM) was transferred to a specific position. "Done" indicates that the master mix transfer was successful. "–" indicates that a problem occurred during master mix transfer.
Template transfer	Shows whether the template was transferred to a specific position. "Done" indicates that template transfer was successful. "–" indicates that a problem occurred during template transfer.

Diluent transfer	Only visible if assay includes a normalization step. Status of diluent transfer: “done”, “failed” or “–” if the step was not performed.
Validity AS result	Shows the validity of an assay run for each assay position (i.e., “valid”, “unclear”, or “invalid”). See “Sample status (AS)”, page 133, for more information. “Removed” if assay point was removed without replanning the batch (only possible in integrated run).

Abbreviations

AC	Assay control
EC+	Positive extraction control
EC–	Negative extraction control
IC	Internal control
MM	Master mix
n/a	Not applicable
N	Normalized eluate/sample/EC+/EC–
NTC	No template control
NTC+IC	No template control containing master mix with internal control
NTC–IC	No template control containing master mix without internal control
S	Sample
Std	Assay standard

Overview for Assay Rack X on Slot X

This section is only available for 96-well formats. It displays a graphical overview of each assay rack that is set up during an assay run. The validity of each assay is indicated by a color. For more information, see “Sample status (AS)”, page 133. Each well contains an abbreviation for the template type and an index for the corresponding assay.

	1	2	3	4	5	6	7	8	9	10
A	[1]: S	[1]: S	[1]: Std	[2]: S	[2]: AC	[3]: S				
B	[1]: S	[1]: S	[1]: Std	[2]: S	[2]: NTC+IC	[3]: S				
C	[1]: S	[1]: S	[1]: Std	[2]: S	[3]: S	[3]: Std				
D	[1]: S	[1]: S	[1]: AC	[2]: S	[3]: S	[3]: Std				
E	[1]: S	[1]: S	[1]: NTC+IC	[2]: S	[3]: S	[3]: Std				
F	[1]: S	[1]: S	[2]: S	[2]: Std	[3]: S	[3]: AC				
G	[1]: S	[1]: S	[2]: S	[2]: Std	[3]: S	[3]: NTC+IC				
H	[1]: S	[1]: S	[2]: S	[2]: Std	[3]: S					

Index	Assay
[1]	PCR_4_96well
[2]	PCR_5_96well
[3]	PCR_6_96well

Slot temperature profiles

Slot temperature profiles are listed only if a temperature violation was detected.

Time	Time at which the temperature was documented.
Slot x	Temperature of the specific slot. X defines the slot number.

Time span information

Time span information is listed for the different steps of assay setup for each assay that is set up during a run.

Start	Start time of the step in the assay run.
End	End time of the step in the assay run.
Duration (hh:mm:ss)	Time taken for a particular step within the assay run.
Max. allowed duration (hh:mm:ss)	Maximum duration of an assay run. This is defined in the assay definition. If "n/a" is displayed this indicates that there is no maximum duration defined in the assay definition.
Creation of master mix	Time taken from the transfer of the first reagent to the transfer of the last reagent.
Reagents on instrument slot X	Time taken from pressing of **Load** button until transfer of last reagent to master mix.
Run	Total duration of the assay setup run.

Samples loaded	Time taken from pressing of **Load** button until transfer of first sample. **Note**: In case of integrated run, this time span is not shown, since the rack is loaded automatically by the transfer module.
Transfer of master mix	Time from the transfer of the master mix to the first assay position to the last assay position.
Transfer of samples	Time from the transfer of the first sample to the transfer of the last sample.
Waiting time until unloading, rack X	Measured from the last transfer to assay rack X to the removal of the run.

Assay parameter information

The "Assay parameter information" section provides information about those assay parameters that can be modified with the **Process Definition** editor tool of the QIAsymphony Management Console or on the touchscreen. For further details about the **Process Definition** editor tool, see the *QIAsymphony Management Console User Manual*.

APS format version	Version of the *.xml structure of an Assay Parameter Set.
APS version	Assay Parameter Set (APS) version.
Last change	Date that the Assay Parameter Set was last modified (yyyy/mm/dd).
Author	Name or role of the user that created the Assay Parameter Set with the QIAsymphony Management Console. If the author is "Unknown" the QIAsymphony Management Console was not connected to the QIAsymphony SP/AS instruments when the Assay Parameter Set was defined. For more details, refer to the *QIAsymphony Management Console User Manual*.
APS authentic	"Custom file" indicates that the Assay Parameter Set was modified by a user. "QIAGEN file" indicates that this is an original file from QIAGEN and has not been modified by a user.
Number of samples, excluding controls	Number of samples, not including assay controls.
Assay definition	Name of the Assay Definition.
AD version	Version of the Assay Definition.

AD authentic	"Custom file" indicates that the Assay Definition was modified by a user. "QIAGEN file" indicates that this is an original file from QIAGEN and has not been modified by a user.
Cycler group	Name of the cycler group to which the assay definition refers.
Dyes	Dye(s) which were used. If ABI dyes were used, it shows a table within the Dyes section showing the ABI dye information (Detector, Reporter, …). Shows a list of dyes if other dyes were used.
Template volume (µl)	Template volume used for each assay position.
Master mix volume (µl)	Volume of master mix used for each assay position.
Pattern based positioning	"Yes" is only shown if Assay Parameter Set defines a user-defined output pattern.

Assay parameters

Replicates, samples	Number of sample replicates.
Replicates, EC+	Number of positive extraction control replicates.
Replicates, EC–	Number of negative extraction control replicates.
Assay-specific IC in samples	Indicates whether an assay specific internal control is present in samples. "Yes" indicates that there is an assay specific internal control in samples. "No" indicates that there is no assay specific internal control in samples.
Number, assay positive controls	Number of assay positive controls, not for user-defined output patterns.
Replicates, assay positive controls	Number of replicates of assay positive controls, not for user-defined output patterns.
Replicates, assay no template controls (with MM+IC)	Number of replicates of no template controls with master mix and internal control, not for user-defined output patterns.
Replicates, assay no template controls (with MM–IC)	Number of replicates of no template controls with master mix and without internal control, not for user-defined output patterns.
Number, assay standard	Number of assay standards.

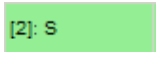
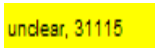
Replicates, assay standard	Number of replicates of assay standards.
Ready-to-use master mix	Indicates whether a ready-to-use master mix was used. “Yes” indicates that a ready-to-use master mix was used. “No” indicates that a ready-to-use master mix was not used.

Detailed run information

This section lists any errors that may have occurred during the assay run. See “Troubleshooting”, Section 10, for more details about errors.

Sample status (AS)

Samples that are processed on the QIAsymphony AS are classified as “valid”, “unclear”, or “invalid”, and are color coded according to their state in the QIAsymphony AS result file.

“valid” (green) 	The sample was processed correctly.
“unclear” (yellow) 	If the run was paused, the samples will be generally classified as “unclear”. Furthermore, “unclear” classification is possible in some cases where insufficient sample volume is available, or the cooling temperature is out of range.
“invalid” (red) 	A serious error occurred during sample processing (e.g., the run stopped and could not be continued). An “invalid” sample cannot be processed by the QIAsymphony AS and cannot be assigned to an Assay Parameter Set.
“Removed”	If the SP batch was removed from an integrated run, related assay points are marked as removed.

Note: While the assay rack remains in the “Assays” drawer and has not been removed, sample states can be viewed in the **Sample View** screen of the **Assay Setup** menu. After the assay rack has been removed, sample states are documented in the result file.

8.11 Loading information file

After pressing **Queue** in the assay setup user interface, the loading information file will be created and can be printed. The loading information file contains detailed information about required reagents, normalization rack, sample rack(s), assay rack(s) and disposable filter-tips for setting up an assay run on the QIAsymphony AS.

The filename is generated automatically with the following nomenclature:

LoadingInformation_YYYYMMDD_HHMMSS_Run ID.htm

LoadingInformation_YYYYMMDD_HHMMSS_Run ID.xml

When downloading a loading information file, the *.htm and *.xml file are available as zipped (*.zip) files on the USB stick. When using the **File Transfer** tool, these files will be automatically unzipped.

8.11.1 Content of loading information file

General information

User	Name of user who defined the run.
Role	Role of the user who assigned the run (i.e., "Operator" or "Supervisor").
Date (yyyy-mm-dd)	Date of run.
Run ID	Run ID generated by the QIAsymphony AS.
QIAsymphony AS SN	Serial number of the QIAsymphony AS.
Loading file	File name of the *.xml loading information file.

Reagent information

Adapter	Name of the required reagent adapter.
Slot	Position of the reagent adapter on the "Eluate and Reagents" drawer. This could be slot 1 or slot 3.
Assay	Name of the Assay Parameter Set.
Assay definition	Name of the Assay Definition.
Reagent	Reagent names as defined in the Assay Definition.
Conc.	Concentration of specific reagents such as assay standards.
Volume (µl), required	Volume of reagent(s) that must be available on the worktable before starting an assay run.
Tube type	Required consumables for holding reagent(s) on the worktable.
Pos.	Position of reagent tube(s) on the reagent adapter.

Additional reagent information

If ready-to-use master mix is used, the following information is also included in the loading information file.

Assay	Name of the Assay Parameter Set for which the reagent is required.
Reagent	Name of the reagent(s).
Volume (µl)	Required volume of master mix.

Sample rack information

Sample rack ID	ID of the sample rack used.
Slot	Position of the sample rack in the "Eluate and Reagents" drawer. This can be slot 1 or 2.
Rack type	Name of the selected rack type.
Category	Name of the category to which the rack type belongs.
Adapter type	Name of the required adapter for the selected rack type.
Rack file status	If no rack file was used, the field contains the value "created". When a rack file was used, the field displays the rack file name and the status of the input rack file's signature ("signed" or "manually created or imported"). In addition, if the user has manually changed the volume of a rack file position ***and*** the state is not "signed", the status text is enhanced with the string ", modified by user on the touch screen".

Normalization rack information

If the assay includes a normalization step, the following information is also included in the loading information file.

Slot	Position of the normalization rack in the "Assays" drawer (i.e., slot 6).
Rack type	Name of the rack type as defined in Assay Parameter Set.
Adapter type	Name of the required adapter for the rack type.

Assay rack information

Assay rack ID	ID of the assay rack used.
Slot	Position of the assay rack in the "Assays" drawer. This can be slot 4, 5 or 6. If a Rotor-Disc is used, this can be slot A or B.
Rack type	Name of the selected rack type.
Adapter type	Name of the required adapter for the selected rack type.
Plasticware	Number of tubes or strip tubes that must be loaded into the defined positions.

Tip information

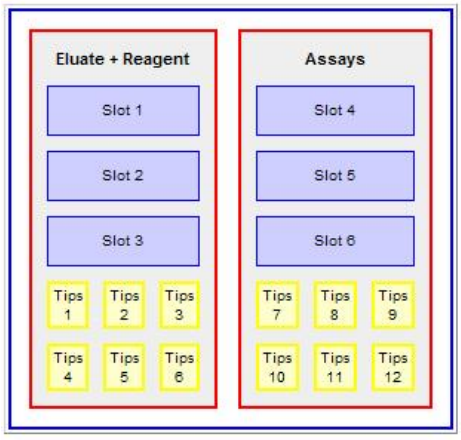
Tip type	Tip types used for the run. These can be 50, 200 and/or 1500 µl.
Required tips	Number of tips of a specific type that are required for a run.

Before starting a run

These things must be done or checked before starting a run.

- Empty tip waste
- Provide tip disposal bag (waste bag)
- Install tip chute

QIAsymphony AS instrument layout



Deleting SP/AS loading information files

The user will be notified when the QIAsymphony SP/AS instruments are short of storage space for loading information files. For more information about deleting files, see Section 8.5.

8.12 Audit trail files

QIAsymphony SP/AS creates an audit trail file where all relevant events and user actions are permanently stored. A unique audit trail file is created for each day. The audit trail file stores all events that create, modify or delete electronic records.

In detail, the following events are stored:

- User login (successful/unsuccessful) and logout
- Every user action that creates, modifies and deletes data, user data, system configuration, reports, archives and result files
- Upload/download of files (e.g., Assay Definitions, Assay Parameter Sets, labware files, etc.) to QIAsymphony
- Execution of maintenance scripts
- Acknowledgement of tasks in the maintenance scheduler
- Start and end of runs

Audit trail files are automatically generated and saved on QIAsymphony SP/AS instruments in *.xml format in the folder directory **/log/AuditTrail**.

The filename is generated automatically with the following nomenclature:

AuditTrail_Instrumentname_YYYYMMDD_HHMMSS.html

AuditTrail_Instrumentname_YYYYMMDD_HHMMSS.xml

When downloading audit trail files, the *.html and *.xml files are available as zipped (*.zip) files on the USB stick.

When using the **File Transfer** tool, these files will be automatically unzipped.

8.12.1 Content of audit trail file

Timestamp	Date and time of event in format yyyy-MM-dd hh:mm:ss.
Action	Description of the relevant event.

UserID	Name of the user during the event.
Device type	QIAsymphony SP or QIAsymphony AS.
Event name	Category of the event (e.g., login event, QMC file transfer event, etc.).

To ensure the integrity/validity of audit trail files, these files are signed automatically with a digital signature. The validity of audit trail file signatures can be checked using the **Checksum Validator** plug-in, which is part of the QIAsymphony Management Console. For detailed information, see the *QIAsymphony Management Console User Manual*.

Instrument Report

Audit trail files are part of the instrument report. When the user generates an instrument report for support purposes, the audit trail files are included in the report.

Deleting audit trail files

A user with the "Supervisor" role can delete audit trail files from the device using the QMC **File Transfer** plug-in.

8.13 Work list files

Work list files are designed to reduce manual editing during run definition. They enable automatic assignment of samples to Assay Control Sets and Assay Parameter Sets. Work list files can be generated by a Laboratory Information Management System (LIMS) or manually by the user. The "Work List Tool" is available for download from **www.qiagen.com/goto/QIAsymphony**. The supported Microsoft Windows and Office Versions are listed on this web site. This Microsoft Excel tool enables work lists to be created quickly and easily. Work lists can be saved in *.xml format, which is compatible with the QIAsymphony SP/AS instruments.

If a sample ID matches a sample ID that is defined in a work list file, the assigned Assay Control Set and/or Assay Parameter Set will be preselected in the software. If a sample ID is associated with more than one work list, and these work list files are associated with incompatible Assay Control Sets, the user can choose which work list to use. See Section 2.11 of *Operating the QIAsymphony SP* for more details about how to do this.

Work list files must be created as tab delimited text files (*.txt or *.csv) in a text editor (e.g., Notepad or Microsoft Excel), or using the "Work List Tool" for Microsoft Excel that is available for download from the **Product Resources** tab at **www.qiagen.com/goto/QIAsymphony**. Before the work lists can be transferred to the QIAsymphony SP/AS instruments they must be converted to

*.xml format. (See the Section "CSV Conversion Tool" in the *QIAsymphony Management Console User Manual* for details about how to do this.)

Work lists that are in *.xml format can be transferred to the QIAsymphony SP/AS instruments using a USB stick or the **File Transfer** tool or **Auto Transfer** tool of the QIAsymphony Management Console (see the *QIAsymphony Management Console User Manual* for more details). Work list files are saved as *.xml files on the QIAsymphony SP/AS instruments in the directory **/data/Worklists**.

Note: Work lists are not automatically deleted. For information about how to delete work list files, see Section 8.5.

Note: Work list files have an expiry date. The time period until expiry can be configured. The expiry date of a work list file can be modified by the "Supervisor" in the **General Process** tab of the **Configuration** menu. See Section 6.2.2 for more details about this.

