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QIAsymphony® SP/AS – Operating the QIAsymphony AS

For use with software version 5.0

CE

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Contents

1 Introduction

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

Before using the QIAsymphony AS, 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.

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

1.1 Provided user documents

The QIAsymphony SP/AS instruments are provided with 4 user manuals, as outlined below:

QIAsymphony SP/AS User Manual — General Description

- Provides a description of the instruments, and describes functions (e.g., handling files) that are the same for both instruments. Information about maintenance procedures and troubleshooting is also provided in this manual.

QIAsymphony SP/AS User Manual — 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 User Manual — Operating the QIAsymphony AS (this user manual)

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

1.2   About this user manual

This user manual describes how to operate the QIAsymphony AS and provides information in the following sections:

1.   Introduction
2.   Operating the QIAsymphony AS
3.   QIAsymphony AS User Interface

1.3   General information

1.3.1   Technical assistance

At QIAGEN, we pride ourselves on the quality and availability of our technical support. Our Technical Services Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of QIAGEN products. If you have any questions or experience any difficulties regarding the QIAsymphony AS 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**).

1.3.2 Policy statement

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

1.4 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 Operating the QIAsymphony AS

This section describes how to operate the QIAsymphony AS instrument.

Before proceeding, we recommend that you familiarize yourself with the features of the instrument by referring to Section 3 of the *General Description*.

The QIAsymphony Operating Software is described in detail in Section 3 of this user manual.

The hood of the QIAsymphony AS must remain closed during operation of the instrument. Only open the hood when instructed to do so by the software or when carrying out maintenance procedures (see Section 9 of the *General Description*).

WARNING   **Moving parts**

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

2.1   Definitions

2.1.1   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.

2.1.2   Independent run

The QIAsymphony SP and QIAsymphony AS can be operated independently of each other. 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.

2.1.3 Run with normalization

QIAsymphony AS can perform a normalization step (i.e., eluates of known concentration are diluted to target concentrations) before assay setup. To obtain high dilution ratios, a two-step normalization is available. The two-step normalization uses one assay position for predilution and a second assay position for final dilution. QIAsymphony AS will automatically calculate which dilution strategy is optimal depending on current and target concentrations of samples. To save resources, QIAsymphony AS will attempt to dilute one-step and two-step dilutions in one normalization rack. If the capacity of one normalization rack is inadequate to execute the run, QIAsymphony AS will request an additional dilution rack. This option is available for most assay definitions in combination with a normalization definition file, which is available on request from the QIAGEN Application Laboratory. Please contact QIAGEN for more information.

Note: During the normalization process, dilution is set up using a normalization rack. Since QIAsymphony AS also creates a rack file for the normalization rack, the user can use the normalization rack like an ordinary eluate rack and reuse it to define a subsequent run.

2.1.4 Standard curve

The QIAsymphony AS can perform series dilutions of standards, using concentrated standard solution and dilution buffer, both provided by the user.

2.2 Things to do before defining a run

Before defining a run, available adapter(s) and holder(s) must be configured in the software. If work list(s) and rack file(s) will be used in the run, these files must be transferred to the QIAsymphony SP/AS instruments.

2.2.1 Transferring process files

Note: To transfer process files, the user must be logged in as "Supervisor". For more information on handling files, see Section 8 of the *General Description*.

Process files can be transferred directly using a USB stick, or by using the **File Transfer** tool of the QIAsymphony Management Console.

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.

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.

2.2.2 Transferring work lists and rack files

Work lists and rack files can be transferred directly using a USB stick, or by using the **File Transfer** tool of the QIAsymphony Management Console.

Work list(s) and rack file(s) that are used on the QIAsymphony SP/AS instruments must be in *.xml format. Work list(s) and rack file(s) that are in *.csv format can be converted to *.xml format using the **CSV Conversion** tool of the QIAsymphony Management Console. See Section 7 of the *QIAsymphony Management Console User Manual* for more details.

2.2.3 Transferring concentration data file

For an assay run with a normalization step, a concentration data file in *.xml format must be transferred to the QIAsymphony SP/AS instruments before run definition. This file can be transferred directly using a USB stick, or by using the **File Transfer** tool of the QIAsymphony Management Console.

2.2.4 Defining assay favorites

For the integrated mode, there is the possibility to define personalized assay favorites for quicker assignment within the **Integrated Setup** screen. Define favorites by pressing **Assay Favorites** within the **Tools** screen.
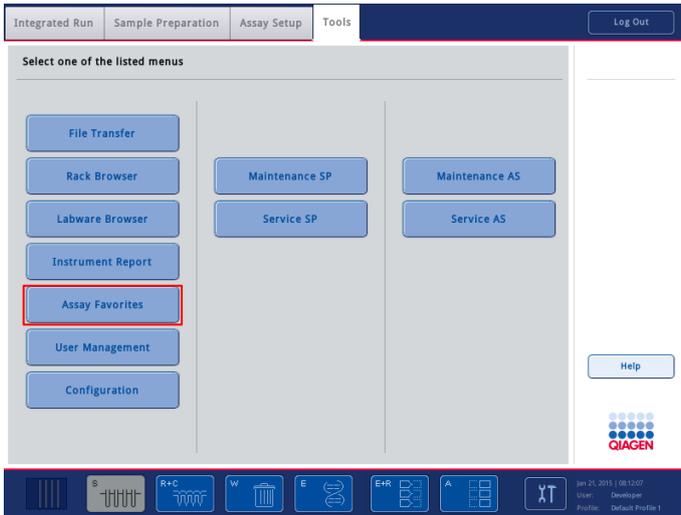
Press **Assay Favorites** and the **Define Assay Favorites** screen appears.
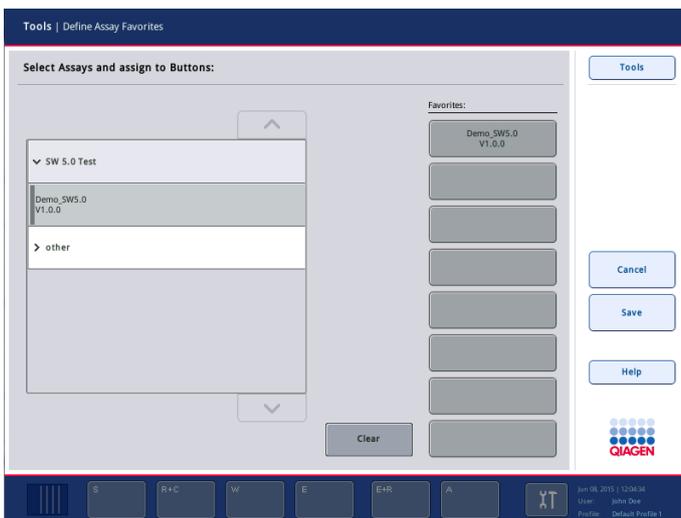
The dialog contains a list showing the available assays and a set of favorite buttons identical to the ones in the **Integrated Setup** screen.

The buttons are labeled with the defined favorite assays if already assigned, otherwise the label is empty.

To define the **Favorites** buttons:

1. On the left side, select the assay to assign as a favorite.

2. Press the **Favorites** button.

   Repeat steps 1 and 2 for all **Favorites** buttons to be defined.

   Using the **Clear** button removes the assays from the checked **Favorites** button.

3. Confirm the favorites by pressing the **Save** button.

Changes are saved in the user data enabling a user-specific configuration of the **Favorites** buttons. Pressing **Cancel** displays a warning that all changes will be lost. By confirming the message with **Yes**, all changes are discarded and the dialog is left. Select **No** to keep the changes and stay within the dialog.

2.3 Workflows

2.3.1 Recommended workflow for an integrated run

1. Switch on the QIAsymphony SP/AS instruments (see Section 5.1 of the *General Description*).
2. Log in (see Section 5.3 of the *General Description*).
3. Insert the tip chute into the QIAsymphony AS.
4. Insert an empty tip disposal bag into the QIAsymphony AS.
5. Switch to the "Integrated Run" user interface (see Section 2.6).
6. Load the "Waste drawer" according to Section 2.3, "Loading the "Waste" drawer", in *Operating the QIAsymphony SP* and start scan.
7. Load the "Eluate" drawer with the correct rack inside the corresponding cooling adapter, together with the transfer frame on Elution slot 1. Assign the eluate rack to "Elution slot 1" on the touchscreen and start scan. (See Section 2.5, "Loading the "Eluate" drawer", in *Operating the QIAsymphony SP*.)
8. Load the "Reagent and Consumables" drawer according to the individual (assay) kit handbooks and Section 2.6, "Loading the Reagents and Consumables drawer", in *Operating the QIAsymphony SP* and start a full scan.
9. Press **Define Run** to define an integrated run on the QIAsymphony SP/AS (see Section 2.4).
10. Load the "Sample" drawer with samples. If required by the assay, also load internal controls according to Section 2.7, "Loading the "Sample" drawer", of *Operating the QIAsymphony SP*.
11. Press **Edit Samples** to check or change sample tube types and inserts. The tubes are predefined for the inserts in the configuration and can be changed. See Section 6.1.3, "Default tube types", in the *General Description*.
12. Press **Define Assays** to assign assays to sample positions (see Section 2.4.1).
13. Create AS batch(es) using the defined SP batch(es) (Section 2.4.2).
14. Queue the integrated run by pressing **OK** (see Section 2.4.4).
15. Optional: Define internal control(s) (see Section 2.4.3).
16. Start the integrated run by pressing **Run** (see Section 2.4.2).

17. While the integrated run is being processed on the QIAsymphony SP, load the QIAsymphony AS (see Section 2.6). Open the "Eluate and Reagents" and "Assays" drawers.

18. Load assay rack(s) into the appropriate precooled adapter(s) and place them onto the "Assay" slot(s) (see Section 2.6.2).

19. Check the cooling temperatures of the cooling positions used (see Section 2.7).

20. Fill each reagent tube with the required volume of appropriate reagent and place the reagent tubes, without lids, into the appropriate positions of precooled adapters for reagents. Place the prepared assay adapter(s) onto the appropriate slot(s) (see Section 2.6.3).

    Note: Ensure that reagents are completely thawed. If desired, enter a kit bar code for each assay (see Section 2.6.1).

21. Load disposable filter-tips into the "Eluate and Reagents" and "Assays" drawers, according to the required number of each tip type (see Section 2.6.4).

22. Close the "Eluate and Reagents" and "Assays" drawers and start the inventory scan (see Section 2.6.5).

    The assay setup will start automatically after the inventory scan is performed successfully and the sample preparation for the integrated batch is finished.

23. When running more than one integrated batch, remove the previous integrated batch in the **Integrated Setup** overview (see Section 2.9). Reload the "Eluate and Reagents" and "Assays" drawers on QIAsymphony AS to continue the AS batch (i.e., repeat steps 17–22).

2.3.2   Recommended workflow for independent run without normalization

1. Switch the QIAsymphony SP/AS instruments on (see Section 5.1, *General Description*).

2. Log in (see Section 5.3, *General Description*).

3. Insert the tip chute into the QIAsymphony AS.

4. Discard the QIAsymphony AS tip disposal bag.

5. Install an empty tip disposal bag into the QIAsymphony AS.

6. If available, transfer elution rack(s) from the QIAsymphony SP manually to the QIAsymphony AS (see Sections 2.19.1 and 2.20 of *Operating the QIAsymphony SP*).

7. Switch to the **Assay Setup** user interface (see Section 2.11).

8. Press **New** to start the assay definition process (Section 2.4.1). The screens on the touchscreen guide the user through the assay definition process in a step-by-step fashion. Use of work lists and rack files are optional.

    Note: If elution rack(s) have been automatically transferred to the QIAsymphony AS, press **Yes** in the message that appears. The **Sample Rack(s)** screen of the assay setup user interface will then open.

9. Assign sample rack(s) and rack IDs to sample slots (Section 2.12.1).

10. Define and check sample rack type(s) for sample, EC+, and EC– positions, sample IDs and volumes (see Section 2.12.2).

11. Define which Assay Parameter Set(s) to use in the run (see Section 2.12.3).

12. Assign Assay Parameter Set(s) to samples (see Section 2.12.5). If desired, assay parameters can be modified (Section 2.12.6). If a work list is being used, the Assay Parameter Set(s) are automatically assigned.

13. Assign rack IDs to assay rack(s). At this stage, assay rack(s) can be loaded onto the "Assay" slot(s) (see Section 2.6.2).

14. Queue the assay run by pressing **Queue**.

15. Check the cooling temperatures of the used cooling positions (Section 2.7).

16. Fill each reagent tube with the required volume of appropriate reagent (Section 2.6.3).

17. Place the reagent tubes, without lids, into the appropriate positions of precooled adapters for reagents (see Section 2.6.3).

    Note: Ensure that reagents are completely thawed.

18. If not already done, place the appropriate assay rack(s) into the appropriate precooled adapter(s).

19. If not already done, place the appropriate sample rack(s) into the appropriate precooled adapter(s).

    Recommendation: We recommend storing the adapters at 4°C, so that they will be precooled and ready for use in the next assay run.

20. Open the "Eluate and Reagents" drawer and load the prepared reagent adapter(s) into the appropriate slot(s). If desired, enter a kit bar code for each assay.

21. If not already done, place the prepared sample adapter(s) onto the appropriate slot(s).

22. Open the "Assays" drawer.

23. If not already done, place the prepared assay adapter(s) onto the appropriate slot(s).

24. Load disposable filter-tips into the "Eluate and Reagents" and "Assays" drawers, according to the required number of each tip type (Section 2.6.4).

25. Close the "Eluate and Reagents" and "Assays" drawers.

26. Upon closing drawers, press **Scan** to start the inventory scan for each drawer.

    The inventory scan checks the slots, adapters and filter-tips. If required, correct any errors.

27. Wait until the target cooling temperatures are reached.

28. Press **Run** to start the run (Section 2.15).

    Important: Keep "Assays" and the "Eluate and Reagents" drawers closed during run.

2.3.3   Workflow for independent run with normalization

1. Perform steps 1–27 of Section 2.3.2 to define and set up the quantification assay.

2. Transfer the assay rack to the thermal cycler. Transfer the cycler file to the cycler and perform the quantification.

3. Create or convert the concentration data file in an *.xml file with the **Concentration Data Editor** in the QIAsymphony Management Console (please see *QIAsymphony Management Console User Manual*, Section 7, "Concentration Data File Editor Tool", for details)

4. Transfer the concentration data *.xml file to the QIAsymphony SP/AS.

5. Perform steps 1–27 of section 2.3.2 to define and set up the assays with normalization (e.g., STR assay). The system asks if you want to import the concentration data file (see Section 2.12.4).

   Note: After step 21, load normalization racks within the appropriate pre-cooled adapter onto the "Assays" drawer. Afterwards proceed with step 22.

Note: During the normalization process the dilution is set up on a normalization rack. Since QIAsymphony also creates a rack file for the normalization rack, the user can use the normalization rack like an ordinary eluate rack and reuse it to define a run.

2.4   Defining an integrated run

The following sections describe how to define an integrated run on the QIAsymphony SP/AS. The screens that appear on the touchscreen guide you through the steps.

It is only possible to define an integrated run if an eluate rack and transfer frame have been loaded on eluate slot 1 of the QIAsymphony SP. To save time, the system checks for the transfer frame at the same as the rack carrier inventory scan. See Section 2.5 of *Operating the QIAsymphony SP* for more detailed information about how to load an eluate rack.

Note: It is not possible to define a normalization step in an integrated run.

An integrated run can be defined via the **Integrated Run** tab in the overview screen.
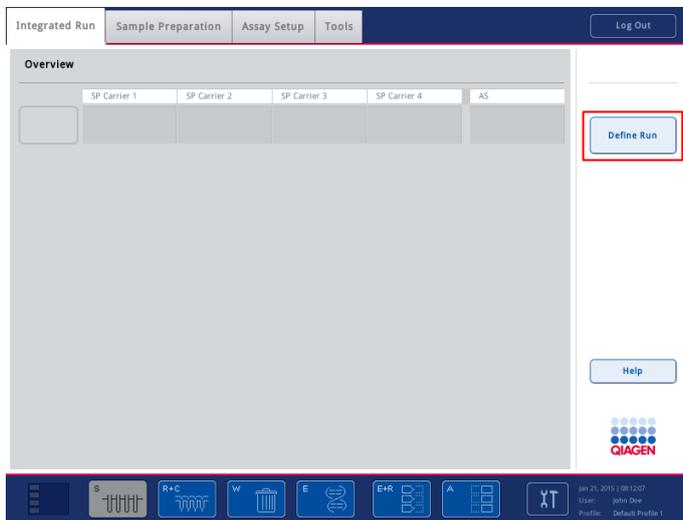
Select the **Integrated Run** tab, and then press **Define Run**.

Note: When **Define Run** is pressed, error messages can appear in the following situations:

- If the bar code of the eluate rack is missing or unreadable

- If the rack type loaded on eluate slot 1 of the QIAsymphony SP is not compatible with elution slot 2 on the QIAsymphony AS

- If the eluate rack on slot 1 of the QIAsymphony SP has reserved columns

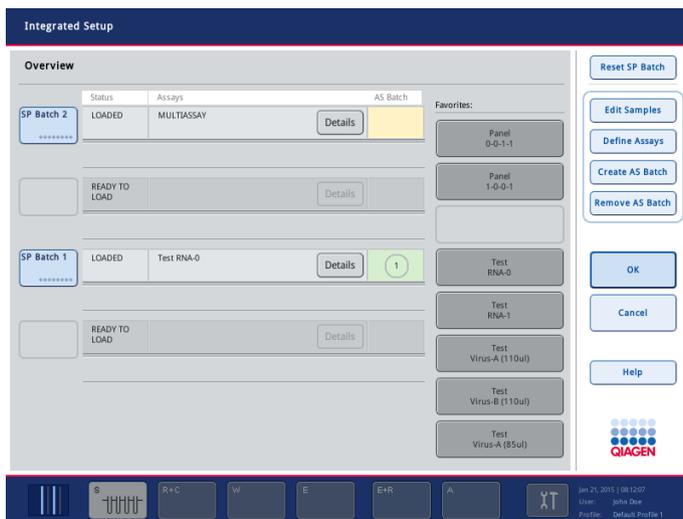- If there are still defined, running or completed independent runs present on QIAsymphony SP/AS
- If no eluate rack with transfer frame has been loaded

Note: If required, refer to the troubleshooting section for details to solve the problems (see Section 10 of the *General Description*).

Integrated Run tab.

The **Integrated Setup** screen appears.

Integrated Setup with 2 tube carriers loaded.