8.13.1 Work list configuration parameters

A number of work list parameters determine how the QIAsymphony SP/AS instruments handle work lists. These parameters can be modified in the **General Process** and **Process SP 3** tabs of the **Configuration** menu.

Work list parameters that can be configured in the **General Process** tab:

- Number of days for which a work list is valid?
- Allow information for single samples in work lists to be overwritten?

Work list parameters that can be configured in the Process SP 3 tab:

- Allow processing of samples without a work list entry?
- Allow combination of multiple work lists for one batch?
- Allow partial use of work lists?
- Warn, if sample sequence differs from work list entry sequence
- Check sample tube type required by work list?
- Check elution rack ID required by work list?

For more detailed information about modifying these parameters, see Section 6.2.2.

8.13.2 Creating work list files

We recommend creating work list files using the "Work List Tool" that is available for download from the **Product Resources** tab at **www.qiagen.com/goto/QIAsymphony**. This tool enables users to quickly and easily create work list files that can be saved in *.csv or *.xml format.

Work list files can also be created in text editors (e.g., Notepad or Microsoft Excel). A tab delimited text file, created in a text editor, must have the layout in the following table to enable it to be converted into *.xml format. Each row in the table represents one line in the text file. In addition, see the examples (page 141) for the layout of a work list file created in Notepad, and the layout of a work list file created in Microsoft Excel.

The tab delimited text file must have the same field delimiter that is configured in the **CSV Conversion** tool of the QIAsymphony Management Console. The recommended delimiter is ";". This delimiter is also the default delimiter in Microsoft Excel.

Note: Text is case sensitive. Blank lines will be ignored by the conversion. Blanks within a line should only be used if they belong to a name or attribute.

Row 1 FileType;Worklist;1	Specifies the file type. This is required for the **CSV Conversion** tool.
Row 2 Table;Worklist	Specifies the next table. This is required for the **CSV Conversion** tool.
Row 3 SampleID;AssayControlSetName; RequiredSPSampleTubeType; RequiredSPElutionRackID; AssayParameterSetName	Specifies the table headers. Defines what information must be entered into which column. **Note**: The column "RequiredSPSampleTubeType" is only used if the process configuration **Check sample type required by work list?** is set to "Yes". **Note**: The column "RequiredSPElutionRackID" is only used if the process configuration **Check elution rack ID is required by work list?** is set to "Yes".
Row 4 Sample IDs and the associated Assay Control Sets and Assay Parameter Sets are listed.	Specifies which Assay Control Set and Assay Parameter Sets should be used to process a sample. Each row defines one sample.

Note: To use more than one Assay Parameter Set with the same sample ID, an additional row must be added with the sample ID, additional Assay Parameter Set(s) and the Assay Control Set.

Note: For consumables and rack types, the names defined in the software must be used. For a full list of names, visit **www.qiagen.com/goto/QIAsymphony**.

Work list file example created with Notepad

File Edit Format View Help

```
FileType;Worklist;1



Table;Worklist;
SampleID;AssayControlSetName;AssayParameterSetName
1;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
2;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
3;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
4;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
5;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
6;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
7;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
8;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
9;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
10;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
EC+ 1;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
EC- 1;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
11;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
12;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
13;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
14;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
15;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
16;Cellfree200_V3 default IC;OneStep_RT-PCR 96 (45+5) V1
1;;QuantiFast Probe RT-PCR 96 (15+10) V1
2;;QuantiFast Probe RT-PCR 96 (15+10) V1
3;;QuantiFast Probe RT-PCR 96 (15+10) V1
```

Work list file example created with Microsoft Excel

	A	B	C
1	FileType	Worklist	1
2			
3			
4			
5			
6	Table	Worklist	
7	SampleID	AssayControlSetName	AssayParameterSetName
8	1	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
9	2	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
10	3	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
11	4	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
12	5	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
13	6	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
14	7	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
15	8	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
16	9	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
17	10	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
18	EC+1	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
19	EC-1	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
20	11	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
21	12	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
22	13	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
23	14	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
24	15	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
25	16	Cellfree200_V3 default IC	OneStep_RT-PCR 96 (45+5) V1
26	1		QuantiFast Probe RT-PCR 96 (15+10) V1

Note: Be sure to include the specifier "1", highlighted in the red circle. The **CSV Conversion** tool requires this numeric specifier for recognition of the work list file.

Note: If samples specified in a work list are to be processed in a single batch, the Assay Control Sets must be compatible. Only Assay Control Sets that refer to the same protocol and have the same elution volume can be processed within the same batch. The internal control within the Assay Control Sets of a work list may vary (Section 2.13 of *Operating the QIAsymphony SP*). For more information about batch/run definition, see Section 2.11 of the *Operating the QIAsymphony SP*.

8.14 Rack files

Rack files contain information about sample racks, elution racks or assay racks (i.e., rack type, rack ID, sample ID, sample type, sample volumes, assay volumes). Rack files can be generated automatically by the QIAsymphony SP/AS instruments (e.g., for elution racks processed on the QIAsymphony SP). The unique rack ID of a sample or assay rack enables the QIAsymphony SP/AS instruments to identify the corresponding rack file. When the rack ID is entered, the QIAsymphony SP/AS instruments scan the rack file directory and select the correct rack file. Only one rack file can be assigned to each slot per assay run.

Existing rack files are updated during an assay run. For example, if the original sample volume was 200 µl and 50 µl was used during an assay run, the rack file is updated and will inform the user that only 150 µl sample volume remains.

Rack files must be created as tab delimited text files (*.txt or *.csv) using a text editor (e.g., Notepad or Microsoft Excel). Before the rack files can be transferred to the QIAsymphony SP/AS they must be converted to *.xml format. (See the Section "CSV Conversion Tool" in the *QIAsymphony Management Console User Manual* for details about how to do this.)

Rack files that are in *.xml format can be transferred to the QIAsymphony SP/AS instruments using a USB stick or the **File Transfer** tool of the QIAsymphony Management Console.

Note: Rack files can be used several times. They have no expiry date.

Note: Rack files can be downloaded from the QIAsymphony SP/AS as *.xml files and can be converted into *.csv format using the **CSV Conversion** tool of the QIAsymphony Management Console.

Note: Rack files are not deleted automatically, except those, which do not contain any rack position information. For information about how to delete rack files, see Section 8.5.

8.14.1 Creating rack files manually

A tab delimited text file, created using a text editor (e.g., Notepad or Microsoft Excel), must have the layout in the following table to enable it to be converted into *.xml format. Each row in the table represents one line in the text file. In addition, see the examples (page 144) for the layout of a rack file created in Notepad, and the layout of a rack file created in Microsoft Excel.

The tab delimited text file must have the same field delimiter that is configured in the **CSV Conversion** tool of the QIAsymphony Management Console. The recommended delimiter is ";". This delimiter is also the default delimiter in Microsoft Excel.

Note: Text is case sensitive. Blank lines will be ignored by the conversion. Blanks within a line should only be used if they belong to a name or attribute.

Row 1 Filetype;RackFile;1	Specifies the file name. This is required for the **CSV Conversion** tool.
Row 2 Table;RackInfo	Specifies the next table. This is required for the **CSV Conversion** tool.
Row 3 RackID;RackLabware;DateTime; Usage;ReadyForAS;	Specifies the table headers. Defines what information must be entered into which column.
Row 4 RackID	Specifies the rack ID and the rack type.
Row 5 Table;RackPosition	Specifies the next table.
Row 6 SampleID:PositionName;PositionIndex; Labware;TotalVolume;InternalControlName; State;SampleType;Concentration	Specifies the headlines of the table. Concentration is optional and can be omitted.
Row 7 Lists the sample IDs and information associated with position, consumables and volume, etc.	

Note: For consumables and rack types, the names defined in the software must be used. For a full list of names, visit **www.qiagen.com/goto/QIAsymphony**.

To generate a rack file, you must enter some mandatory information into the *.csv file, using a text editor (e.g., Notepad or Microsoft Excel). See the example of a rack file created with Microsoft

Excel for the mandatory entries (below). The empty rows and columns will be filled by the software when the rack file is used on the instruments.

The "RackId" is important. The ID listed here is the name of the rack file displayed on the touchscreen. Labware listed under "RackLabware" must have the correct name, as written in the software. For the QIAsymphony AS, "Eluate" must be written under "Usage". For the QIAsymphony SP, "Sample" must be written under "Usage".

In addition, information about sample ID, position, volume, sample state and sample type is required. The "PositionName" must have the format "letter:number". The sample state must be "valid". The "SampleType" can be "Sample", "ExtractionControl_Pos", or "ExtractionControl_Neg".

Rack file example created with Notepad

File Edit Format View Help

```
FileType;RackFile;1;;;;;

Table;RackInfo;;;;;;
RackId;RackLabware;DateTime;Usage;;;
Example;QIA#19588 *EMTR;20111010 11:11:11;Eluate;;;

Table;RackPosition;;;;;;
SampleID;PositionName;PositionIndex;Labware;TotalVolume;InternalControlName;State;SampleType
1;A:1;0;QIA#19588 *EMTR;200.0;;valid;Sample
2;B:1;1;QIA#19588 *EMTR;200.0;;valid;Sample
3;C:1;2;QIA#19588 *EMTR;200.0;;valid;Sample
4;D:1;3;QIA#19588 *EMTR;200.0;;valid;Sample
5;E:1;4;QIA#19588 *EMTR;200.0;;valid;Sample
6;F:1;5;QIA#19588 *EMTR;200.0;;valid;Sample
7;G:1;6;QIA#19588 *EMTR;200.0;;valid;Sample
8;H:1;7;QIA#19588 *EMTR;200.0;;valid;Sample
9;A:2;8;QIA#19588 *EMTR;200.0;;valid;Sample
10;B:2;9;QIA#19588 *EMTR;200.0;;valid;Sample
11;C:2;10;QIA#19588 *EMTR;200.0;;valid;Sample
12;D:2;11;QIA#19588 *EMTR;200.0;;valid;Sample
13;E:2;12;QIA#19588 *EMTR;200.0;;valid;Sample
14;F:2;13;QIA#19588 *EMTR;200.0;;valid;Sample
15;G:2;14;QIA#19588 *EMTR;200.0;;valid;Sample
16;H:2;15;QIA#19588 *EMTR;200.0;;valid;Sample
17;A:3;16;QIA#19588 *EMTR;200.0;;valid;Sample
18;B:3;17;QIA#19588 *EMTR;200.0;;valid;Sample
19;C:3;18;QIA#19588 *EMTR;200.0;;valid;Sample
20;D:3;19;QIA#19588 *EMTR;200.0;;valid;Sample
21;E:3;20;QIA#19588 *EMTR;200.0;;valid;Sample
22;F:3;21;QIA#19588 *EMTR;200.0;;valid;Sample
EC+ 1;A:9;64;QIA#19588 *EMTR;200.0;;valid;ExtractionControl_Pos
EC+ 2;B:9;65;QIA#19588 *EMTR;200.0;;valid;ExtractionControl_Pos
EC- 1;C:9;66;QIA#19588 *EMTR;200.0;;valid;ExtractionControl_Neg
EC- 2;D:9;67;QIA#19588 *EMTR;200.0;;valid;ExtractionControl_Neg
```

Rack file example created with Microsoft Excel

	A	B	C	D	E	F	G	H
1	FileType	RackFile	1					
2								
3	Table	RackInfo						
4	RackId	RackLabware	DateTime	Usage				
5	Example	QIA#19588 *EMTR	20111010 11:11:11	Eluate				
6								
7	Table	RackPosition						
8	SampleID	PositionName	PositionIndex	Labware	TotalVolume	InternalControlName	State	SampleType
9	1	A:1	0	QIA#19588 *EMTR	200.0		valid	Sample
10	2	B:1	1	QIA#19588 *EMTR	200.0		valid	Sample
11	3	C:1	2	QIA#19588 *EMTR	200.0		valid	Sample
12	4	D:1	3	QIA#19588 *EMTR	200.0		valid	Sample
13	5	E:1	4	QIA#19588 *EMTR	200.0		valid	Sample
14	6	F:1	5	QIA#19588 *EMTR	200.0		valid	Sample
15	7	G:1	6	QIA#19588 *EMTR	200.0		valid	Sample
16	8	H:1	7	QIA#19588 *EMTR	200.0		valid	Sample
17	9	A:2	8	QIA#19588 *EMTR	200.0		valid	Sample

8.15 Cycler files

If the assigned assay racks are compatible with selected PCR cyclers, a cycler file will be created after each assay run. The cycler file contains information (i.e., sample IDs, sample positions, concentration and units for assay standards) that can be exported to the PCR cycler.

Cycler files are available for Rotor-Gene Q instruments and ABI PRISM cyclers. If one of these cycler files does not meet your requirements, or for further information about the maintained ABI cycler models, please contact QIAGEN Technical Services.

8.15.1 Rotor-Gene Q cycler file

The Rotor-Gene Q cycler file has the following layout.

QIAsymphony sample type	**Rotor-Gene Q sample type**	**Color in column C of the Rotor-Gene Q sample settings**
Sample (S)	Unknown	 (dark blue)
Extraction control negative (EC-)	None	(light blue)
Extraction control positive (EC+)	PosControl	 (blue)
Assay standard (Std)	Standard	 (red)
No template control (NTC)	NTC	(light blue)
Assay control (AC)		(light blue)

8.15.2 ABI cycler file

To create a cycler file for ABI cyclers, the dye list must have the layout described in Section 13.4.2 in the *QIAsymphony Management Console User Manual*.

For further information about the maintained ABI cycler models, please contact QIAGEN Technical Services.

8.15.3 ABI-HID cycler file

To create a cycler file for ABI-HID cyclers, the dye list must have the layout described in Section 13.4.2 in the *QIAsymphony Management Console User Manual*.

For further information about the maintained ABI-HID cycler models please contact QIAGEN Technical Services.

8.16 Instrument report files

Instrument report files are password-protected *.zip files that are only intended for QIAGEN Technical Services to help with troubleshooting.

You may be requested by QIAGEN Technical Services to create an instrument report file in the **Instrument Report** menu. In this case, refer to Section 10.3.2 in "Troubleshooting" for more details. For more details about information that can be found in the **Instrument Report** menu, see Section 3.14 in *Operating the QIAsymphony SP*.

8.17 Log files

Log files are data files that contain general information about the QIAsymphony SP/AS, user interactions and details about the protocol being run. Information in the log files may be required for troubleshooting and for QIAGEN Technical Services.

The log files are written in plain text and can be displayed using a text editor (e.g., Notepad).

To download a log file to the USB stick, see Section 8.3.2, page 102. Log files can also be downloaded using the QIAsymphony Management Console. See the *QIAsymphony Management Console User Manual* for more information.

8.18 Concentration data file

The concentration data file contains a concentration value for each sample ID. This data file is only relevant if a QIAsymphony AS system is connected to the QIAsymphony SP. The concentration data file should be used as a basis if the user wants to apply a normalization step (refer to Section 2.3.3, "Workflow for independent run with normalization", in *Operating the QIAsymphony AS* for further information).

The raw data format is generated by an external quantification device (cycler). The file format used by the QIAsymphony AS is a predefined *.xml format. Use the **CSV Conversion** tool of the QIAsymphony Management Console to convert the concentration data from *.csv to *.xml format. The concentration data can be created as tab delimited text files (*.txt or *.csv) in a text editor (e.g., Notepad or Microsoft Excel).

Alternatively, it is possible to write the concentration data directly to rack files and to upload the rack file (refer to Section 8.14 of *Operating the QIAsymphony AS* for further information about the import of rack file data).

The concentration data file can be uploaded to the QIAsymphony AS via USB stick or by using the QIAsymphony Management Console. After importing the concentration data file and writing the concentration data into the rack file, the QIAsymphony AS automatically deletes the concentration data file. If all concentration data is already defined in the rack file before uploading the rack file on the QIAsymphony AS, there is no need to create and use a concentration data file.