The **Integrated Setup** screen provides an overview for the defined batches (including starting points) to:

- Select a batch button and press **Reset SP Batch**
- Edit samples (includes resolving errors regarding sample/internal control tubes or sample IDs)
- Assign an assay to all samples of a batch
- Define assays for a batch
- Create/remove AS batches from their related SP batch

An integrated run consists of one or more integrated batches. An integrated batch is a combination of one or more SP batches and one AS batch. Hence, the eluates of several SP batches can be processed in one AS batch.

To define an integrated batch:

1. Load a tube carrier. The loaded batch is displayed on the touchscreen.
2. Assign assays to sample positions (see Section 2.4.1).
3. Optional: Create AS batch for the related SP batch(es).
4. Queue the integrated run (see Section 2.4.4).

    Note: Integrated runs can only be queued together with a QIAsymphony AS batch.

Note: If an error or conflict appears, the affected batch is colored orange. For troubleshooting, see Section 2.4.1 or Section 2.4.2.

2.4.1   Assigning assays to sample positions

When defining an integrated run, assays can be assigned to samples using:

- Favorite assays
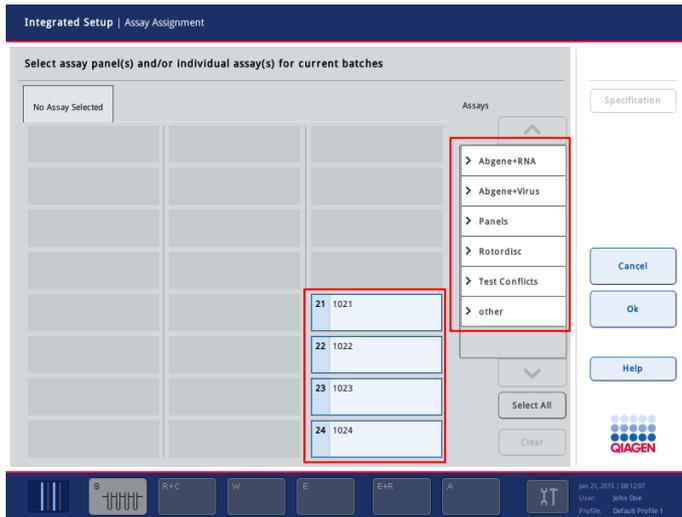- The **Assay Assignment** screen manually
- Work lists

Assigning favorite assays

In the **Integrated Setup** screen, you can assign a favorite assay to all samples of a batch. First, you need to set up a list of **Favorites** assays (see Section 2.2.4 for details about how to do this). Then proceed as follows:

1. Select the desired SP batch.
2. Select the desired **Favorites** assay.

Assigning assays using the Assay Assignment screen

Select the SP batch, then press **Define Assays** in the **Integrated Setup** screen. The **Assay Assignment** screen appears. Here, assays can be assigned to specific sample positions.
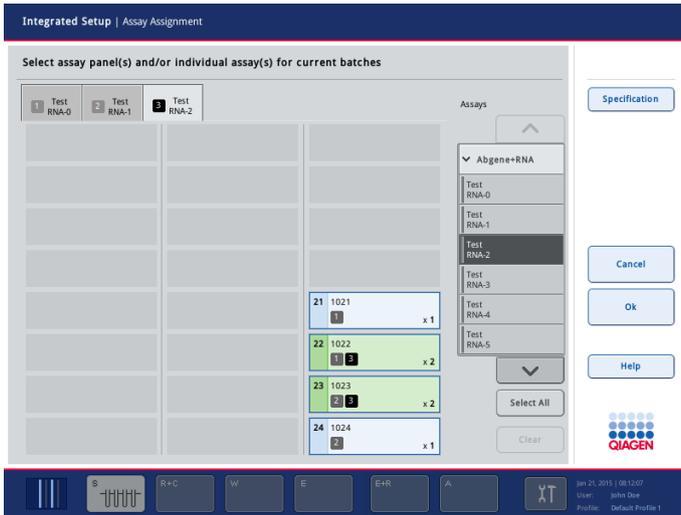

Assay Assignment screen.

To assign assays to the selected batch:

1. Select the sample positions to which the assay should be assigned. These will be shown in light blue before selection and darker blue after selection. Alternatively, select all the samples by pressing **Select All**.

2. Select the desired assay from the **Assays** list.

The selected assays will be assigned to the selected positions. A number will appear in the bottom right corner of the assigned sample positions. This number indicates the number of assays that have been assigned to a particular sample.

If there is more than one assay to be assigned, repeat steps 1 and 2 for all assays.

For each assigned assay, there is a separate tab. When an assay tab is selected, all samples with this assigned assay are colored green and have the same assay-specific number in the bottom left corner of the sample position.

Assay Assignment screen with selected assay tab.

**Note**: The **OK** button becomes inactive when at least one conflict exists.

Modifying assay specifications

Depending on the assay definition, it is possible to modify certain assay specifications for the run that is being defined.

Note: For "Read only" Assay Parameter Sets, it is ensured that when defining a run, only the number of replicates can be changed using the touchscreen.

**Note**: It is not possible to modify assays in work list mode.

Press **Specification**. The **Assay Specifications** screen will appear.
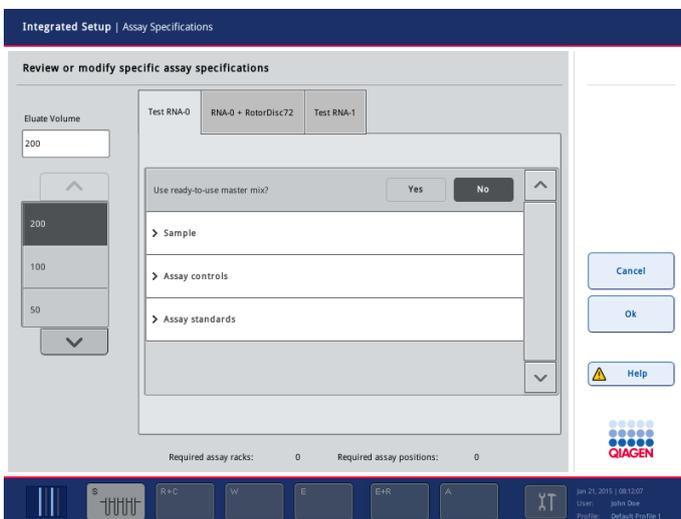
Assay Specifications screen.

The assigned assays define the default parameters for a run. To change the assay specifications, proceed as follows:

1. Select the assays for which the parameter will be changed from the tabs.
2. Press **Yes** or **No** to define whether or not a ready-to-use master mix will be used.
3. Parameters are listed under **Sample**, **Assay controls** and **Assay standards** headings. Press one of these headings to view a list of parameters. To scroll through the list, use the up and down arrows. Depending on the assay, some headings are not visible.
4. Modify the desired parameter(s). After modifying a parameter, the associated value appears green and a hand symbol is displayed in the active assay tab. After modifying assay parameters, a hand symbol appears.
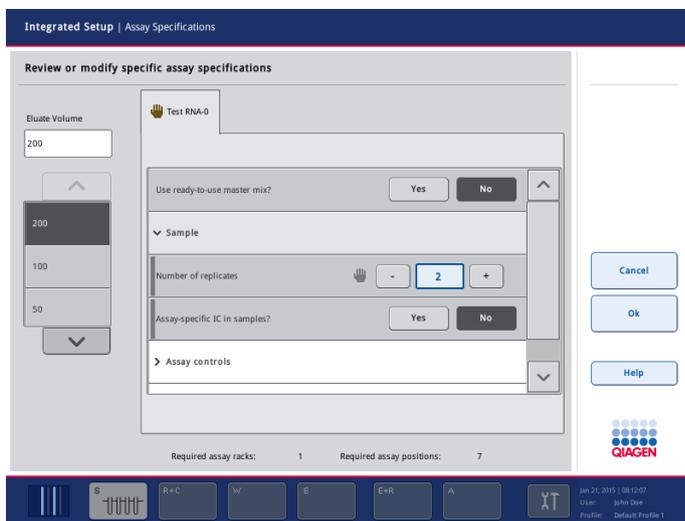
5. If the parameters for more than one assay need to be modified, repeat steps 1–4 for the other assay(s).
6. To overwrite the default elution volume, select the required elution volume from the **Eluate Volume** list on the left side of the screen by pressing the appropriate button. Use the up and down arrows to scroll through the list of available elution volumes.
7. Press **OK** to save the changes and to return to the **Assay Assignment** screen.

Note: If the parameters are modified, the changes will not be saved in the assays. They will be used for the actual run only. To change parameters in an assay for future runs, use the **Process Definition** editor tool of the QIAsymphony Management Console. For further details, see Sections 5 and 14 of the *QIAsymphony Management Console User Manual*.

Note: If the **Help** button has an exclamation mark when the **Assay Specification** dialog appears, then a conflict exists. If the last action results in an error, you can undo the previous action.

The **Help** in the **Assay Specification** screen is context sensitive and provides a hint about the conflict.