We recommend creating concentration data files using the "Concentration Data Tool". This tool can be downloaded from the **Product Resources** tab at **www.qiagen.com/goto/QIAsymphony**. This tool enables users to quickly and easily create concentration files that can be saved in *.csv or *.xml format.

Concentration data files can also be created in text editors (e.g., Notepad or Microsoft Excel). A semicolon delimited text file created in a text editor must have the following layout to enable it to be converted into *.xml format. Each row in the table represents one line in the text file.

```
1  FileType;ConcentrationData;1
2
3
4  Table;ConcentrationData;
5  SampleID;Concentration
6  1001;200
7  1002;100
```

Example of a concentration data file created with a text editor.

9 Maintenance

The table below describes the types and frequencies of maintenance required and the personnel required to carry out the maintenance. Following these procedures ensures optimum performance of your QIAsymphony SP/AS instruments. A maintenance scheduler is implemented in the software which provides reminders when maintenance is due (see Section 9.6, for details).

Important: If liquid is spilled on the QIAsymphony SP/AS worktables, wipe it away as soon as the run has finished in accordance with the required safety regulations. Do not allow the liquid to dry.

Note: Optional maintenance is not mandatory for instrument function, but is highly recommended to reduce risk of contamination.

Task	Personnel	Personnel
Regular maintenance	At the end of each run	Laboratory technicians or equivalent
Daily maintenance	At the end of each day, after the regular maintenance	Laboratory technicians or equivalent
Weekly maintenance	Once per week, after the regular and daily maintenance	Laboratory technicians or equivalent
Annual maintenance and servicing	Once per year	QIAGEN Field Service Specialists only

9.1 Cleaning agents

9.1.1 Disinfectants and detergents

The following disinfectants and detergents are recommended for cleaning the QIAsymphony SP/AS instruments:

- Mikrozid® Liquid (Schülke & Mayr GmbH; **www.schuelke.com**) — ethanol-based disinfectant for spraying onto items that have been removed from the QIAsymphony SP/AS worktables
- Mikrozid Wipes (Schülke & Mayr GmbH; **www.schuelke.com**) — moistened with ethanol-based disinfectant for wiping surfaces of the QIAsymphony SP/AS
- Mikrozid Sensitive Liquid (Schülke & Mayr GmbH; **www.schuelke.com**) — quaternary ammonium salt based disinfectant for alcohol-sensitive surfaces (consists of 0.26 g quaternary ammonium compounds, benzyl-C12-C16-alkyldimethyl, chlorides; 0.26 g Didecyldimethylammonium chloride and 0.26 g quaternary ammonium compounds, benzyl-C12-C14-alkyl[(ethylphenyl)methyl]dimethyl, chlorides per 100 g Mikrozid Sensitive Liquid)

9.1.2 Removal of RNase contamination

- 5 PRIME RNaseKiller (5 PRIME, cat. no 2500080) — for cleaning surfaces and submerging worktable items
- 0.1 M NaOH — as an alternative to 5 PRIME RNaseKiller

9.1.3 Removal of nucleic acid contamination (DNA and RNA)

- DNA-ExitusPlus™ IF (AppliChem, cat. no. A7409,0100; indicator-free variant of DNA-ExitusPlus) — for cleaning surfaces and submerging worktable items

Important: Do not use alcohol or alcohol-based disinfectants to clean the QIAsymphony SP/AS hoods or side panels. Exposure of the QIAsymphony SP/AS hoods and side panels to alcohol or alcohol-based disinfectants will cause surface cracking. Clean the QIAsymphony SP/AS hoods and side panels with distilled water or Mikrozid Sensitive Liquid only.

Europe

Gigasept® Instru AF (Schülke & Mayr GmbH; **www.schuelke.com**) — disinfectant for submerging worktable items (consists of 14 g cocospropylene-diamine-guanidine diacetate, 35 g phenoxypropanols, and 2.5 g benzalkonium chloride per 100 g Gigasept Instru AF , with anticorrosion components, fragrance, and 15–30% nonionic surfactants).

USA

DECON-QUAT® 100 (Veltek Associates, Inc.; **www.sterile.com**) — quaternary ammonium salt based disinfectant concentrate for submerging worktable items (contains 5% alkyldimethylbenzylammonium chloride and 5% alkyldimethylethylbenzylammonium chloride).

Note: If you want to use disinfectants different from those recommended, ensure that their compositions are similar to those described above. A suitable alternative to Mikrozid Liquid is Incidin® Liquid (Ecolab; **www.ecolab.com**).

CAUTION

Damage to the instrument(s)
Do not use bleach, solvents, or reagents containing acids, alkalis, or abrasives to clean QIAsymphony SP/AS instruments.

CAUTION

Damage to the instrument(s)

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAsymphony SP/AS instruments. Spray bottles should be used only to clean items that have been removed from the worktables.

CAUTION

Damage to the instrument(s)

After wiping the drawers, the perforated metal plate and lysis station with paper towels, make sure that no bits of paper towel remain. Pieces of paper towel remaining on the worktable could lead to a worktable collision.

Note: If solvents or saline, acidic or alkaline solutions are spilled on the QIAsymphony SP/AS instruments, wipe them away immediately.

CAUTION

Damage to the instrument hood(s) or side panels

Never clean the instrument hood(s) or side panels with alcohol or alcohol-based solutions. Alcohol will damage the hood and the side panels. To clean the hood(s) and side panels, use distilled water. .

Important: Do not use alcohol or alcohol-based reagents to clean the QIAsymphony hood(s) or side-panels.

WARNING/ CAUTION

Risk of electric shock

Do not open any panels on the QIAsymphony SP/AS instruments. Only perform maintenance as described in this user manual.

Disconnect the line power cord from the power outlet before servicing.

9.2 Servicing

The QIAsymphony SP/AS instruments are supplied with a 1 year warranty that includes all repairs due to mechanical breakdown. Worldwide, the maximum time for response to a breakdown is 5 days. Application development, software upgrades, worktable accessories and disposable items are not included in the warranty.

QIAGEN offers comprehensive Service Support Agreements, including IQ/OQ, Warranty Extensions, Full Cover Support Agreements and Preventive Maintenance Agreements. Service Support Agreements maximize productivity and ensure high performance from your instrument. In addition, service histories are fully documented and all parts are certified and guaranteed.

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

9.3 Regular maintenance procedure

Regular maintenance is required after each run on the QIAsymphony SP/AS. A separate maintenance routine should be performed for the QIAsymphony SP and QIAsymphony AS.

Important: Before running a service protocol from the **Maintenance SP** or **Maintenance AS** menu, ensure that the QIAsymphony SP/AS hoods are closed.

WARNING/ CAUTION

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

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.

9.3.1 Regular maintenance procedure for the QIAsymphony SP

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

1. *Remove eluates*: Remove eluates from the "Eluate" drawer.
2. *Download the result file(s)(optional)*: As an optional step, download the result file(s) and ensure that the files have been backed up.
3. *Remove used sample tubes/plates*: Remove used sample tubes/plates from the "Sample" drawer and discard according to your local safety regulations.
4. *Remove reagent cartridges*: Remove reagent cartridges from the "Reagents and Consumables" drawer.

   Seal partially used reagent cartridges and store according to the instructions in the handbook of the QIAsymphony kit you are using. Discard used reagent cartridges according to your local safety and environmental regulations.
5. *Replace the tip disposal bag*: Replace the tip disposal bag before starting the next run.
6. *Discard unit boxes*: Close unit boxes filled with waste plasticware and discard according to your local safety regulations.
7. *Check the magnetic-head guards*: Check the magnetic-head guards and clean if required.
8. *UV decontamination* (optional): Perform UV decontamination of the worktable (optional).

Note: When using the QIAsymphony Cabinet SP/AS, the waste bin should be emptied to avoid contamination inside the cabinet.

For detailed information, refer to the *QIAsymphony Cabinet SP/AS User Manual*.

If required, clean the magnetic-head guards before starting the next protocol run. Proceed as follows:

9. Open the **Maintenance SP** menu and run the service protocol **Magnetic head guards**. Gently raise the catches to release the magnetic-head guards.
10. Wipe the magnetic-head guards with ethanol-based disinfectant (e.g., Mikrozid), and incubate as appropriate.
11. Wipe with a lint-free cloth moistened with water and wipe dry with paper towels. Replace the magnetic-head guards.
12. Open the **Maintenance SP** menu and run the service protocol **Open magnetic head guards**.

CAUTION **Damage to the instrument(s)**

Make sure to install the magnetic-head guards before operating the QIAsymphony SP.

9.3.2 Regular maintenance procedure for the QIAsymphony AS (integrated and independent)

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

1. *Remove assay run*: Remove the assay run by pressing the **Remove** button.
2. *Remove assays*: Remove assays from the "Assays" drawer.

   If desired, transfer assays directly to the PCR cycler.
3. *Download the result file(s)* (optional): Download the result file and, if available, the cycler file. Ensure that these files have been backed up.
4. *Remove used sample tubes/plates*: Remove used sample tubes/plates from the "Eluate and Reagents" drawer. Either store safely or discard according to your local safety regulations.
5. *Remove reagent tubes and bottles*: Remove reagent tubes and bottles from the "Eluate and Reagents" drawer. Discard according to your local safety regulations.
6. *Discard empty tip racks*.
7. *Replace the tip disposal bag*: Replace the tip disposal bag before starting the next assay run.
8. *UV decontamination* (optional): Perform UV decontamination of the worktable.

Note: Do not refill used tip racks.

Note: When using the QIAsymphony Cabinet AS, check if the tip disposal bag is full. The waste bin should be emptied to avoid contamination inside the cabinet.

For detailed information, refer to the *QIAsymphony Cabinet SP/AS User Guide*.

9.4 Daily maintenance (SP/AS)

After performing the last run of the day, perform the regular maintenance procedure and, in addition, the daily maintenance procedure.

Note: Before running a service protocol from the **Maintenance** menu, ensure that the QIAsymphony SP/AS hoods are closed.

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 **Toxic fumes**

Do not use bleach to clean or disinfect QIAsymphony SP/AS instruments. Bleach in contact with salts from the buffers can produce toxic fumes.

CAUTION **Risk of fire**

When cleaning QIAsymphony SP/AS instruments with alcohol-based disinfectant, leave the instrument hoods open to allow flammable vapors to disperse.
Only clean QIAsymphony SP/AS instruments with alcohol-based disinfectant when worktable components have cooled down.

CAUTION **Damage to the instrument(s)**

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the QIAsymphony SP/AS instruments. Spray bottles should be used only to clean items that have been removed from the worktables.

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

9.4.1 Pipetting system tip guards (SP/AS)

Clean pipetting system tip guards

1. Open the **Tools** screen and press **Maintenance SP** or **Maintenance AS.**
2. Move the robotic arm to the cleaning position by pressing **Tip guards**.
3. Remove all 4 tip guards by pushing each tip guard upward until it clicks out of place and can be removed.
4. Soak in a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) for at least 15 min.
5. Rinse with water and wipe dry with paper towels.

CAUTION **Damage to the instrument(s)**

Make sure to install the tip guards correctly before operating QIAsymphony SP/AS instruments.

9.4.2 Tip disposal chute

Note: If using the QIAsymphony Cabinet SP/AS, refer to the instructions provided in the "Maintenance" section of the *QIAsymphony Cabinet SP/AS User Guide*.

QIAsymphony SP

Clean tip disposal chute

1. Remove the tip disposal chute from the "Waste" drawer.
2. Soak in a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) for at least 15 minutes.
3. Rinse with water and wipe dry with paper towels.

QIAsymphony AS

Clean tip disposal chute

1. Open the **Tools** screen and press **Maintenance AS**.
2. Press **Robotic arm left** to move the robotic arm to the left.
3. Open the QIAsymphony AS hood.
4. Remove the tip disposal chute from the worktable.
5. Soak in a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) for at least 15 minutes.
6. Rinse with water and wipe dry with paper towels.

Note: Residual liquid from the tip disposal chute may drip.

9.4.3 Drawers and lysis station (SP)

Clean drawer and lysis station

1. Remove all removable objects (tube carriers, adapters, inserts, liquid waste station/tip park station, tip disposal chute, liquid waste bottle, waste bag holder, reagent box holder) from the drawers.
2. Wipe the drawers, the removed objects, and the lysis station with ethanol-based disinfectant (e.g., Mikrozid) and incubate as appropriate. Then wipe with a cloth moistened with water and dry with paper towels. Return the objects to the drawers.
3. Clean the top plate of the piercing device.
4. Optional: Clean the removed objects by soaking them in a glyoxal and quaternary ammonium salt-based disinfectant (e.g., Gigasept Instru AF) according to the manufacturer's

instructions. After incubation according to manufacturer's instructions, rinse the removed objects thoroughly with water.

Note: There are spikes below the piercing device in the "Reagents and Consumables" drawer that ensure that the reagent cartridge is correctly positioned. Take care when cleaning the "Reagents and Consumables" drawer.

9.4.4 Drawers (AS)

Clean the drawers

1. Remove all removable objects (tubes/plates, adapters) from the drawers.
2. Wipe the drawers and the removed adapters with quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) and incubate as appropriate. Then wipe with a cloth moistened with water and dry with paper towels. Return the objects to the drawers.

Clean adapters (optional)

1. Clean the removed adapters by soaking them in a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) according to the manufacturer's instructions. After incubation according to manufacturer's instructions, rinse the removed objects thoroughly with water.
2. We recommend storing the adapters at 4°C, so that they will be precooled and ready for use in the next assay run.

9.4.5 Conveyor base tray (SP) — optional

Clean the conveyor base tray (optional)

1. Carefully remove the conveyor base tray from below the magnetic head.
2. Soak in a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) for at least 15 minutes.
3. Rinse with water and wipe dry with paper towels.

Note: The tray can also be autoclaved at 121°C for 20 minutes.

9.4.6 Robotic gripper (SP)

Clean the robotic gripper

1. Wipe the robotic gripper with a lint-free cloth moistened with ethanol-based disinfectant (e.g., Mikrozid). Incubate as appropriate.
2. Wipe with a lint-free cloth moistened with water and dry with paper towels.

   Note: Only wipe the weight. Do not wipe the rods otherwise the ball mechanism may become jammed.

9.4.7 Liquid waste container (SP)

Clean the liquid waste container

1. Remove the liquid waste container from the "Waste" drawer.
2. Empty the liquid waste container. Dispose of the liquid waste according to your local safety regulations.
3. Clean the liquid waste container with a glyoxal and quaternary ammonium salt based disinfectant (e.g., Gigasept Instru AF) according to the manufacturer's instructions.
4. Rinse the liquid waste container with deionized water.
5. Replace the liquid waste container in the "Waste" drawer.

9.5 Weekly maintenance (SP/AS)

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

9.5.1 File management

Download files (SP/AS)

1. Download the result file(s) (for QIAsymphony SP and QIAsymphony AS) and loading information files (QIAsymphony AS only) as described in Section 8.3 and ensure that the files are backed up.
2. Delete result files older than 10 days (default setting) as described in Section 8.5.

9.5.2 Touchscreen

Clean the touchscreen

Wipe the touchscreen with ethanol-based disinfectant (e.g., Mikrozid). Then wipe with a cloth moistened with water and dry with paper towels.

9.5.3 QIAsymphony SP/AS hoods

Clean the hoods

To clean the hoods of QIAsymphony SP/AS instruments, wipe the surface with a soft lint-free cloth moistened with deionized water, or use wipes soaked with Mikrozid Sensitive Liquid. Then wipe dry with a dry soft lint-free cloth or paper towel.

Note: Do not use ethanol-based disinfectant; use distilled water or Mikrozid Sensitive Liquid only.