Assigning assays using work lists

If work list(s) are used, assays are automatically assigned to samples, as defined in the work list(s). Those batches that have assays assigned to them by work lists are marked with a work list symbol in the column **Assays** (circled in the image below). The assignments can be edited in the **Assay Assignment** screen by pressing the **Define Assays** button.
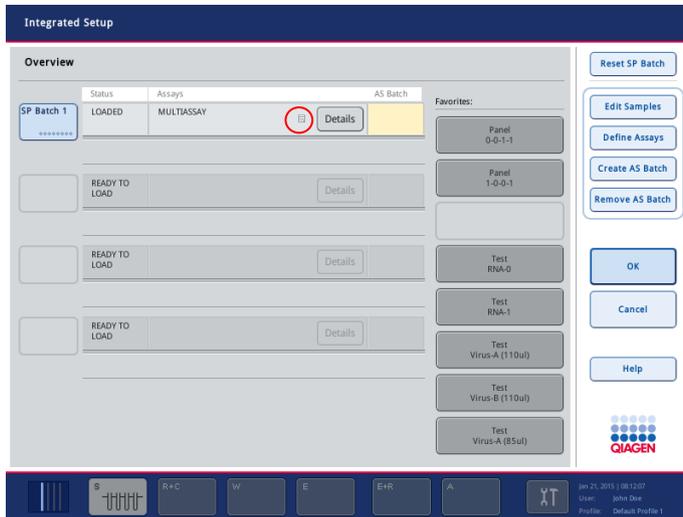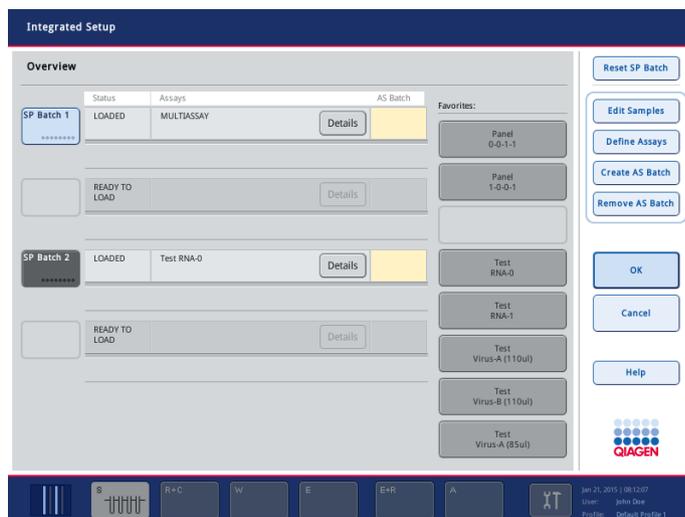

Integrated Setup screen with work list assignments.

2.4.2 Creating AS batches

An AS batch can be created from a single SP batch, or from more than one SP batch.

To create an AS batch, proceed as follows:

1. In the **Integrated Setup/Overview** screen, press on one or more SP batches to select them. When selected, the batch button(s) will change from blue to gray.

2. Press **Create AS Batch**. An AS batch will be created from the selected SP batches. A number will appear in the **AS Batch** column. This number indicates which AS batch a particular SP batch is linked to.
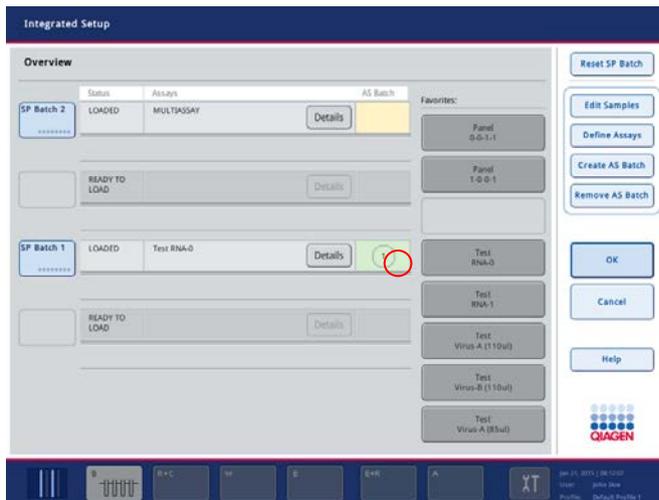
Note: To unlink an AS batch from an SP batch, press on the SP batch(es) to select them, and then press **Remove AS Batch**.

2.4.3   Defining internal controls

1. First load the internal controls into slot A of the "Sample" drawer.

2. Press the **IC** button. The **Sample Preparation/Internal Controls** screen appears.

3. Press on the loaded internal control(s) to select them, and then select an internal control from the **Internal controls** list. The selected internal control will be assigned to the selected loaded internal control(s).

4. Press **OK** to return to the **Integrated Run/Overview** screen.

2.4.4 Queuing an integrated run

When assay definition is complete, the integrated run can be queued. If an SP batch has no related AS batch, only the SP batch is queued. If the SP batch has a related AS batch, both the SP and the AS batch are queued.

To queue an integrated run, proceed as follows:

1. Press **OK** in the **Integrated Setup** screen.

    Note: It is not possible to queue the integrated run if at least one batch has conflicts.

    The **Integrated Run/Overview** screen appears.

2. Load the QIAsymphony SP worktable (see Section 2 of *Operating the QIAsymphony SP*).

3. Start the integrated run by pressing **Run** (see Section 2.8).

4. While the integrated run is being processed, load the QIAsymphony AS worktable (see "Loading an integrated run", Section 2.6).
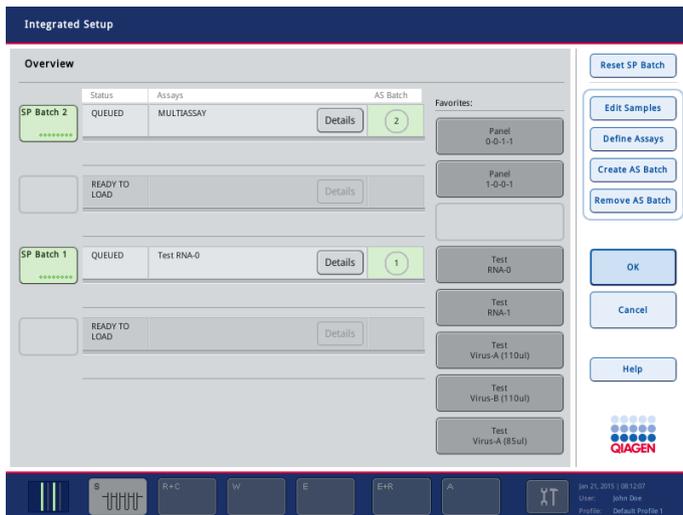
2.4.5 Modifying an integrated run

If an integrated run has already been defined, the **Integrated Run** screen displays the status of all defined integrated batches and the relationship between SP and AS batches.

Integrated Run screen with integrated batches.

Press **Modify Run**. The **Integrated Setup** screen will open.

Integrated Setup screen with 2 queued batches.

The **Integrated Setup** screen provides an overview of the defined integrated batches. The following modifications can be performed:

- **Reset SP Batch**: Removes all assigned assays from the selected SP batch (i.e., all actions in the **Define Assays** screen are undone). This action can only be performed while the SP batch is in the **LOADED** state.

- **Edit Samples**: Allows bar code reading errors for sample tubes to be resolved; also allows the modification of sample IDs, sample types or sample labware.

- Assign assay to all samples of a batch (via the **Favorites** buttons, see "Assigning favorite assays", page 18.

- **Define Assays** for a batch, see "Assigning assays using the **Assay Assignment** screen", page 19.

- **Create AS Batch**: Using this functionality, an AS batch can be assigned to one or more SP batches.

  Important: Be aware that if you use the functions **Modify Run** and **Create AS Batch** after an integrated run has been queued, the order in which SP and AS batches are processed by the system may be different from the order in which batches would be processed if AS batches were created before queuing the integrated run. For more details about this, see the Appendix, "Processing order of an integrated run".

  Note: At least one assay has to be assigned to the SP batch's samples.

  Note: This action can also be performed for already completed SP batches. This allows an automated assay setup for samples for which the purification step is already completed.

- **Remove AS Batch** from a related SP batch. Using this functionality, an AS batch can be removed from the integrated run.

Note: This functionality is unavailable if the AS batch has been started.

Note: It is possible to change the order in which batches of an integrated run are processed by manually unloading and reloading an SP batch. For more details, see the Appendix, "Processing order of an integrated run".

## 2.5   Resolving errors of sample/internal control tubes or sample IDs

For details about to how resolve errors regarding sample/internal control tubes or sample IDs, see Section 2.8 of *Operating the QIAsymphony SP.*

2.6   Loading an integrated run

First, load the QIAsymphony SP. Then, load the QIAsymphony AS. This section outlines how to load samples, reagents and consumables onto the QIAsymphony AS.

For detailed loading information, see "Loading information file", Section 8.11 of the *General Description*.