9.5.4 Tube carriers (SP)

Clean the tube carrier and inserts

1. Remove tube carriers, adapters, and inserts and soak them in disinfectant (e.g., Gigasept Instru AF). Incubate for at least 15 minutes, then rinse with water and dry with paper towels.
2. Check the condition of the bar code labels and ensure that they are not scratched.

9.5.5 Optical sensor (SP)

Clean the optical sensor

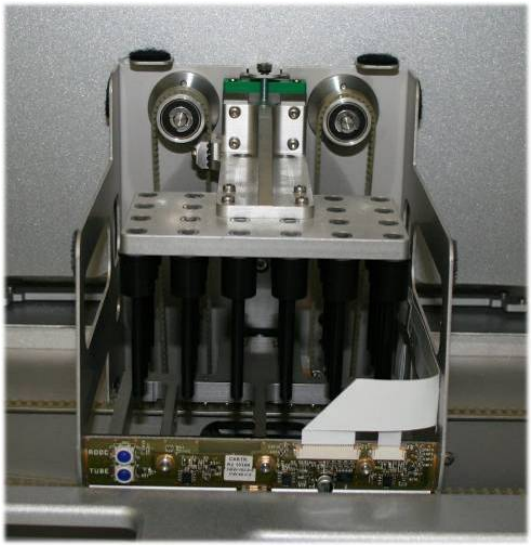
Wipe the window of the optical sensor with a lint-free cloth.

Moisten the cloth with 70% ethanol if required.

9.5.6 Magnetic head (SP)

Clean the magnetic head

1. Remove the cover from the magnetic head.
2. Move the magnetic head up and carefully push the rod cover holder down.



3. Wipe the exterior of the magnetic head with a lint-free cloth moistened with ethanol-based disinfectant (e.g., Mikrozid), and incubate as appropriate.
4. Wipe with a lint-free cloth moistened with water and dry with paper towels.

Note: Insert the cloth from the sides of the magnetic head in order not to damage the cable and electronic board at the front.

9.5.7 Liquid waste container (SP)

Clean the liquid waste container

1. Remove the liquid waste container from the "Waste" drawer.
2. Empty the liquid waste container. Dispose of the liquid waste according to your local safety regulations.
3. Disinfect the liquid waste container using ethanol-based disinfectant (e.g., Mikrozid).
4. Replace the liquid waste container in the "Waste" drawer.

9.5.8 Adapters (AS)

Clean adapters

1. Remove the adapters from the "Eluate and Reagents" and "Assays" drawers and soak them in disinfectant (e.g., Gigasept Instru AF). Incubate for at least 15 minutes.
2. Rinse with water and dry with paper towels.
3. Check the condition of the bar code labels and ensure that they are not scratched.

9.6 Maintenance scheduler

The maintenance scheduler assists the user with managing all maintenance tasks. It reminds the user of tasks that are due, provides an overview of the maintenance schedule and keeps record of the maintenance data.

Maintenance tasks can be divided into two categories: regular maintenance and time-based maintenance.

Regular maintenance procedures are event-driven tasks that must be performed after the respective event has finished (e.g., regular maintenance SP and/or AS, regular maintenance integrated run).

Time-based maintenance procedures are time-dependent tasks that have a fixed time schedule (e.g., daily, weekly, and monthly QIAsymphony SP/AS tasks, as well as annual maintenance). Annual maintenance can only be confirmed by QIAGEN Technical Services. All maintenance tasks from QIAGEN are classified as mandatory.

Note: It is not possible to postpone or modify a mandatory maintenance task. When a mandatory task is due, the task must be performed. Depending on the Application Process files, it is either possible to use the QIAsymphony without flagging, with flagging or the QIAsymphony denies to start a run.

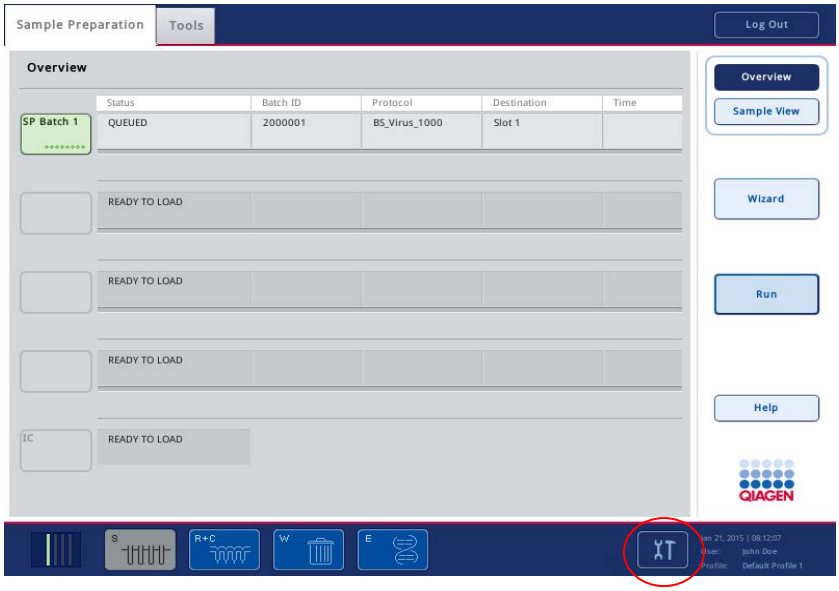
The maintenance scheduler is accessed using the **Tools** icon in the status bar (see image below). The **Tools** icon color indicates the status:

No pending maintenance tasks are due.

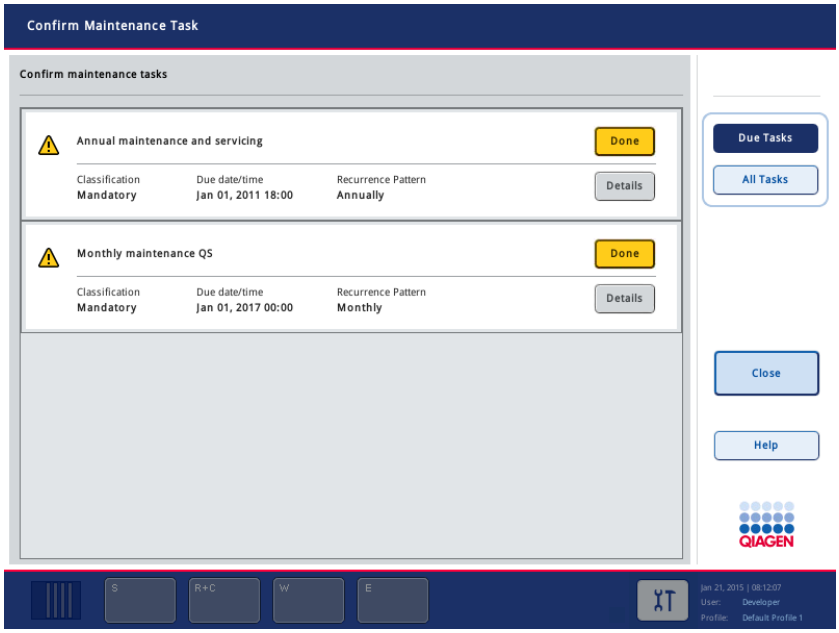
A pending maintenance task is due or overdue during a run. In this case, the **Maintenance Tasks** list dialog opens in read-only mode.

The **Maintenance Tasks** list dialog is open.

One or more maintenance tasks are due.



All maintenance tasks are listed in the **Confirm Maintenance Task** screen with their title, classification, due date/time and their recurrence pattern. Scheduled maintenance must be confirmed upon task completion by pressing the **Done** button. A confirmation can be canceled by pressing the **Undo** button. The **Details** button opens a message box listing all maintenance steps belonging to a maintenance task. The maintenance tasks are ordered with event-driven tasks listed first at the top, followed by date-driven tasks that are sorted according to their due date.



Planned: The maintenance task is created but has not reached the prewarning time, or is due.

Due: The maintenance task has reached the prewarning time.

Overdue: The maintenance task is due.

Confirmed: The user has confirmed the maintenance task.

9.6.1 Confirming a maintenance task

To confirm a maintenance task:

1. Press the yellow flashing **Tools** icon in the status bar.
2. After performing the respective maintenance press **Done**.

   The selected task is confirmed, the background color changes to grey, the icon changes to an **OK** symbol and the confirmation date is displayed.

   If the task is time-based, the next due date is scheduled.

Note: If you unintentionally confirm a maintenance task, press "Undo" to revert the task state to unconfirmed.

9.6.2 Displaying detailed steps for a maintenance task

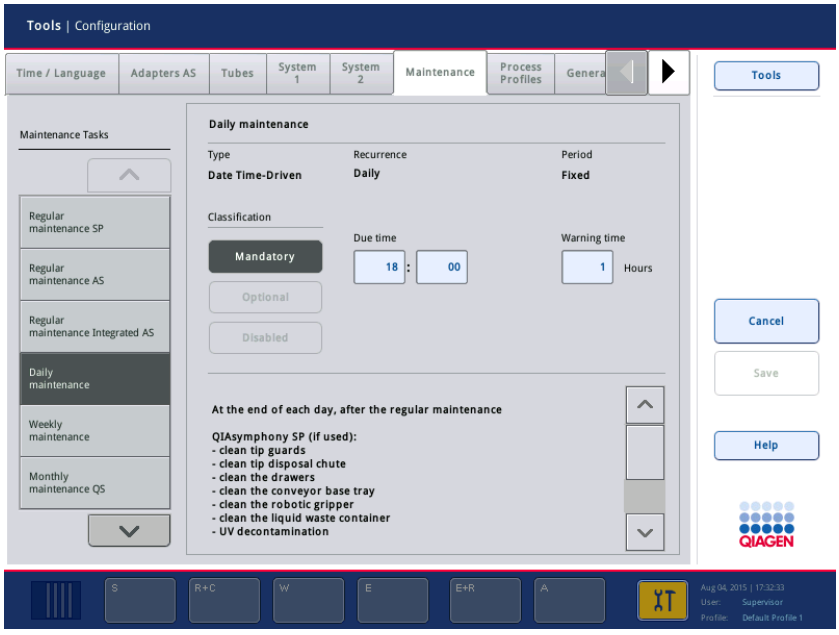
To display all the required steps for a specific maintenance task, press the **Tools** icon and then press **Details** for a specific task. A message box is shown with a description of all necessary maintenance steps.

9.6.3 Postponing a maintenance task

Time-based maintenance tasks can be postponed once if (for example) you are working on a time-consuming batch and cannot start the maintenance immediately. For a postponed task the due time is set to 23:59 of the current day. The user must confirm the task the next day but cannot postpone the task a second time. To postpone a task, press **Postpone**.

9.6.4 Configuring the maintenance settings

The “Supervisor” can configure the maintenance settings in the **Tools/Configuration** menu. Only the due time and warning time can be modified.



Different maintenance tasks can be selected in the **Maintenance Tasks** list:

- For **Daily maintenance**, it is possible to select the **Due time** and **Warning time**.
- For **Weekly maintenance**, in addition to the **Due time** and **Warning time**, the weekday when the maintenance should occur can be selected.
- For **Monthly maintenance**, the **Due time**, **Warning time** and **Day of month** can be selected.
- The **Annual maintenance and servicing** can only be initially set after the software update performed by the “Supervisor”. The **Due time**, **Warning time** and **Day**, **Month** and **Year** of the last **Annual service visit** must be set. All following **Annual maintenance and servicing tasks** can only be confirmed by QIAGEN Technical Services.

9.7 UV decontamination of the worktable

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

UV decontamination

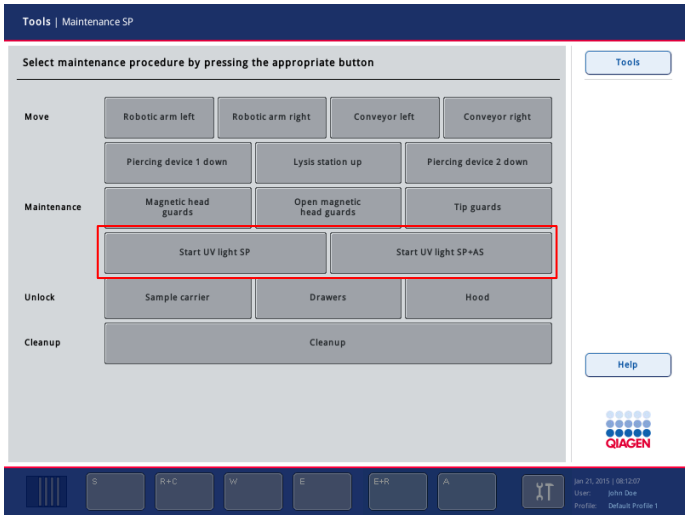
UV decontamination should be performed daily. It helps to reduce possible pathogen contamination of the QIAsymphony SP/AS worktables. The efficiency of inactivation has to be determined for each specific organism and depends, for example, on layer thickness and sample type. QIAGEN cannot guarantee complete eradication of specific pathogens. UV decontamination of the QIAsymphony SP and AS can be started either sequentially or in parallel.

Note: Before starting the UV irradiation procedure, ensure that all samples, eluates, reagents, consumables and assays have been removed from the worktable. Close all drawers and the hoods. Once the UV irradiation procedure has been started, it will continue for the defined period of time, or until interrupted by the user.

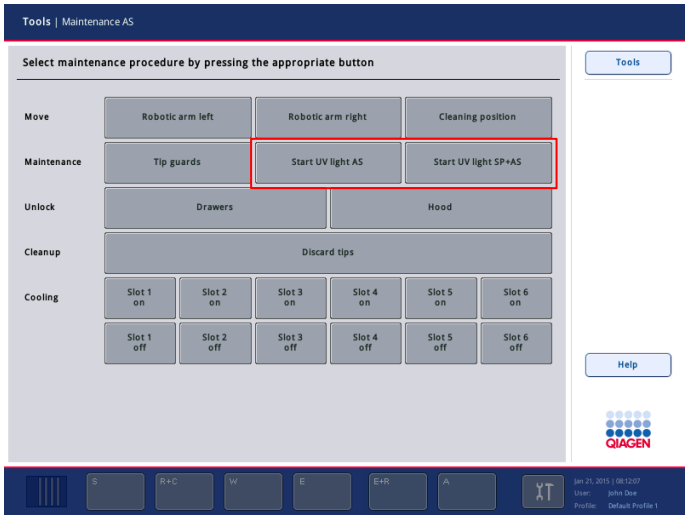
We recommend using the following formula to calculate the duration of decontamination in minutes:

$$\text{Dose (mW x s/cm}^2\text{) x 10.44 = Duration (seconds)}$$

1. Remove all removable objects (tubes/plates, adapters, consumables, tip disposal chute) except for the liquid waste bottle from the drawers.
2. Enter the **Maintenance** screen. Press **Tools**, then press **Maintenance SP** or **Maintenance AS** in the **Tools** screen.
3. To start the UV cleanup procedure for QIAsymphony SP, press the **Start UV light SP** button. To start the UV cleanup procedure for QIAsymphony AS, press the **Start UV light AS** button. To start the UV cleanup procedure for QIAsymphony SP and AS press the **Start UV light SP+AS** button.



Maintenance SP screen.



Maintenance AS screen.

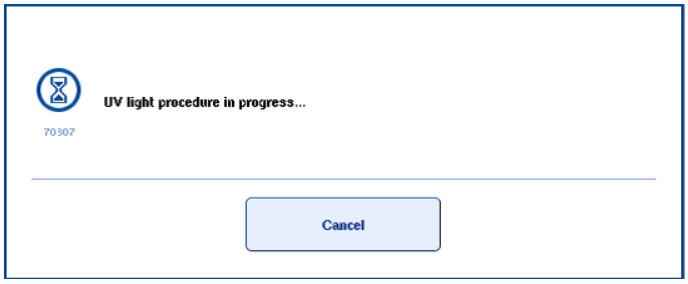
4. Enter the duration of the decontamination in minutes.

   If **Start UV light SP+AS** was selected, first enter the decontamination time in minutes for the SP, followed by the decontamination time in minutes for the AS. The default setting is 15 minutes. The UV irradiation time is dependent on the pathogen. Use the formula above to calculate the irradiation time and then enter the time into the input box.

5. A message appears asking you to check whether all plasticware and consumables have been removed from the worktable. Confirm that all removable objects have been removed from the worktable by pressing **OK**.

6. Press **OK** to start the UV irradiation procedure. The UV lamp then starts and the robotic arm moves over the worktable surface for the set irradiation time.

Note: To stop the UV irradiation procedure before the defined period of time has elapsed, press **Cancel**. The procedure will stop as soon as the robotic arm completes the current movement.



9.8 Monthly maintenance (SP/AS)

The underlined words are the keywords the user sees on the touchscreen within the maintenance scheduler (see "Displaying detailed steps for a maintenance task", page 162).

Change tip adapter O-ring

This section describes replacing the tip adapter O-ring using the O-Ring Change Tool Set (cat. no. 9019164) to perform O-ring change. The O-rings must be changed every month using the O-Ring Change Tool Set.

Before removing the old O-ring, the new O-ring must be prepared. These steps should be performed for both the QIAsymphony SP and the QIAsymphony AS instruments.

For instructions, refer to the quick guide that is equipped with the O-Ring Change Tool Set. If there is no O-Ring Change Tool Set available, contact QIAGEN Technical Services.

9.9 Mounting the tip disposal bag

Note: When using the QIAsymphony Cabinet SP/AS, the following procedure for mounting the tip disposal bag is not used.

To mount the tip disposal bag unit and install a tip disposal bag, proceed as follows:

Each tip disposal unit consists of an upper and lower holder that grip the tip disposal bag, and 2 extendable sliding rods that hold the complete assembly.

Upper holder **Lower holder** **Extendible sliding rods**

1. Pull out the holder and sliding rods.
2. Grip the upper part of the holder and pull it toward you.
3. Lift the upper part of the holder and pull it backwards until the cutouts are resting on the rods.
4. Attach the tip disposal bag to the lower part of the holder.
5. Attach the upper part of the holder to the lower part, and slide in the rods by pushing them toward the instrument.

Note: The tip disposal bag is not checked during the inventory scan. Ensure that a tip disposal bag is installed before starting a batch.

Note: If the tip disposal bag is not properly installed, a tip jam may occur. Ensure that the tip disposal bag is correctly installed and is not crinkled.

To remove a tip disposal bag, proceed as follows:

1. Pull out the holder and sliding rods. Grip the upper part of the holder and pull it toward you.
2. Lift the upper part of the holder and push it backwards until the cutouts are resting on the rods.
3. Remove the disposal bag from the lower part of the holder.
4. Attach the upper part of the holder to the lower part, and slide in the rods by pushing them toward the instrument.

Discard the waste according to your local safety regulations.

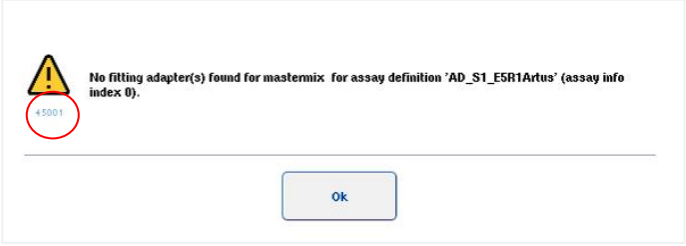
10 Troubleshooting

10.1 Error messages and warnings

If a problem occurs during operation of the QIAsymphony SP and/or AS, an error message or warning will appear on the touchscreen.

See Section 3.2.3 of *Operating the QIAsymphony SP* for more information about the different symbols that may occur in error messages.

If the error has an error code, it is displayed on the left side of the message, below the error symbol (see below). The error message is displayed in the middle of the dialog box.



10.1.1 Errors indicated in the status bar

In some cases, errors are indicated by the drawer buttons flashing yellow in the status bar. Press the flashing button to view the error message and follow instructions.

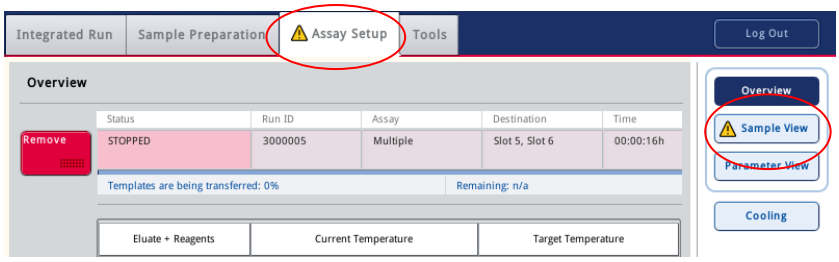
10.1.2 Errors indicated in the tab headers

The different tab headers support an error indicator within the tab. Thus, in some cases, errors are indicated by a warning sign icon next to the tab header name.

10.1.3 Errors indicated in the command bar

In case of an error, a warning sign icon will be displayed within the menu button affected, next to the name.

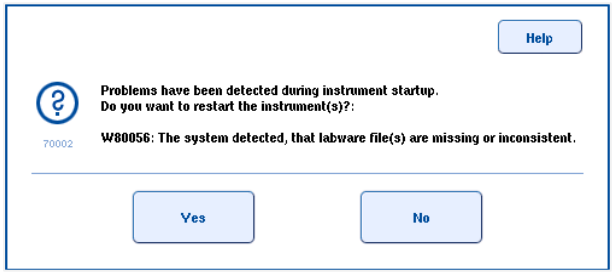
Switch to the affected tab or press the command bar button concerned for an overview of the error situation within the dialog.



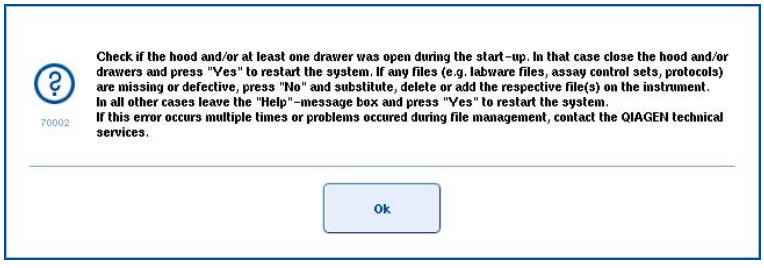
Error indication in tab headers and command bar buttons.

10.1.4 Messages with **Help** button

If a message appears with a **Help** button, the user has access to instructions about how to solve the problem. Proceed as follows:

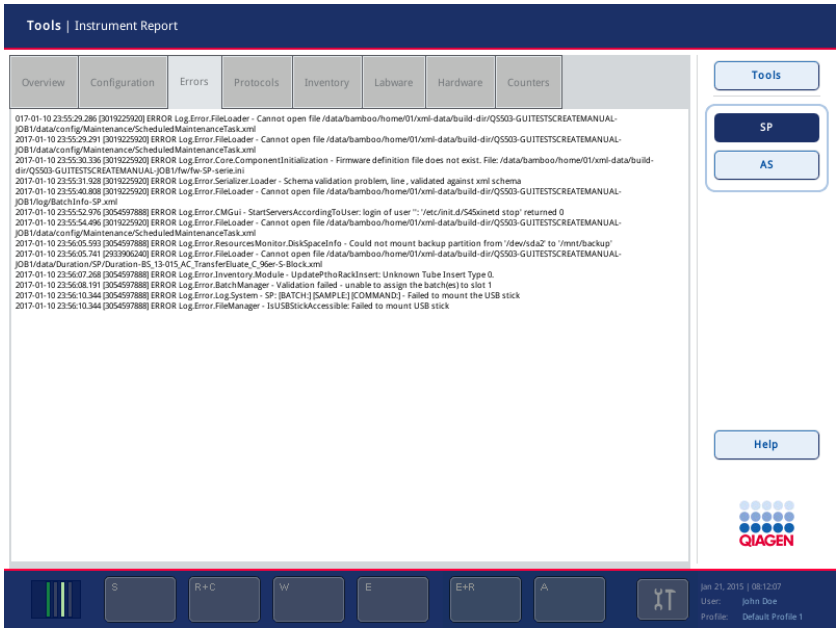


1. Press the **Help** button. A new message will appear.



2. Carefully read the instructions and then press **OK**.
3. Close the message and follow the instructions.

Note: To read the message again, select **Instrument Report** in the **Tools** screen. Then select the **Errors** tab. Recent error messages will be listed there.



10.1.5 Messages without **Help** button

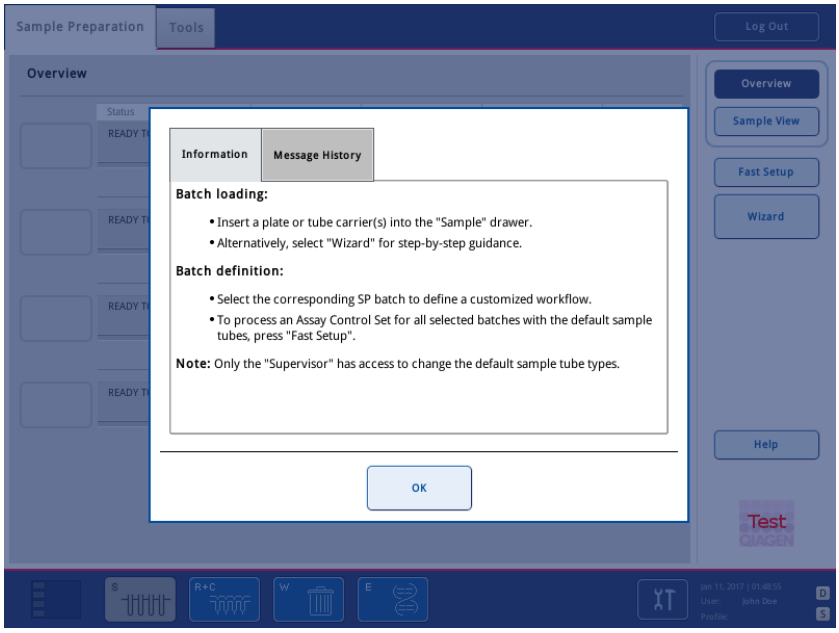
If a message appears that does not have a **Help** button, perform one of the following:

- Confirm the message and then follow the instructions that were outlined in the message.
- Check the **Help** button from the current screen to get additional information (see Section 10.2). Refer to Section 10.4 for context-specific errors and associated instructions.
- Call QIAGEN Technical Services if recommended or required (see Section 10.3).

10.2 Software help boxes

In order to assist and guide the user, the QIAsymphony SP/AS provides a software help for all screens.

To access the software help texts, press the **Help** button in the command bar which appears in all screens. Pressing this **Help** button will open a dialog in front of the actual screen. The displayed text within the help message gives advice on how to handle the current screen. To return to the original screen, press **OK** inside the help dialog.



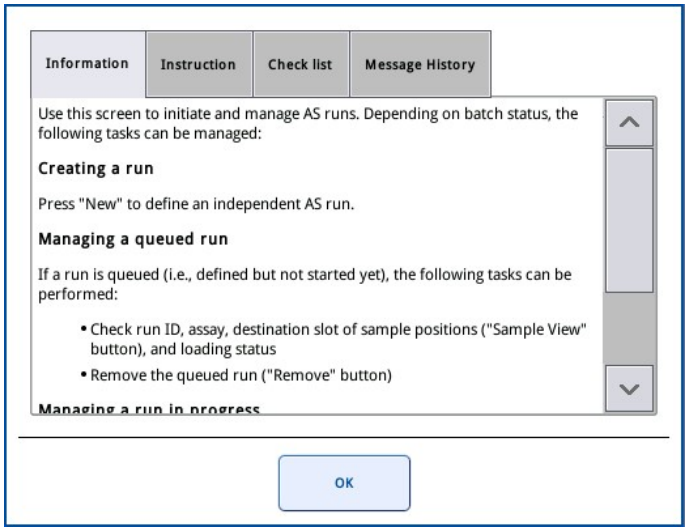
Help dialog.

10.2.1 Structure of software help boxes

A help box consists of a maximum of 5 different tabs (in the following sequence): **Errors**, **Information**, **Instruction**, **Check list** and **Message History.**

Errors	The **Errors** tab displays additional information on dialog content that is marked as erroneous. The tab filters the information for selected positions, if they exist.
Information	The **Information** tab displays notes about the screen's behavior and/or information about the screen's view. The help text describes options for the user in context.
Instructions	The **Instructions** tab shows a detailed description of the steps the user will need to execute.
Check list	The **Check list** tab includes a selection of different topics the user may check for the actual context. The particular checks described within the checklist do not need to be rigorously executed.
Message History	By clicking the relevant row in **Message History**, the corresponding message will be shown together with the corresponding help text, if it is available.

Note: A software **Help** dialog may consist of fewer than these types of text.



10.3 Contacting QIAGEN Technical Services

If an error persists and you need to contact QIAGEN Technical Services, make a record of the incident and create an instrument report file.

10.3.1 Make a record of the incident

1. Note down all steps that were performed before and after the error occurred.
2. Document any messages that appeared on the touchscreen.

   Note: It is important that you can tell us the error code and the associated text. This information will help the QIAGEN Field Service Specialist and Technical Services to resolve the error.

   Note: In some cases, the software does not list the error message on the touchscreen. The error is documented in the system log file either for the QIAsymphony AS or QIAsymphony SP.
3. Note the date and time at which the error occurred.
4. Provide a detailed description of the incident. For example, provide a photograph of the worktable and record the following information:
   - Where on the QIAsymphony SP/AS instruments did the error occur?
   - In which step of the protocol did the error occur?
   - What was observed (e.g., has something broken, are tips or sample prep cartridges in unusual places on the worktable?) and what was expected?
   - Was there any unexpected noise?

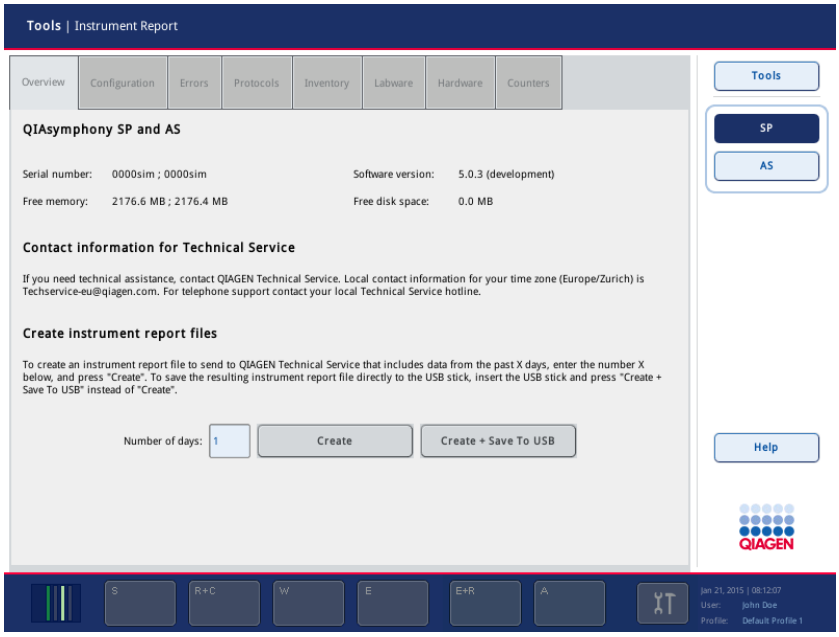
In addition, if relevant, provide the following information.