In addition, the **Loading Information** screen provides an overview of which labware, consumables and adapters are required for a run. The number and type of filter-tips that are required are displayed. Press on a particular slot for more detailed information.
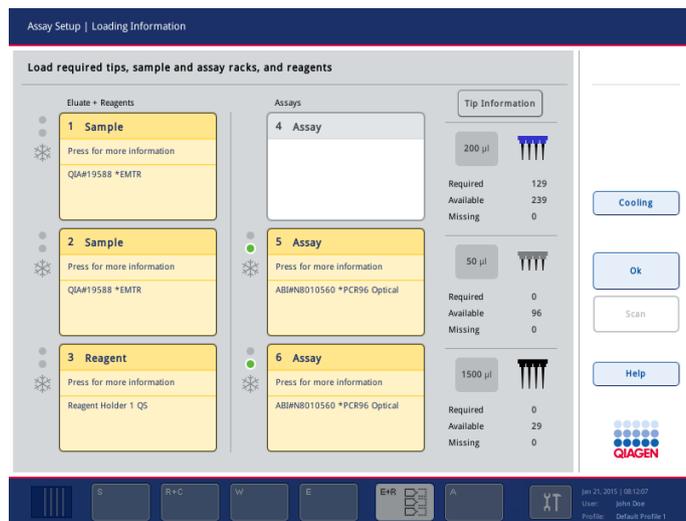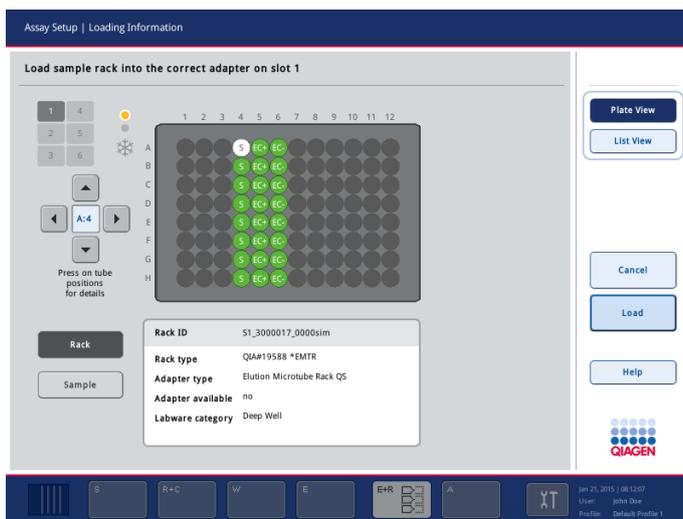

Loading Information screen.

2.6.1 Loading sample racks

Sample slots

Press on a sample slot for detailed loading information. A schematic diagram of the sample rack appears. Press on an individual position to view information about a particular sample. You can also use the arrows to select a position. When **Sample** is pressed, the sample ID, sample type, status and sample volume are displayed, as well as the assay to which this sample has been assigned.

To view information about all of the samples in the sample rack in a tabular format, press **List View**. The following screen appears.
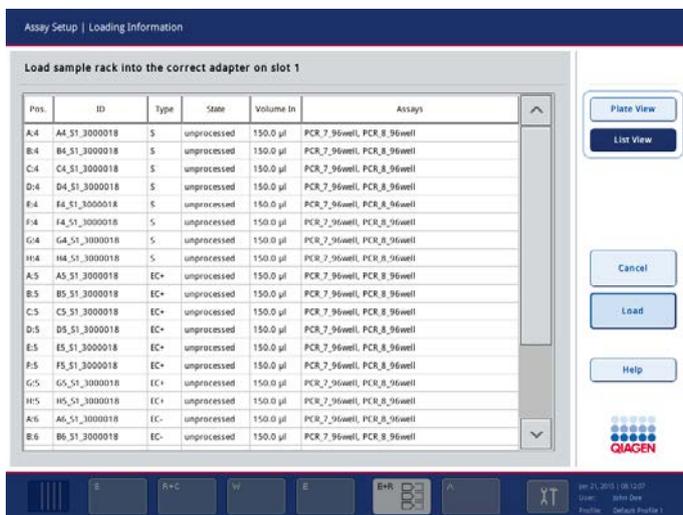
Loading

If operating the QIAsymphony SP/AS instruments in integrated mode, an elution rack is automatically transferred to the QIAsymphony AS (see Section 2.19 in *Operating the QIAsymphony SP*

If operating the QIAsymphony AS in independent mode, the sample rack can be automatically transferred (using the **Transfer** button) or manually transferred. If manually transferred, load a sample rack as follows:

1. Open the "Eluate and Reagents" drawer. The **Assay Setup/Loading Information** screen appears. Temporary cooling for the defined slots is started.
2. In the **Assay Setup/Loading Information** screen, press the first sample slot to be loaded (highlighted yellow). Detailed loading information for the slot is shown.
3. Place the sample rack in the appropriate adapter on the selected sample slot.

    Note: Ensure that the appropriate adapter is used with each sample rack.

    Note: Ensure that the sample volume(s) match the sample volume(s) that have been defined during assay definition in the sample rack **Overview** screen.
4. In the **Assay Setup/Loading Information** screen, press **Load**.
5. If the **Assay Setup/Manual Input** screen appears, scan the bar code with the bar code scanner, or enter the rack ID manually and press **OK**. (This step may be skipped depending on configuration settings.) See Appendix A of the *General Description* for a list of compatible bar code types.

    The **Assay Setup/Loading Information** screen reappears. The loaded slot is now highlighted blue.
6. If a second sample rack has to be loaded, repeat steps 2–4 for the second sample slot.
7. Leave the "Eluate and Reagents" drawer open to enable loading of reagents (Section 2.6.3), and disposable filter-tips (Section 2.6.4).
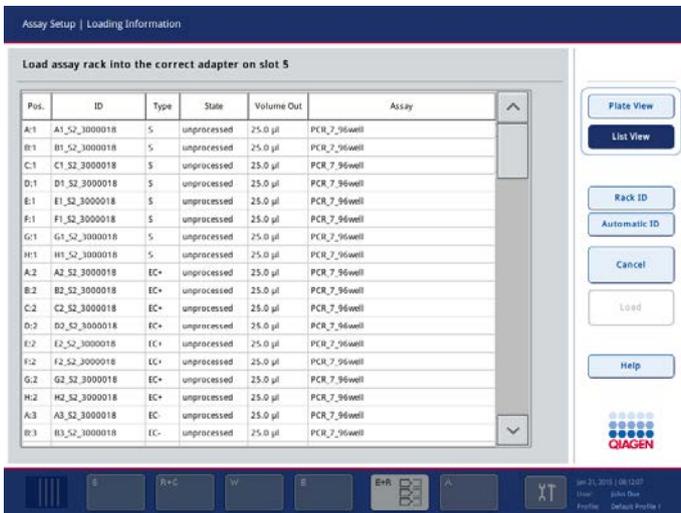
2.6.2 Loading assay rack(s)

Assay slots

Press on an assay slot for detailed loading information. A schematic diagram of the assay rack appears. Press on an individual position to view information about the sample at that position. You can also use the arrows to select a position. When **Sample** is pressed, the sample ID, sample type, status and volume are displayed, as well as the assay to which this sample has been assigned.
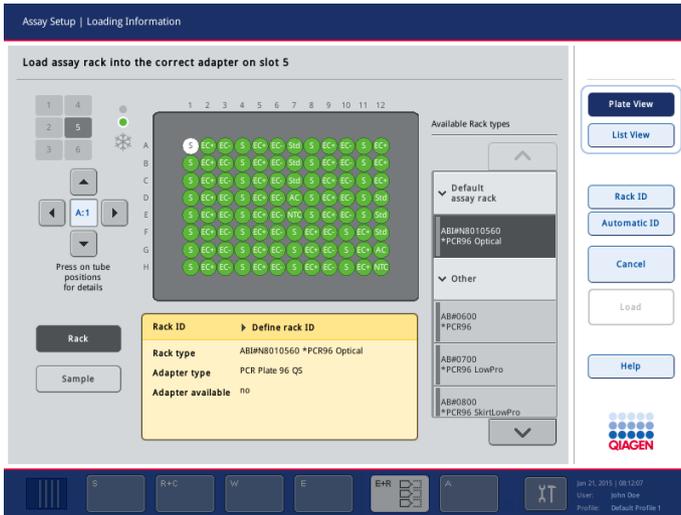
To view information about all of the positions in the assay rack in a tabular format, press **List View**. The following screen appears.
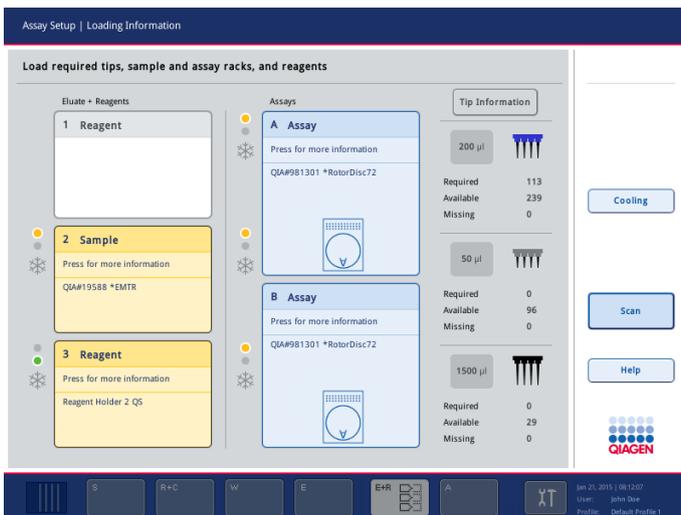

Loading

The required number of assay rack(s) is calculated by the software. The maximum number of assay racks is 3. If an assay run includes a normalization step, up to 2 assay racks can be used.