- If tips were lost during pipetting, provide the lot number and tip type.
- Were tip racks manually refilled?
- Which reagent adapter, including manufacturer and ordering number, was used?
- Which sample and eluate racks, including manufacturer and ordering number, were used?
- Which assay rack, including manufacturer and ordering number, was used?

10.3.2 Creating an instrument report file

If you are requested by QIAGEN Technical Services to create an instrument report file, proceed as follows:

1. Log in to the instrument(s).
2. Select **Instrument Report** in the **Tools** menu. The **Overview** tab of the **Instrument Report** menu appears and instrument data will be retrieved.



3. To create an instrument report for the QIAsymphony SP, select **SP**. To create an instrument report for the QIAsymphony AS, select **AS**.
4. Enter the number of days which you want the instrument report file to cover.
5. Press **Create**, or to save the file directly to the USB stick, insert the USB stick and then press **Create + Save to USB**.

To download all instrument report files to the USB stick, see Section 8.3.2, page 102. Instrument report files can also be downloaded using the QIAsymphony Management Console. See Section 4 of the *QIAsymphony Management Console User Manual* for more information.

Note: If an instrument incident (i.e., problem, crash, etc.) occurs, generate an instrument report file and ensure that all files and information are available for QIAGEN Technical Services.

10.4 General errors

Error	Comments and suggestions
The startup screen does not appear and the status LEDs are not illuminated.	Contact QIAGEN Technical Services.
Error occurs during an assay run.	An assay run was in progress on the QIAsymphony AS and an error occurred. The QIAsymphony SP/AS instruments must be switched off. Upon restarting the instruments, it is not possible to continue with the assay run or a protocol that was in progress at the same time on the QIAsymphony SP.
Error occurs during a protocol.	If a protocol was in progress on the QIAsymphony SP and an error occurs, the QIAsymphony SP/AS instrument must be switched off. Upon restarting the instruments, it is not possible to continue with the protocol or an assay run that was in progress on the QIAsymphony AS. For information on how to continue with manual assay setup, see Section 2.13 of *Operating the QIAsymphony AS*.

10.4.1 File handling errors

Error	Comments and suggestions
USB stick or other USB device was not recognized.	Only use the USB stick provided with the QIAsymphony SP. Try connecting the USB stick to the other USB port. Restart the QIAsymphony SP/AS instruments. **Note**: For file transfer, use the QIAsymphony Management Console.
Signature invalid/Invalid checksum.	During file transfer via a USB stick, the new files are loaded again. If a file (e.g., Assay Control Set, Assay Parameter Set) is unsigned, an error message will be displayed ("signature invalid" or "invalid checksum"). However, the name of the invalid file is not given. The newly transferred file could be invalid, but this is not necessarily the case. Check the validity in the QIAsymphony Management Console. Delete any unsigned files. Do not delete other file types.

10.4.2 File errors

General file errors

Error	Comments and suggestions
File not transferred.	Check that the file is in the correct folder on the USB stick.
Invalid checksum.	Ensure that the file was created by the QIAsymphony SP/AS instruments or using the QIAsymphony Management Console.

Rack file errors

Error	Comments and suggestions
Rack file could not be loaded.	Ensure that the rack file has been uploaded to the QIAsymphony SP/AS instruments. Check the parameter **Ready for AS**. This parameter should be set to **Yes**. If it is not set to **Yes**, the rack file must be modified. To do this, convert the *.xml file to *.csv format using the **CSV Conversion** tool of the QIAsymphony Management Console. Then, correct the parameter using Microsoft Excel or Notepad. See Section 8.14 for more information.
Rack file contains wrong labware.	Ensure that the racks/tubes and adapters that are written in the rack file are compatible with the QIAsymphony SP/AS instruments. For a full list of compatible racks and adapters, visit **www.qiagen.com/goto/QIAsymphony**. Ensure that the names of the racks and adapters are correctly spelled and that there are no incorrect blanks at the beginning or the end of the names.
Sample positions are incorrect.	For a user-generated rack file convert the *.xml file back to *.csv format using the **CSV Conversion** tool of the QIAsymphony Management Console. Correct the positions of the samples using Microsoft Excel or Notepad. Ensure that the correct rack file is selected.
Rack file could not be found.	Ensure that the correct rack file has been transferred to the QIAsymphony SP/AS instruments. Ensure that the correct rack file has been transferred to the QIAsymphony SP/AS instruments before starting assay definition. The rack file must be in a format that can be recognized by the QIAsymphony SP/AS instruments (i.e., *.xml). Ensure that the rack file has been converted from *.csv format to *.xml format using the **CSV Conversion** tool of the QIAsymphony Management Console.
Content of system generated file is wrong.	Check whether actualization is correct. Ensure that no errors occur during the process.

Work list errors

Error	Comments and suggestions
Work list could not be found.	Ensure that the correct work list has been transferred to the QIAsymphony SP/AS instruments before starting assay definition. Ensure that the work list has been converted to *.xml format using the **CSV Conversion** tool of the QIAsymphony Management Console. If using the QIAsymphony AS, ensure that the work list has not expired. Press **Assay Lists** and check if the required Assay Parameter Set(s) are listed. If the required Assay Parameter Set(s) are listed, the work list has probably expired.
Assay list does not display expected Assay Parameter Set.	Ensure that the work list has not expired. Press **Assay Lists** and check if the required Assay Parameter Set(s) are listed. If the required Assay Parameter Set(s) are listed, the work list has probably expired. Ensure that the Assay Parameter Set(s) and Assay Definition files that are defined in the work list have been transferred to the QIAsymphony SP/AS instruments before starting assay definition. Ensure that the name and unique ID of the Assay Parameter Set that is defined in the work list is identical to the name and unique ID that is defined in the Assay Parameter Set.

Labware errors

Error	Comments and suggestions
The labware is not visible in the **Assay Setup | Sample Rack(s)** and **Assay Setup | Assay Rack(s)** screen.	Check the **Labware Browser** menu (see Section 3.16 of *Operating the QIAsymphony SP* and Section 3.8 of *Operating the QIAsymphony AS*). Ensure that the labware file has been transferred to the **Labware AS** folder. Ensure that the labware file was saved in the correct folder on the USB stick (**data/Labware/AS/**). Ensure that the labware file has been transferred to the QIAsymphony SP/AS instruments before starting assay definition. Check all categories of listed labware.

Cycler file errors

Error	Comments and suggestions
Cycler file is not created or is not correct for the cycler.	The QIAsymphony SP/AS instruments automatically create a cycler file when an assay run is finished. The format of the cycler file depends on the assay rack type. Ensure that the correct cycler file format for the assay rack(s) is defined in the Assay Parameter Set. If necessary, modify the cycler file format in the Assay Parameter Set using the **Process Definition** editor tool of the QIAsymphony Management Console. If the required assay rack format for a particular cycler file format is not available to be selected in the QIAsymphony Management Console, ensure that the available assay racks are updated in the QIAsymphony Management Console. See the *QIAsymphony Management Console User Manual* for more details about how to do this.

Result file AS errors

Error	Comments and suggestions
The final result file is not created/Only a preliminary result file is visible or printed.	The QIAsymphony SP/AS instruments create a preliminary result file when an assay run is started. The final result file is created when **Remove** is pressed at the end of an assay run. If using automatic transfer, check in the related folder to see if the correct printer is listed. Ensure that you are looking in the correct folder for the QIAsymphony SP result files or the QIAsymphony AS result files. The correct folder is **log/Results/SP** or **log/Results/AS**.
Result file AS is not accessible because QIAsymphony is started up without AS	An AS run stops due to technical error and the system creates an AS result file. Afterwards, if QIAsymphony is started up without the AS module connected it is not possible to access the AS result file using QMC or USB stick. Restart the system with AS module connected to download the AS files. If this is not possible, contact QIAGEN Technical Services.
Sample status.	If errors/problems occur during an assay run, sample status can be affected. If samples were successfully processed, the sample status is "valid". If the batch was paused, the samples will be "unclear" and if, for example, cooling problems occur during a run, the sample status may be "unclear". If problems occur during master mix or sample transfer, the sample status is "invalid". If a QIAsymphony SP rack file is used on the QIAsymphony AS, the sample status will only be changed if errors/problems occur during the assay run. If sample status is changed, the reason for this change will be recorded in the QIAsymphony AS result file. The message, the message ID, and the sample status is listed in the **Detailed Run Information** section of the QIAsymphony AS result file.

Loading information file errors

Error	Comments and suggestions
The loading information file is not created or printed.	A loading information file should be generated after pressing **Queue**. Ensure that you are looking for the loading information file in the correct folder. The correct folder is **\log\LoadingInformation**. If using the automatic file transfer tool of the QIAsymphony Management Console, check in the related configuration to see if the correct printer is listed.

Log file errors

Error	Comments and suggestions
General transfer problems.	Ensure that the QIAsymphony SP/AS instruments are connected to the network when using the QIAsymphony Management Console for file transfer. Ensure that the USB stick is correctly plugged in.

10.4.3 Tip waste errors

Error	Comments and suggestions
Tips are stacking in the tip chute.	Ensure that the tip disposal bag is empty and that it is not jammed between the drawer and the workbench.
Tips are spilled in the lab.	Ensure that the tip disposal bag is correctly attached to the waste bag holder.

10.4.4 **Configuration** menu errors

Error	Comments and suggestions
The adapter for AS is not displayed in the configuration dialog.	Ensure that you have transferred the adapter file(s) to the **Labware AS** folder.

10.4.5 Inventory scan errors

Error	Comments and suggestions
Run cannot be started because an inventory scan has to be performed.	Before the user can start a run, an inventory scan of each drawer except the "Sample" drawer must be performed. Open and close the drawers to start the inventory scan. If an inventory scan has already been performed, do not open the hood before starting the run. If the hood was opened after performing an inventory scan the scan has to be carried out again.
Inventory scan does not start.	Ensure that the hood and all drawers are properly closed.
The inventory scan of the drawers detects an adapter on "slot X" although no adapter has been placed there/Adapter bar code not readable.	Ensure that the bar codes on the drawer are clean and can be easily read. Do not expose the QIAsymphony SP/AS instruments to direct sunlight (see Section 4.2). If there is an unneeded adapter on the elution slot, be sure to remove it.
Consumables are not recognized correctly by inventory scan.	Check that consumables (unit boxes, buffer bottle, tip racks, Accessory Trough, tip chute, etc.) are placed correctly on the corresponding drawer. Check that lids of unit boxes and buffer bottle have been removed. Only place Accessory Troughs into tip rack slots 5 and 12 (SP). Open and close the drawer and start the inventory scan again. Ensure that the tip chute is correctly installed on the QIAsymphony (SP and AS). **Note**: It is recommended to load only full tip racks. **Note**: Do not refill partially used unit boxes.
Volume check of buffer bottle failed.	Make sure that the bottle contains sufficient volume of buffer.
Volume check of the Accessory Trough failed.	Make sure that the Accessory Trough contains sufficient volume of ethanol. For more information, refer to the handbook of the QIAsymphony Kit you are using. Perform another inventory scan of the "Reagents and Consumables" drawer.
Reagent cartridge was not opened automatically by the system.	Make sure that a piercing lid was attached to the reagent cartridge. **Note**: If the inventory scan detects an unopened reagent cartridge, the reagent cartridge will be opened automatically before the first use in a protocol.

Error	Comments and suggestions
One or more buffers were not recognized.	Make sure that the Reuse Seal Strips have been removed from the troughs of the reagent cartridge.
The elution drawer was opened while an inventory scan was running and the "Elution Rack" screen cannot be exited.	The scan of the "Elution" drawer is queued and will be performed as soon as the current inventory scan has finished.
After starting and closing the "Eluate Drawer" dialog without changes, the inventory scan of the "Eluate" drawer starts.	This is the correct behavior if you open and close the hood and press **No, nothing changed** on the displayed message box. After this, a full scan will be performed on leaving the "Eluate Drawer" dialog without changes.
The bar code of an elution or assay rack cannot be read using the handheld bar code scanner.	Make sure that the handheld bar code scanner is correctly connected to the QIAsymphony SP/AS instruments. Try to read other bar codes with the scanner. Ensure that all bar codes can be easily read. Check that the bar code format can be read by the handheld bar code scanner. See Appendix A, page 200, for a list of compatible bar code types. Define the elution slot/elution rack using the touchscreen.
Sample bar codes are not read properly/not detected. Tube/plate carrier was not recognized during loading.	Only use compatible bar codes. Refer to Appendix A, page 200, for detailed information about compatible bar codes. Be sure that bar codes can be easily read and are oriented to the left. Be sure to position the bar code at an appropriate height in the rack. Make sure that the bar code fits into the cut-out of the tube carrier and position the bar code at the height of the plate carrier's bar codes. If you are using duplicate sample bar codes do not place them next to each other in the sample carrier. In this case, place different sample bar codes between the identical ones. Remove the carrier and insert again more slowly. Remember to pause at the stop line.

10.5 QIAsymphony SP errors

10.5.1 "Eluate" drawer

Error	Comments and suggestions
Filter-tips are bent or deformed after eluate transfer.	Be sure to define the correct type of eluate rack on the corresponding elution slot. Make sure that the elution rack is correctly positioned on the elution slot. Only use elution racks that are compatible with the specified adapter.
Tips/channels are incorrectly positioned on the elution slot during the elution step.	Make sure to place the elution rack onto the elution slot in the correct orientation. Be sure to insert and to define the same sample tube. Only use compatible sample tubes/ racks. For more information about tubes and racks, visit **www.qiagen.com/goto/QIAsymphony**.
The "Eluate" drawer cannot be opened.	The "Eluate" drawer is locked during eluate transfer. After transfer of eluates to the elution rack, the system unlocks the "Eluate" drawer If the "Eluate" drawer cannot be opened after eluate transfer, open the **Maintenance** menu and press the **Drawers** button under **Unlock**.
It is not possible to define an elution rack.	Open the "Eluate" drawer and leave the drawer open while defining an elution rack.
Eluates are not in the corresponding elution rack as described in the result file.	Be sure to set up the elution rack with well A1 at the upper left corner.
After closing the "Eluate" drawer, the information about the elution rack entered by the user was not stored by the system and an error message is displayed after performing the inventory scan.	After you have entered information about the elution rack, press the **Add** button before you close the drawer so that the changes to the information are saved.

10.5.2 “Sample” drawer

Error	Comments and suggestions
Sample carrier locks do not release and/or bar code reader does not move forward.	Make sure that the QIAsymphony SP is switched on and the LEDs in the “Sample” drawer are illuminated green. Be sure to insert all tube/plate carriers with the bar codes oriented to the left. Move the carrier up to the stop line and wait. Make sure that all bar codes can be read. If this does not resolve the problem, restart the QIAsymphony SP/AS instruments. Open the **Maintenance SP** menu and press the **Sample carrier** button under **Unlock**.
Samples have been physically removed from the system but a result file cannot be downloaded.	In order to download a result file containing detailed information about the samples, remove the corresponding elution rack from the inventory.

10.5.3 “Waste” drawer

Error	Comments and suggestions
Liquid in the “Waste” drawer.	Check that the lid of the liquid waste container has been removed. Make sure to insert the liquid waste container in the correct orientation. If the liquid waste container overflowed, contact QIAGEN Technical Services to ensure that the liquid did not cause malfunctions.
“Waste” drawer cannot be opened.	The “Waste” drawer is locked during a run and during the inventory scan. If the drawer cannot be opened after the protocol has finished, open the **Maintenance SP** menu and select **Drawers** under **Unlock**.
“Waste” drawer cannot be closed.	Make sure to place the liquid waste container in the “Waste” drawer at the right-hand side of the drawer. Remove the lid of the liquid waste container before you place it in the “Waste” drawer.

10.5.4 “Reagents and Consumables” drawer

Error	Comments and suggestions
The “Reagents and Consumables” drawer cannot be opened.	The “Reagents and Consumables” drawer is locked during a run and during the inventory scan. If the drawer still cannot be opened after the protocol has finished, open the **Maintenance SP** menu and select **Drawers** under **Unlock**. Be sure that both piercing devices/reagent cartridges have been moved to the lower position. If not, open the **Maintenance SP** menu and select **Piercing Device 1/2 down** under **Move**. **Note**: Do not use force to open the drawer.

10.5.5 Errors that may occur when starting a batch/run

Error	Comments and suggestions
Run button is inactive.	Make sure that the tube/plate carrier has been loaded and that the batch status is **QUEUED**.
One or more batches cannot be queued.	The system detected 2 or more samples with the same sample ID. Make sure the sample ID is unique. Sample ID could not be read during loading of the tube/plate carrier. Remove the tube/plate carrier and reload it more slowly. Make sure that all bar codes are oriented to the left and are readable.
Wrong sample IDs are shown in sample view.	If two or more tube carriers are inserted: • Remove all carriers. • Insert a carrier and wait until the bar code camera has returned to its home position and the corresponding batch has changed state. • Insert remaining carriers in the same way. • Before inserting a new carrier, wait until the corresponding batch has changed state.

10.5.6 Protocol errors

Error	Comments and suggestions
Assay Control Set is not displayed.	Make sure that the Assay Control Set was transferred to the QIAsymphony SP. Check all categories in the **Assay Control Set** list.

10.5.7 Errors that may occur while operating the QIAsymphony SP

Error	Comments and suggestions
One or more channels had a Z-drive movement error.	Be sure to insert and to define the same tube/plate. Only use compatible tubes/racks. For more information, visit **www.qiagen.com/goto/QIAsymphony**. Make sure that the tubes/plates are properly inserted in the tube carrier/adapter. Use an appropriately sized tube or rack for the volume. If filter-tips are still attached to the tip adapters, open the **Maintenance SP** menu and select **Cleanup** under **Cleanup**. Select the **Crash occurred** branch of the cleanup procedure. **Important**: After successful cleanup it is necessary to empty all slot positions in the "Sample" and "Eluate" drawers and restart the machine. New runs can then be started.

Error	Comments and suggestions
Sample is not detected by the system and is flagged as "invalid".	Make sure the samples do not contain foam. Be sure to use at least the minimum volume of sample required for the protocol. For more information, refer to the handbook of the QIAsymphony Kit you are using.
Nothing happens when the **Cleanup** button in the **Maintenance SP** menu is pressed.	Check that the hood and all drawers are closed.
Lysis timer exceeded the time limit.	The lysis time of the sample batch was exceeded. Do not pause the run during the lysis step. **Note**: If another inventory scan of the "Eluate" drawer is performed after the run has started, this may result in the samples being flagged as "unclear".

10.5.8 Protocol run interruption

Error	Comments and suggestions
System paused due to too few consumables in the "Reagents and Consumables" drawer.	Open the "Reagents and Consumables" drawer and add missing items. Close the drawer and perform an inventory scan. **Note**: Samples will be flagged as "unclear". **Note**: If one or more tip adapters cannot pick up filter-tips, contact QIAGEN Technical Services.
Inventory scan of the "Eluate" drawer starts even though a batch is running.	Each time the "Eluate" drawer is opened and closed an inventory scan must be performed. During the scan the batch/run is paused, which leads to samples being flagged as "unclear". The batch continues when the inventory scan has finished. After a successful scan of the "Eluate" drawer, the user must press **Close** to continue. **Note**: All drawers except the "Eluate" drawer are unlocked during an inventory scan of the "Eluate" drawer.
The protocol was interrupted or stopped by the system due an error.	The worktable must be cleaned up. Open the **Maintenance SP** menu and select **Cleanup** under **Cleanup**. Select the **Crash occurred** branch of the cleanup procedure. See Section 2.23.1 of *Operating the QIAsymphony SP*. **Important**: After successful cleanup it is necessary to empty all slot positions in the "Sample" and "Eluate" drawers and restart the machine. New runs can then be started.

Error	Comments and suggestions
The system stopped because an 8-Rod Cover or sample prep cartridge could not be released from the robotic gripper.	Switch off the QIAsymphony SP/AS instruments and try to remove the 8-Rod Cover or sample prep cartridge from the QIAsymphony SP manually. If it cannot be removed manually, contact QIAGEN Technical Services. **Note**: Do not initialize the QIAsymphony SP/AS instruments.

10.6 QIAsymphony AS errors

10.6.1 Assay definition errors

Error	Comments and suggestions
Wrong rack file content.	Ensure that the content of the selected rack file is correct. If the content is not correct, it can be modified using the touchscreen or the QIAsymphony Management Console.
Wrong rack type.	If possible, return to the **Sample Rack(s)** screen and change the rack type. If this is not possible, press **Cancel** and restart the assay definition process. If you are using a rack file, ensure that the correct rack file is selected.
Wrong volume information for the eluate rack.	If the actual sample volume available is greater than the volume that was defined in the **Sample Rack Layout** screen, overflow may occur during aspiration. If the actual sample volume available is lower than the volume that was defined in the **Sample Rack Layout** screen, signals may be missing.
Sample cannot be assigned to an APS.	Samples with the status “invalid” cannot be processed on the QIAsymphony AS and therefore cannot be selected during assay definition. Ensure that the sample you want to select is not “invalid”.
Assay list does not display expected Assay Parameter Set.	Ensure that the required Assay Parameter Set(s) and Assay Definition files have been transferred to the QIAsymphony SP/AS instruments before starting assay definition. Check all categories in the **Available assays** list for the expected Assay Parameter Sets. Check whether the expected Assay Parameter Set was configured for usage in Independent or Integrated mode. In **Assay Setup/Assay Selection** screen, if using a work list, switch between the **Assay list** and the **Work list** mode and check all categories in **the Available assays** list for the expected Assay Parameter Sets. **Note**: This only applies in **Independent** mode.

10.6.2 Errors occurring during an assay run

Problems with labware or with liquid spills

Error	Comments and suggestions
Liquids in adapter.	Ensure that all consumables are placed in the correct positions on the worktable. The inventory scan does not check whether the correct tubes/plates are placed in the corresponding adapters.
Condensation on the worktable.	Depending on the environment in the laboratory, it is possible that condensation forms on the worktable. Wipe away condensation according to the daily maintenance procedures; see Section 9.4.
Filter-tips are bent or deformed after liquid transfer.	Ensure that the correct rack type is defined on the correct slot. Ensure that the rack is correctly positioned on the adapter. Only use rack types that are compatible with the defined adapter.

Assay run interruption

Error	Comments and suggestions
The protocol was interrupted or stopped by the system due to an error.	Remove consumables from the worktable. If necessary, see Section 2.13 of *Operating the QIAsymphony AS* for details about protocol recovery and manually completing assay setup. Any stop, pause, or interruption of a protocol will lead to samples being flagged as "unclear".
Not enough liquid found.	Ensure that the correct volume is provided and that the plates/tubes and adapters as defined in the assay definition are provided. Ensure that there are no air bubbles on the surface of the liquid. Add more liquid.

10.6.3 Data analysis errors

Error	Comments and suggestions
Missing or wrong signal for assay standards and assay controls (e.g., internal control).	Check that correct reagent tubes are placed in adapter. If the shape of a tube differs slightly from the required tube type, problems during aspiration may occur. For instance, a lower volume than expected may be transferred. Check if tubes are missing in a position on the reagent holder. If the requested volume is above the liquid-level detection limit, a "not-enough-liquid" message will appear. If the requested volume is below the liquid-level detection limit, the QIAsymphony AS will not recognize a missing tube or the liquid level and will continue with the assay run.

Error	Comments and suggestions
	Ensure that the lids were removed from all tubes and that the liquids are completely thawed.
	Ensure that there are no bubbles or foam on the liquid surface. To remove bubbles, centrifuge the tubes.
	Ensure that the reagent and assay standard tubes are correctly positioned to avoid mix-up of reagent and assay standard tubes.
	If the volume is lower than expected, a message will appear indicating that there is not enough liquid available. If the volume is higher than expected, or is below the liquid-level detection limit, the assay run will continue which may result in missing signals.
Missing sample signal.	Possible evaporation: If eluates/assays are left to stand on the QIAsymphony SP/AS instruments for a long time after a run is complete, evaporation will occur. Ensure that eluate racks and assay racks are removed immediately when a run is completed.
	Check if the eluate volume as defined in the rack file or on the touchscreen is higher than the actual eluate volume. The QIAsymphony SP/AS instruments may not be able to transfer the correct sample volumes. This may result in reduced performance.
	Fluctuations in eluate volumes: It is recommended to check the assay rack visually for differences in sample volumes. Large differences in volume indicate that the actual eluate volume differs from the expected volume and that insufficient eluate was transferred to the assay rack. If problems persist, reduce the eluate volume.
	Ensure the correct adapters and consumables, as defined for the current run, are loaded on to the worktable. Use of different consumables may result in damage to the QIAsymphony SP/AS instruments and may cause pipetting problems.
	Ensure that the assay rack and the elution rack are set up in the correct orientation, with well A1 in the upper left corner. If two elution racks are in use, ensure that the elution racks on slot 1 and slot 2 are correctly placed.
	Ensure that the correct sample tubes are loaded, as defined in the run. Only use sample tubes/racks that are compatible with the QIAsymphony SP/AS instruments. For a full list of compatible sample tubes/racks, visit **www.qiagen.com/goto/QIAsymphony**.

10.7 Integrated run errors

10.7.1 "Eluate" drawer

Error	Comments and suggestions
The "Eluate" drawer cannot be opened.	The "Eluate" drawer is locked as soon as **Define Run** button in the **Integrated Run/Overview** is selected (see Section 2.4, "Defining an integrated run", of *Operating the QIAsymphony AS*). It is only possible to open the "Eluate" drawer if no integrated batch is loaded or queued in the **Integrated Run/Overview** screen. To open the "Eluate" drawer, remove **Integrated Batch(es)** in the **Integrated Run/Overview** (see Section 2.16.1, "Unloading the worktable", of *Operating the QIAsymphony AS*).

10.7.2 Removal of an integrated run

Error	Comments and suggestions
Integrated batch cannot be removed in the **Integrated Run /Overview.**	To remove an Integrated run which cannot be removed in the **Integrated run/Overview**, the Assay Setup has to be manually booked out from the system (e.g., if sample preparation has finished and the AS batch cannot be started due to a previously stopped AS batch). To manually book out the AS batch from the integrated run, remove the AS batch by selecting the **Assay Setup** tab and press **Remove** in the **Overview** screen (see Section 2.9, "Removing assays after an AS run", of *Operating the QIAsymphony AS*). After removing the AS batch, return to the **Integrated Run/Overview** and remove the Integrated run by pressing the **Integrated Batch X** button (see Section 2.16.1, "Unloading the worktable", of *Operating the QIAsymphony AS*).

10.7.3 Maintenance, service, and configuration

Error	Comments and suggestions
Maintenance is not accessible.	Remove loaded Integrated batches to access the Maintenance menu.
Service is not accessible.	Remove loaded Integrated batches to access the service menu.
Configuration is not accessible.	Remove eluate plate and scan the empty eluate drawer.

11 Glossary

Term	Description
AC	Abbreviation for assay control.
Accessory Trough	An item of labware that is filled with ethanol by the user and placed into the "Reagents and Consumables" drawer, if required by the protocol.
AD	Abbreviation for Assay Definition.
Adapter	Metal block that can hold consumables (e.g., microplate) on the worktable. For a list of available adapters, visit **www.qiagen.com/goto/QIAsymphony**.
APS	Abbreviation for Assay Parameter Set.
"Eluate and Reagents" drawer	QIAsymphony AS drawer into which sample racks, filter-tips, and reagents are placed.
"Assays" drawer	QIAsymphony AS drawer into which assay racks are placed and in which assays are set up.
Assay Control Set	The combination of a protocol plus additional parameters, such as internal control.
Assay definition	A set of instructions for the QIAsymphony AS that allows the instrument to perform an assay run.
Assay Parameter Set	The combination of an Assay Definition with additional parameters defined, such as replicate count and number of assay standards. In Integrated run mode, it is also connected to the ACS.
Assay rack	Name of the output formats of the QIAsymphony AS.
Assay rack ID	Identification number that is associated with an assay rack. This can be manually entered or automatically created.

Term	Description
Assay specific IC	An internal control (IC) used during sample preparation that is specific for a particular assay. If this assay is selected on the QIAsymphony AS, the master mix for those samples does not need an internal control.
Bar code camera (2D)	A device on the QIAsymphony SP that reads bar codes on consumables.
Bar code scanner	A handheld device that enables scanning of bar codes and conversion of them into data that is transmitted to the QIAsymphony SP/AS.
Buffer bottle	An additional bottle of buffer that is placed into the "Reagents and Consumables" drawer, if required by the protocol.
Conveyor	A component of the QIAsymphony SP that moves sample prep cartridges below the magnetic head during sample preparation.
Cycler file	A data file that is generated by the QIAsymphony that can be transferred to certain cyclers (i.e., Rotor-Gene Q). The cycler file contains information about sample ID, sample position, and concentration and unit of assay standards.
EC–	Abbreviation for negative extraction control.
EC+	Abbreviation for positive extraction control.
Eluate	Purified nucleic acids.
"Eluate" drawer	Drawer into which purified nucleic acids are eluted.
Elution rack	Name of the output format of the QIAsymphony SP. An elution rack can be used as the input format for the QIAsymphony AS.
Error code	A number that is associated with a specific error that occurred on the QIAsymphony SP/AS instruments.

Term	Description
Filter-tip	A consumable that is picked up by a tip adapter during operation of the QIAsymphony SP/AS instruments. Liquid is aspirated into and dispensed from a filter-tip.
Hood	The QIAsymphony SP/AS hoods protect users from the moving robotic arms and from potentially infectious material on the worktable.
IC	Abbreviation for internal control.
Independent run	An independent run is a run that is performed either on the QIAsymphony SP or the QIAsymphony AS, where the run is performed independently of the other instrument. It is possible to perform 2 independent runs (one on the QIAsymphony SP and one on the QIAsymphony AS) at the same time, where neither run influences the other. It is also possible to perform an independent run on the QIAsymphony SP, and then transfer eluates via the transfer module to the QIAsymphony AS. Here samples can be processed using an independent assay setup run. In this case, sample preparation run definition must be performed first, and when the eluate rack is transferred to the QIAsymphony AS, assay setup run definition is performed.
Integrated run	An integrated run consists of a sample preparation run on the QIAsymphony SP and then an assay setup run on the QIAsymphony AS. Eluates are automatically transferred from the QIAsymphony SP to the QIAsymphony AS via the transfer module. An integrated run is defined in the software for the complete workflow before starting the run.
Internal control	QIAGEN assay kits contain a second heterologous amplification system which is detected as an internal control (IC) in a second fluorescence channel. The IC allows the user both to control the nucleic acid isolation procedure and to check for possible PCR inhibition. An IC can either be used during sample preparation or during PCR.

Term	Description
Inventory scan	An inventory scan is performed to check that drawers are correctly loaded and that the QIAsymphony SP/AS instruments have all required reagents and consumables for a protocol.
Labware	A piece of labware is a plastic/consumable item (e.g., PCR plate, microplate, reagent tubes, filter-tips) that samples, reagents, assays are put into and that can be used on the QIAsymphony SP/AS instruments.
Loading information file	A data file generated by the QIAsymphony AS that contains detailed information about required reagents, sample rack(s), assay rack(s), and disposable filter-tips.
Lysis station	A component of the QIAsymphony SP that accommodates sample prep cartridges and enables automated lysis of up to 24 samples in one batch.
Log file	Data file(s) generated by the QIAsymphony SP/AS instruments that contains general information about the instruments, user interactions, and details about the protocol being run.
Magnetic head (MH)	An array of 24 magnetic rods for processing magnetic particles.
Magnetic-head guards	The magnetic-head guards move below the magnetic head during sample preparation and catch any drops that may fall from the 8-Rod Covers.
MM	Abbreviation for master mix.
MM+IC	Abbreviation for master mix with internal control.
MM–IC	Abbreviation for master mix without internal control.
Network interface	The network interface allows connection of the QIAsymphony SP/AS instruments to a network via an Ethernet cable.