If a Rotor-Disc® is used as an assay rack, slots 4–6 are covered by the Adapter 2 x Rotor-Disc, Qsym (cat. no. 9242204). A maximum of 2 Rotor-Discs can be used.
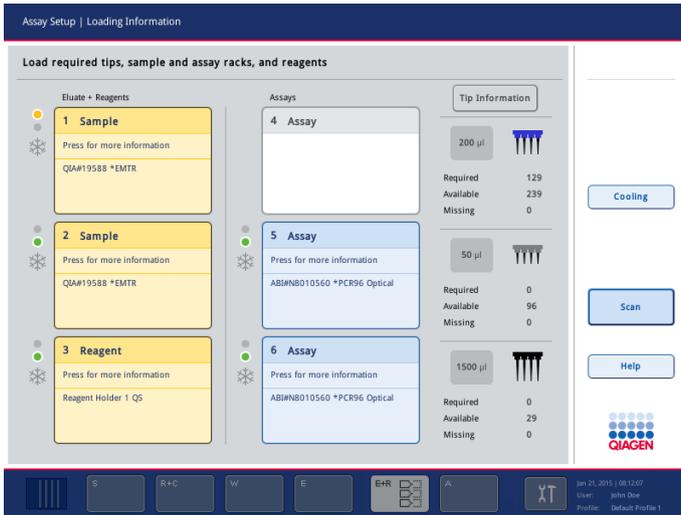
Loading Information screen with assay racks assigned to slots 5 and 6.

Loading Information screen with Rotor-Discs assigned.

Assay slots are assigned automatically by the software; the assignment cannot be changed by the user. The assignment depends on the processing work flow. Slot 5 is processed first, then slot 6, and then finally slot 4. If the assay run includes a normalization step, slot 5 is processed first, and then slot 4. If an assay which uses the Rotor-Disc has been assigned, two assay slots are visible: A and B. Slot B is processed first, followed by slot A.

1. Open the "Assays" drawer. Temporary cooling for the defined slots is started.
2. In the **Assay Setup/Loading Information** screen, press the first assay slot to be loaded (highlighted yellow). Detailed loading information for the slot is shown.
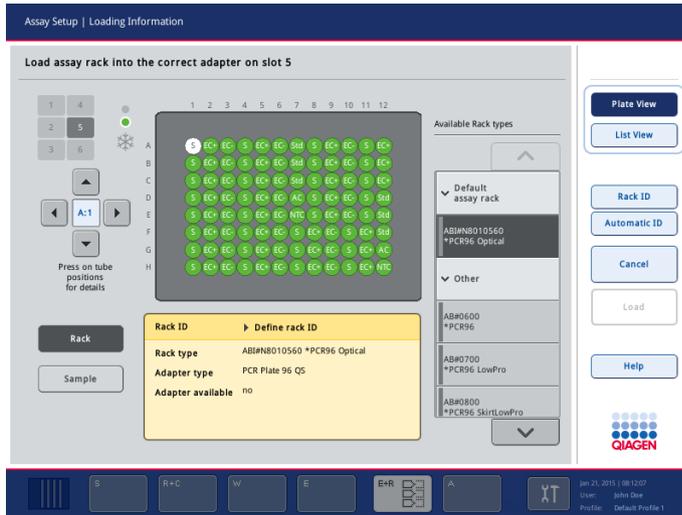
3. Assign rack type and rack ID (see below for details).

4. Place the empty assay rack in the appropriate adapter on the correct assay slot(s).

   Note: Ensure that the appropriate adapter is used with each assay rack.

   Note: When using segmented labware, the required plasticware and corresponding positions will be displayed. Ensure that the correct positions are used. The positions will not be checked during the inventory scan.

   Note: When using a Rotor-Disc, place the Rotor Disc onto the Rotor Disc loading block, the loading block onto the Rotor Disc adapter, and the base unit onto slot positions 4, 5 and 6.
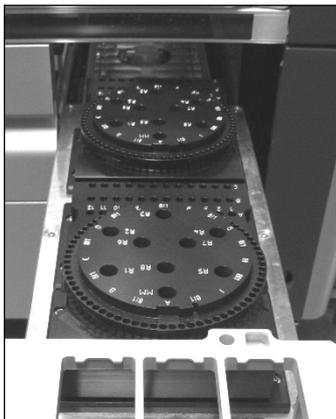

Placement of 2 x Rotor-Discs on the Rotor-Disc adapter in the "Assays" drawer.

5. Press **Load**. The **Assay Setup/Loading Information** screen appears again. The loaded slot is now shown in blue color.

6. If more assay racks have to be loaded, repeat steps 2–4 for the second assay slot.

7. Leave the "Assays" drawer open to enable loading of normalization rack (optional) and disposable filter-tips (Section 2.6.4).

Assigning assay rack type

A default assay rack type is defined in each Assay Parameter Set. This default assay rack type is automatically displayed in the assay slots in the **Assay Setup/Loading Information** screen. It is possible to change the assay rack type. For some assay rack types, the assay rack can only be changed to an assay rack that uses the same adapter type. If Assay Parameter Sets have been assigned that have different default rack types, no rack type will be specified in the corresponding assay slot. **Available Rack types** lists rack types that are specified in one or more of the assays under **Default assay rack**, and all other assay racks that can be used are listed under **Other**.
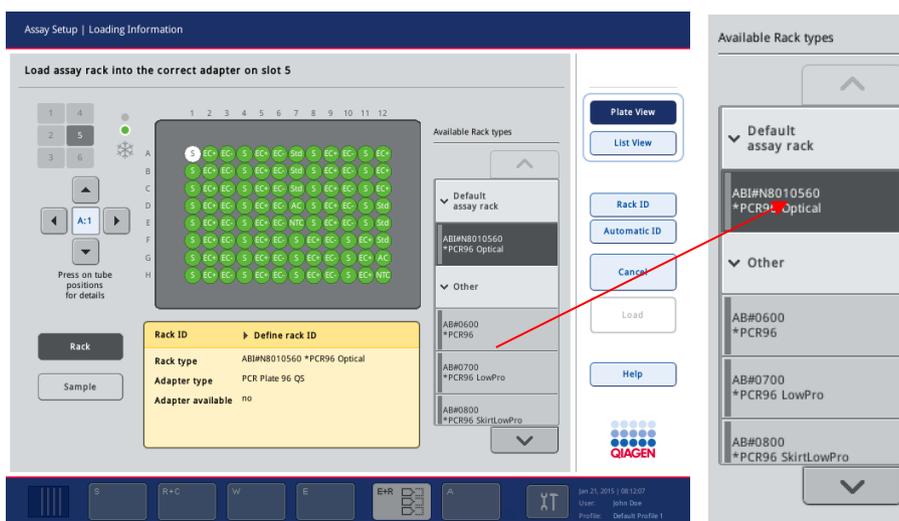
To change the assay rack type or to assign an assay rack type, proceed as follows:

1. Select a rack type from those listed on the right. The up and down buttons can be used to scroll through the list.

   Note: The list only displays rack types that have the same assay rack format.

2. The assigned rack type is then displayed in the selected assay slot.

Assigning assay rack ID(s)

An assay rack ID can be assigned manually or automatically. The assigned assay rack ID will be used to create a rack file. The name of the rack file is "RackFile_rack ID".

Note: Be aware that some symbols cannot be used in the rack file name and some symbols are converted.

Note: If the assay rack type is changed after a rack ID has been entered, the rack ID will remain the same.

Manually assigning an assay rack ID

1. Press **Rack ID**.

2. The **Assay Setup/Manual Input** screen will appear.
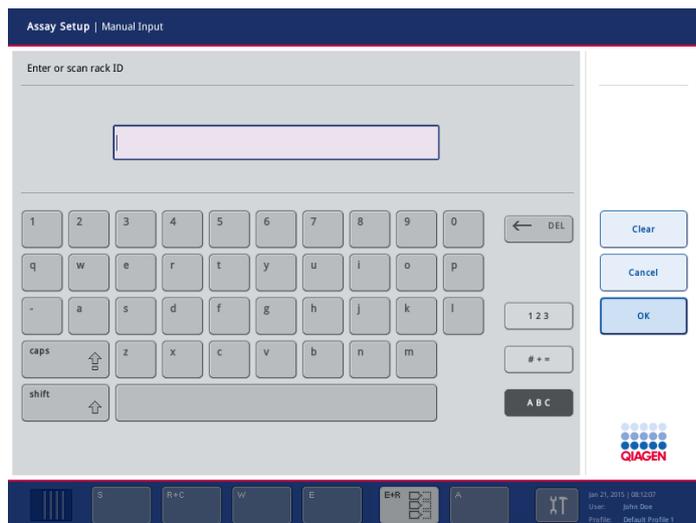
3. Manually enter an assay rack ID by pressing the buttons in the keyboard. Alternatively, use the bar code scanner to enter a rack ID. See Appendix A of the *General Description* for a list of compatible bar code types.

4. Press **OK** to return to the **Assay Setup/Loading Information** screen.

    The entered assay rack ID will appear in the corresponding Assay slot. If a rack type has already been assigned to the Assay slot, the slot will now appear blue.

Automatically assigning an assay rack ID

Press **Automatic ID**. The software will automatically assign an ID with the format SlotNr_RunID_Suffix (e.g., S5_1000017_0000).

A rack ID is automatically assigned to the selected assay slot(s). If a rack type has been assigned to the assay slot(s), the slot(s) will now appear blue.

2.6.3   Loading reagents

Reagent slots

Press the reagent slot(s) to view detailed information about the required reagents, tubes and corresponding volumes. The **Loading Reagents** screen appears. A schematic of the reagent adapter that will be used is displayed on the screen.

Press on an individual position to view loading information for that particular position. The position will change from blue to white and detailed information about the reagent, tube type and volume for that position on the adapter will be displayed in the table.
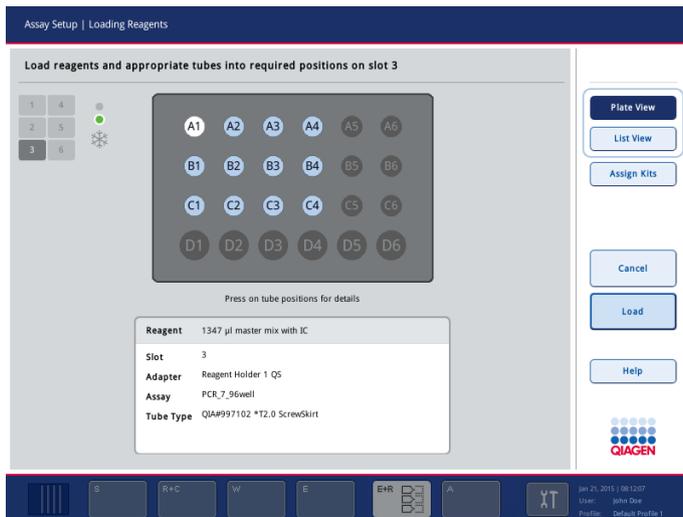
Loading Reagents screen.

To view loading information about all reagents for a particular assay, press **List View**. The following screen appears.
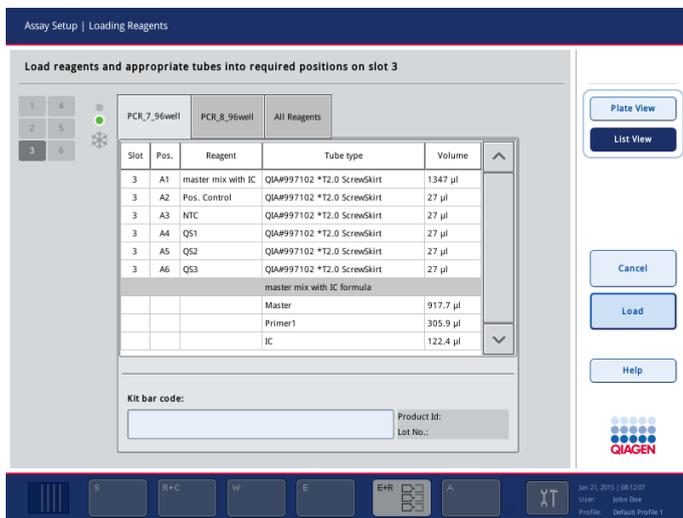

Select different assay tabs to see reagent information for the different assays. To view reagents for all assay(s) defined for the run, select **All Reagents**.

If ready-to-use master mix was selected for an Assay Parameter Set, the list contains information about the composition of the master mix, as shown in the screenshot above.

Entering reagent kit bar codes

To enter a reagent kit bar code for each assay, proceed as follows:

1. Switch to **List View**, or press the button **Assign Kits**.

2. Press on the appropriate tab to select an assay.

3. Press on the **Kit bar code** field.
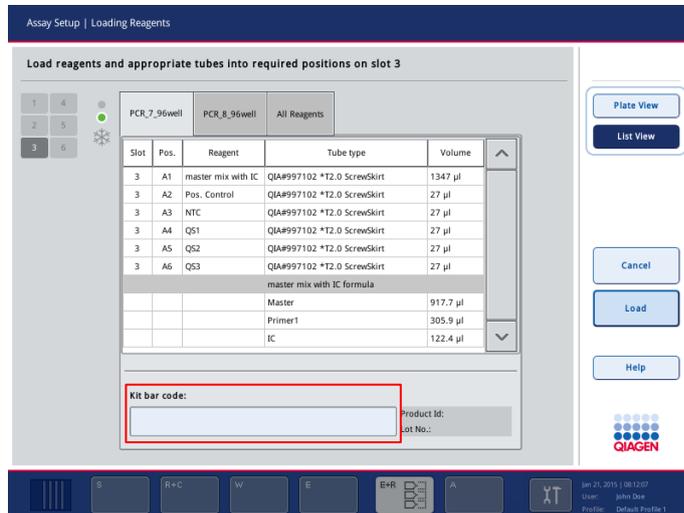
4. Manually enter the bar code, or enter a bar code using the handheld bar code scanner.

    Note: Multiple kit bar codes for one assay must be separated by a semi colon. In this case, validation of lot number and expiration date will not be performed.

5. Press **OK** to return to the **Loading Reagents** screen. If the bar code scanner was used, the **Loading Reagents** screen will automatically reappear.

6. The software validates the kit bar code of known format and checks the lot number and expiration date.

    Note: Entered kit bar codes, including additional information (i.e., expiration date, product number and lot number), are tracked in the result file.

    Note: If the entered kit bar code does not follow a recognized format, a message will appear, asking whether to accept the bar code. Press **OK** to continue.

Defining customized kit bar codes

It is possible to use customized kit bar codes. Validation of the lot number and expiration date is performed by the QIAsymphony SP/AS instruments and is tracked in the result file. The bar code must have the following format (e.g., *123456;20111231).

*	Start delimiter
n x digits	Lot number
;	Delimiter
yyyymmdd	Expiration date (yyyymmdd)

It is possible to use other kit bar codes. After entering the bar code, validation of the lot number and expiration date is not performed. The bar code is tracked in the result file.
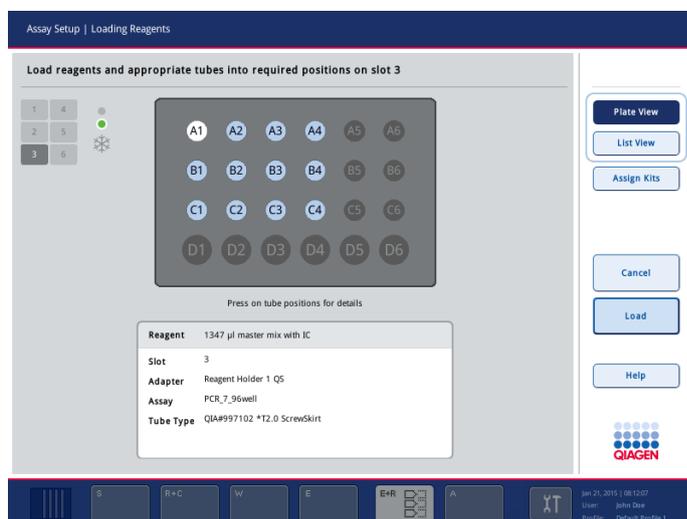
Loading

To load a reagent adapter with reagents, proceed as follows:

1. Fill each tube with the required volume of reagent. If ready-to-use master mix is being used, prepare the master mix as defined in the software.

    Note: Ensure that the correct labware is used. Use of labware that is different to that defined in the **Loading Information** screen may result in an error during preparation or transfer of the master mix. This could result in damage to the QIAsymphony AS.

    Note: Do not mix reagents from different lots because such mixing cannot be tracked by QIAsymphony AS and may adversely affect performance.

2. Remove the lids from the reagent tubes and place the tubes into the correct positions of the appropriate adapter.

3. If not already open, open the "Eluate and Reagents" drawer.

4. In the **Assay Setup/Loading Information** screen, press the first reagents slot (shown in yellow). The detailed loading information for the slot is shown.

5. Place the appropriate reagent adapter onto the defined reagent slot.

6. Press **Load**. The **Assay Setup/Loading Information** screen opens again. The loaded slot is now shown in blue color.

7. If a second reagent rack has to be loaded, repeat steps 1–6 for the second reagent slot.

8. Leave the "Eluate and Reagents" drawer open to enable loading of disposable filter tips (Section 2.6.4).

2.6.4   Loading disposable filter-tips

Up to 6 tip racks can be placed in the "Eluate and Reagents" drawer and the "Assays" drawer (i.e., a total of 12 tip racks). Tip rack position, tip type and number of tips are detected during the inventory scan. The number of tips required varies depending on the assay(s) being run.

We recommend that you load more tips than the actual number of required tips calculated by the software. This is because filter-tip consumption can be affected by some processes on the QIAsymphony AS (e.g., liquid-level detection). In addition, we recommend to load tips preferably in rear tip rack slots. For more information about tip loading press the **Tip Information** button.

Three different types of disposable filter-tips can be used on the QIAsymphony AS – 50 µl, 200 µl and 1500 µl.

Tip information is displayed on the right side of the **Loading Information** screen. For each tip type, the number of required, available and missing tips is listed.
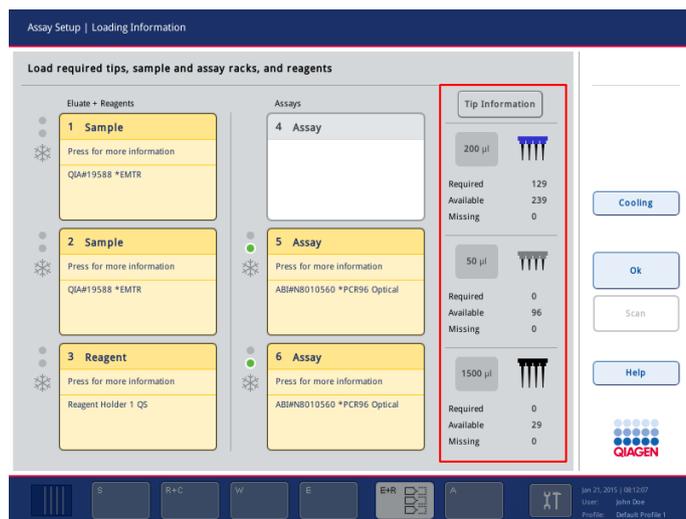
Note: The number of individual tips is displayed, and not the number of tip racks.