Term	Description
Normalization	An optional processing step performed by the QIAsymphony AS. The normalization step is performed after sample preparation and before assay setup. Normalization involves diluting eluates to a predefined target concentration.
Normalization definition	A file containing a set of instructions for the QIAsymphony AS that allows the instrument to perform normalization as part of an assay run.
NTC	Abbreviation for no template control.
NTC–IC	Abbreviation for no template control with master mix, without internal control.
NTC+IC	Abbreviation for no template control with master mix and with internal control.
Optical sensor	A component of the QIAsymphony SP and AS that checks that consumables are correctly loaded in the "Reagents and Consumables", "Eluate and Reagents", and "Assays" drawer during an inventory scan.
Panel	A group of Assay Parameter Sets.
Piercing device	A device integrated in the "Reagents and Consumables" drawer that enables reagent cartridges to be automatically opened by the QIAsymphony SP.
Piercing lid	A lid that is placed on top of the reagent cartridge that enables the reagent cartridge to be automatically opened by the QIAsymphony SP.
Pipettor head	A component of the QIAsymphony SP/AS instruments that aspirates and dispenses liquid. Each pipettor head contains 4 syringe pumps, each of which is connected to a tip adapter.
Plate carrier	A carrier that can accommodate up to 4 sample racks on the QIAsymphony SP worktable.

Term	Description
Power switch	A button located at the front left of the QIAsymphony SP in the bottom-left corner. It allows the user to switch the QIAsymphony SP/AS instruments on and off.
Protocol	A set of instructions for the QIAsymphony SP that allows the instrument to perform an automated purification procedure.
QDef	Specific file format provided by QIAGEN for exchanging rack information between different products.
QIAsymphony Cabinet SP/AS	Cupboard that is specially designed to position the QIAsymphony SP/AS instruments.
QIAsymphony Management Console	Software that is provided with the QIAsymphony instrument(s) that enables users to manage files, create Assay Control Sets and/or Assay Parameter Sets, convert *.csv formatted rack files or work list files into *.xml files, and to check that result files have not been modified.
QS	Abbreviation for quantitation standard.
Quantitation standard	External positive controls that are supplied with QIAGEN kits, enabling the determination of the amount of nucleic acids.
Rack file	File that contains information about sample racks or assay racks (i.e., rack type, rack ID, sample volumes, assay rack volumes). Rack files can be generated manually or automatically.
Rack type	Type of rack that will be used on the worktable.
Ready-to-use master mix	Master mix that has been premixed by the user. The QIAsymphony AS will not prepare the master mix.
Reagent cartridge	An item of labware that contains a magnetic-particle trough, reagent troughs, and enzyme rack. A reagent cartridge is prefilled with reagents.

Term	Description
Reagent holder	An adapter that holds reagent tubes on the QIAsymphony AS. There are 2 available reagent holders (Reagent Holder 1 and Reagent Holder 2) that support different tube types at the same time.
"Reagents and Consumables" drawer	Drawer that accommodates consumables and reagents required for the protocol run.
Result file SP	A data file that is generated by the QIAsymphony SP for each elution rack. The file contains general information, batch-related information, and information about the reagent cartridge.
Result file AS	A data file that is generated by the QIAsymphony AS for each assay run/AS batch in integrated mode. It contains all information about the defined assay run and its parameters.
Robotic gripper	A component of the QIAsymphony SP robotic arm that transfers consumables (sample prep cartridges and 8-Rod Covers) to the required position on the worktable during sample preparation.
8-Rod Cover	An array of 8 rod covers that cover the magnetic rods of the magnetic head.
Run status	Indicates the status of a batch or assay run. This could be **READY TO LOAD**, LOADED, **QUEUED**, **RUNNING**, **COMPLETED, PAUSED** or **STOPPED**. For more details, see *Operating the QIAsymphony SP/AS*.
"Sample" drawer	Drawer that accommodates samples in primary or secondary tubes or multi-well sample racks.
Sample prep cartridge	A vessel with 8 wells that is used by the QIAsymphony SP for purification of nucleic acids.
Sample rack	A rack for holding samples.
Sample rack ID	Identification number/code that is assigned to a sample rack. This can be automatically or manually assigned.
Sample tube	A tube for holding a sample containing nucleic acids to be purified.

Term	Description
Sample status	Indicates the status of a sample. This could be “valid”, “unclear” or “invalid”.
Slot	A worktable position on the QIAsymphony SP and AS.
Standard curve	QIAsymphony AS provides the ability to create standards with varying concentration automatically from one highly concentrated standard and dilution buffer in terms of a serial dilution. The initial standard and the dilution buffer are provided by the user.
Status LEDs	Blue illuminated status bar, located at the front of the QIAsymphony SP and AS. When the instrument(s) are switched on, the status bar is illuminated.
Std	Abbreviation of assay standards used for quantitation.
Target temperature	The temperature which cooling positions will be cooled to, as defined in the Assay Definition.
Tip adapter	Each pipetting channel is equipped with a tip adapter which picks up the disposable tips from the tip rack.
Tip chute	Passage through which used tips are disposed of from the QIAsymphony SP/AS worktables. Each instrument has a separate tip chute.
Tip disposal bag	Used tips are stored in a tip disposal bag. They are ejected from the QIAsymphony SP or AS worktable through a tip chute and into a tip disposal bag.
Tip guard	The tip guard is positioned below the disposable tip to avoid aerosol contamination.
Tip rack slots	Positions on the QIAsymphony SP and AS worktable that accommodate tip racks containing filter-tips.
Touchscreen	The user interface that allows the user to operate the QIAsymphony SP and AS.

Term	Description
Transfer module	Located under the separation window between the QIAsymphony SP and AS, the transfer module enables automatic transfer of eluate racks from the QIAsymphony SP to the QIAsymphony AS.
Tube carrier	A carrier that can accommodate up to 24 tubes.
Unit box	A plastic box with a lid that contains either sample prep cartridges or 8-Rod Covers.
User-defined output pattern	An alternative pipetting scheme for assay racks, that is defined by the user in the APS editor by defining 4 patterns and the size of an eluate block.
UV lamp	A light source of ultraviolet light for worktable decontamination.
Validation	The QIAsymphony Operating Software checks if the file(s) that are transferred to the QIAsymphony SP/AS instruments meet certain criteria. For instance, the software verifies whether all files have a specific *.xml structure.
"Waste" drawer	Drawer in which used consumables and liquid waste from the sample preparation procedure is collected.
Worktable	The surface of the QIAsymphony SP or QIAsymphony AS where sample preparation or assay setup takes place.
Work list	File that enables automatic assignment of samples to Assay Control Sets and Assay Parameter Sets. Work list files can be generated by a LIMS or manually by the user.

Appendix A — Technical Data

QIAGEN reserves the right to change specifications at any time.

Environmental conditions

Operating conditions

Power consumption QIAsymphony SP	100–240 V AC, 50/60 Hz, 800 VA
Power consumption QIAsymphony AS	100–240 V AC, 50/60 Hz, 600 VA
	Mains supply voltage fluctuations are not to exceed 10% of nominal supply voltages. The inlet is on the QIAsymphony SP; in combined operation, the maximum power consumption is 1400 VA.
Overvoltage category	II
Air temperature	15–32°C (59–89.6°F)
Relative humidity	15–75% (noncondensing)
	Maximum 75% relative humidity for temperatures up to 31°C (88°F), decreasing linearly to 50% humidity at 32°C (89.6°F)
Altitude	Up to 2000 m (6500 ft.)
Place of operation	For indoor use only
Pollution level	2
Environmental class	3K2 (IEC 60721-3-3) 3M2 (IEC 60721-3-3)

Transportation conditions

Air temperature	–25°C to 70°C (–13°F to 158°F) in manufacturer's package
Relative humidity	Maximum of 75% (noncondensing)
Environmental class	2K2 (IEC 60721-3-2) 2M2 (IEC 60721-3-2)

Storage conditions

Air temperature	5°C to 40°C (41°F to 104°F) in manufacturer's package
Relative humidity	Maximum of 85% (noncondensing)
Environmental class	1K2 (IEC 60721-3-1) 1M2 (IEC 60721-3-1)

Mechanical data and hardware features

QIAsymphony SP

Dimensions	Width: 128 cm (50.4 in.) Height: 103 cm (40.6 in.) Depth: 73 cm (28.7 in.)
Weight	175 kg (385.8 lb.)

QIAsymphony AS

Dimensions	Width: 59 cm (23.2 in.) Height: 103 cm (40.6 in.) Depth: 73 cm (28.7 in.)
Weight	90 kg (198 lb.)

QIAsymphony SP and AS (integrated operation)

Dimensions	Width: 185 cm (72.8 in.) Height: 103 cm (40.6 in.) Depth: 73 cm (28.7 in.)
Weight	265 kg (584 lb.)

Bar code labels

The bar code reader in the "Sample" drawer can read the following types of bar codes:

- Code 39 (length 4–45)
- Code 128 and subtypes (length 3–45)
- Codabar (length 4–45)

To ensure error-free bar code reading, slide tube carriers into the "Sample" drawer so that loading takes 3 seconds or longer (0.2 m/s) and slide plate carriers into the "Sample" drawer so that loading takes 2 seconds or longer (0.3 m/s).

Specifications of 1D bar codes

Width	Bar code line width of 0.128–0.305 mm.
Print quality	Bar codes with a line width of 0.128 mm must be printed in high resolution.
Position	When using primary tubes, bar codes should be positioned 1 cm from the bottom of the tube. The bar code reader has a reading area of 8 cm. Bar codes should be attached to Sarstedt tubes so that the tube bar code is no higher than the insert bar code.

Open source software

This laboratory device contains open source software. According to chapter 3.a of the GPLv2. QIAGEN delivers a machine-readable copy of the corresponding source code on the *QIAsymphony — Pure Performance* CD.

For any additional questions, write to:

QIAGEN GmbH
R&D Instrumentation
QIAGEN Strasse 1
40724 Hilden
Germany

E-mail: open.source@qiagen.com

For details on the open source software components used by the QIAsymphony Operating Software, load the **qiasymphony-open-source.tar.bz2** file, which is included on the *QIAsymphony — Pure Performance* CD.

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 application specialist 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.

Appendix B

FCC declaration

The ''United States Federal Communications Commission'' (USFCC) (in 47 CFR 15. 105) declared that the users of this product must be informed of the following facts and circumstances.

''This device complies with part 15 of the FCC:

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.''

"This Class A digital apparatus complies with Canadian ICES-0003.''

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

QIAGEN GmbH Germany is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connection cables and equipment other than those specified by QIAGEN GmbH, Germany. The correction of interference caused by such unauthorized modification, substitution, or attachment will be the responsibility of the user.

Declaration of Conformity — QIAsymphony SP

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.

Declaration of conformity — QIAsymphony AS

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.

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.

Wen Quan Yi Micro Hei font

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Appendix C — QIAsymphony SP/AS Accessories

Product	Contents	Cat. no.
Sample Prep Cartridges, 8-well (336)	8-well sample prep cartridges for use with the QIAsymphony SP	997002
8-Rod Covers (144)	8-Rod Covers for use with the QIAsymphony SP	997004
Filter-Tips, 200 µl (1024)	Sterile, Disposable Filter-Tips, racked; (8 x 128)	990332
Filter-Tips, 1500 µl (1024)	Sterile, Disposable Filter-Tips, racked; (8 x 128)	997024
Tip Disposal Bags (15)	For use with the QIAsymphony SP/AS instruments	9013395
Accessory Trough (10)	For use with the QIAsymphony SP	997012
Reagent Cartridge Holder (2)	For use with the QIAsymphony SP	997008
Sample Carrier, plate, Qsym	Plate carrier for sample input; for use with the QIAsymphony SP	9017660
Tube Insert 1A, 13 mm, sample carrier, Qsym (24)	Primary tube adapter (13 mm, with tube insert 1A) for use with the QIAsymphony SP tube carrier	9242058
Tube Insert 2A, 11 mm, Revision, sample carrier, Qsym (24)	Primary tube adapter (11 mm, with tube insert 2A) for use with the QIAsymphony tube carrier	9242057
Tube Insert 3B, 2.0 ml v2, samplecarr. (24), Qsym	Secondary tube adapter (for 2 ml screw-cap tubes, tube insert 3B) for use with the QIAsymphony tube carrier	9242083
Tube Insert 5A SnapCap Tube (24)	Secondary tube adapter (for 1.5 and 2 ml snap cap tubes, tube insert 5A) for use with the QIAsymphony tube carrier	9244701
Cooling Adapter, 2ml, v2, Qsym	Cooling adapter for 2 ml screw-cap tubes; for use with the QIAsymphony SP/AS instruments	9020674
Cooling Adapter, EMT, v2, Qsym	Cooling adapter for EMT racks; for use with the QIAsymphony SP/AS instruments	9020730
Cooling Adapter, MTP, RB, v2, Qsym	Cooling adapter for round bottom microplates (MTP); for use with the QIAsymphony SP/AS instruments	9020729
Cooling Adapter, PCR, v2, Qsym	Cooling adapter for PCR plates; for use with the QIAsymphony SP/AS instruments	9020732

Product	Contents	Cat. no.
Cooling Adapter Snap-Cap Microtube QIAsymphony	Cooling adapter for holding snap cap tubes; for use with the QIAsymphony SP instruments	9020731
Starter pack, QIAsymphony AS	Pack includes consumables required for operating the QIAsymphony AS	997199
Tubes, conical, 5 ml, Qsym AS (500)	Conical tubes (5 ml) for holding reagent	997104
Filter-Tips, 50 µl, Qsym AS (1024)	Sterile, Disposable Filter-Tips, racked; (8 x 128)	997120
Reagent Bottles, 30 ml, QSym AS (50)	Reagent bottles (30 ml) with lids	997108
Tubes, conical, 2 ml, Qsym AS (500)	Conical tubes (2 ml) for holding reagent	997102
Cooling Adapter, LC Capillaries 32, Qsym	Adapter for holding up to 32 capillaries (20 µl) for the LightCycler; for use with the QIAsymphony SP/AS instruments	9018093
Cooling Adapter, SBS Universal, Qsym	Adapter for holding microplates; for use with the QIAsymphony SP/AS instruments	9243384
Rotor-Disc 72 Loading Block	Aluminum block for manual and automated reaction setup in Rotor-Disc 72 discs; for use with the QIAsymphony AS only	9018910
Loading Block, GeneDisc, Qsym	Adapter for holding up to 2 x Rotor-Disc 72 on Rotor-Disc 72 Loading Blocks; for use with the QIAsymphony AS only	9242204
Cooling Adapter, RG Strip Tubes 72, Qsym	Adapter for holding 18 strips of 4 tubes; for use with the QIAsymphony AS only	9018092
Cooling Adapter, Reagent Holder 1, Qsym	Adapter for holding 18 x 2 ml conical tubes, and 6 x 5 ml conical tubes; for use with the QIAsymphony AS only	9018090
Cooling Adapter, Reagent Holder 2, Qsym	Adapter for holding 18 x 2 ml conical tubes, 2 x 5 ml conical tubes, and 2 x reagent bottles, 30 ml; for use with the QIAsymphony AS only	9018089

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