Note: The number of available tips is calculated by the software based on the previous run and inventory scan. If the number of available tips does not correspond with the number of required tips, a message will appear during the inventory scan.

To load a disposable filter-tip rack, proceed as follows:

1. If not already open, open the "Eluate and Reagents" and/or the "Assays" drawer.
2. Hold the tip rack with 2 fingers, using the grips.
3. Gently squeeze the tip rack and place it into a tip rack slot.

    Note: Ensure that the tip racks are properly seated in the tip rack slot so that the tip racks will be identified during the inventory scan.

4. Close the drawer(s). See Section 2.6.5 for more detailed information about performing an inventory scan after closing the drawer(s).

    CAUTION   **Damage to the instrument**

    Do not refill partially used tip racks. The number of tips in the racks is detected during the inventory scan. A mixture of various tip sizes in one rack will result in an error during the run.

2.6.5   Performing an inventory scan

After the sample rack(s), assay rack(s), normalization rack (optional), reagents and disposable filter-tips have been loaded, close the "Eluate and Reagents" and "Assays" drawers.

In the **Assay Setup/Loading Information** screen, press **Scan**. The following dialog box appears.

Yes is preselected for tip racks left and right, for adapters left and right and for reagents LLD. Press **Scan** to start the inventory scan immediately.

To perform a partial inventory scan, select **No** for the tip racks, adapters (only available for repeated inventory scans) and/or reagents LLD. Then press **Scan**.

After the inventory scan has been performed, the inventory of the QIAsymphony SP/AS instruments is updated. The system switches off temporary cooling for the slots and switches on cooling for loaded slots.

Note: The inventory scan must be performed to exit this dialog and before a run can be started.

For detailed information about the inventory scan of the "Eluate and Reagents" and "Assays" drawers, see Sections 3.7.2 and 3.7.4 of the *General Description*.

2.7   Checking cooling temperatures (optional)

Cooling temperatures are shown in an overview screen.

Press the **Cooling** button in the **Loading Information** screen. The **Temperature Status** screen appears.
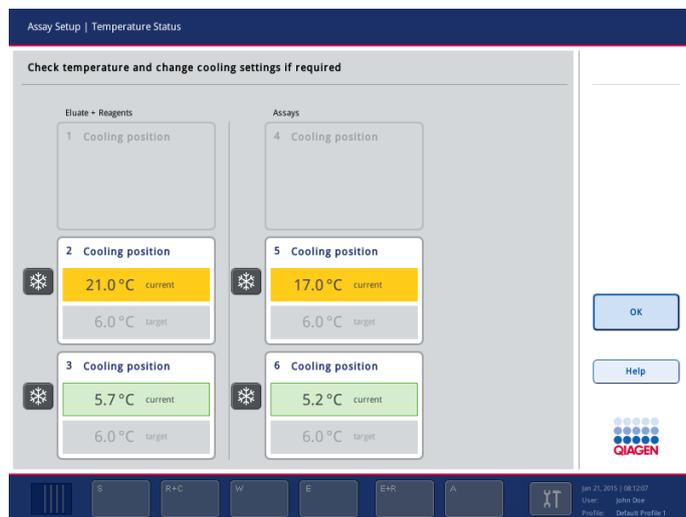
The QIAsymphony AS automatically starts cooling the loaded cooling positions. The current temperature of the cooling positions is updated in real time. If the current temperature is outside the target temperature, the slot will appear yellow. If the current temperature is within the target temperature the slot will appear green.

The target temperature is defined in the assay definition and cannot be changed using the touchscreen.
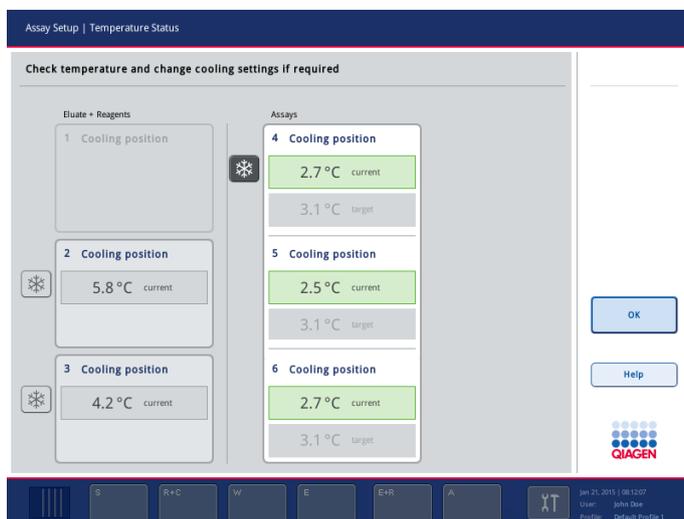
Note: The temperature of the cooling positions throughout an assay run is documented in the result file.

The cooling settings for sample, reagent and assay slots can be switched on when the rack is not yet loaded (precooling).

To switch cooling on:

Press the snowflake button to the left of the cooling position to be switched on.

Note: When a Rotor-Disc is assigned as an assay rack, slots 4–6 are covered with the Rotor-Disc adapter unit. Therefore, only one snowflake button is necessary and visible for slots 4–6.

Temperature Status dialog with Rotor-Disc assigned as an assay rack.

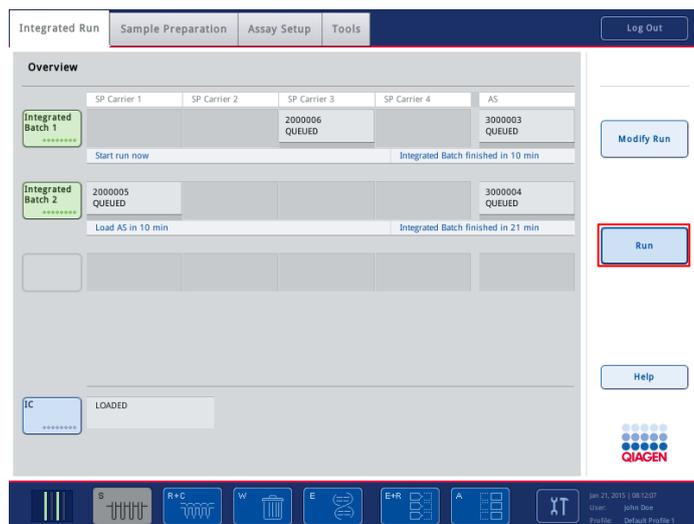Cooling for that position will be switched on, and the snowflake will appear black.

To switch the cooling off again:

Press the snowflake button to the left of the cooling position to be switched off.

Note: If rack is loaded, cooling cannot be switched off.

2.8 Starting an integrated run

Press **Run** in the **Integrated Run/Overview** screen.

Integrated Run screen.

If an inventory scan is necessary, a message will appear, asking whether to perform an inventory scan for each drawer.

2.8.1 Status of a run

The status of an integrated run can be viewed in the **Integrated Run/Overview** screen. See Section 3.3 for further details.

2.9 Removing assays after an AS run

When an assay run is completed or canceled, the assays must be removed from the "Assays" drawer. The assays will not be automatically removed from the QIAsymphony AS.

If the status of a run is shown as **QUEUED**, **STOPPED** or **COMPLETED**, the assay rack(s) and adapter(s) can be removed.

Note: Depending on the setting of the parameter **Time frame for acceptable delay of downstream processing (minutes)** (see Section 6.2.2 of the *General Description*), the acceptable remaining minutes are shown in the assay drawer button:
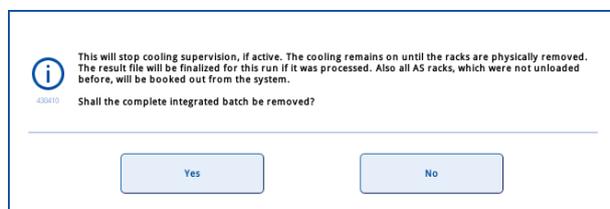

Waiting time must not exceed waiting time as indicated within assay-specific instructions for use. Strict compliance to assay-specific instructions for use is mandatorily required.

1. Press the batch button of completed integrated batch in the **Integrated Run/Overview** screen.
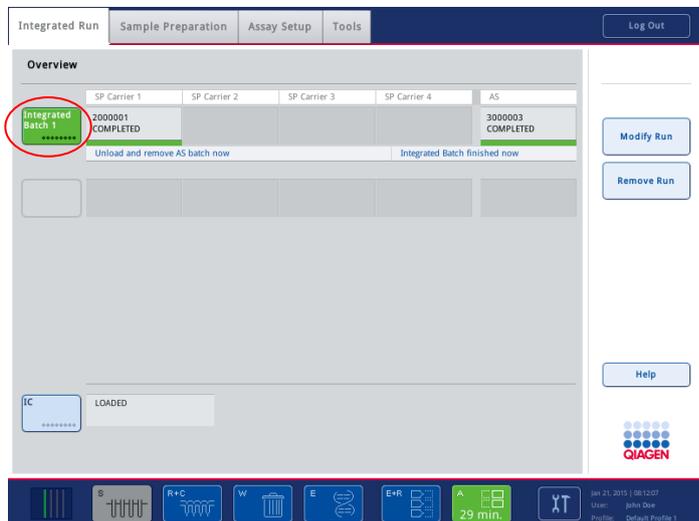
The following message appears.

2. Press **Yes** to remove the batch.

   Note: The racks should now be removed since cooling supervision is switched off for all slots. The cooling will remain active until the racks are physically unloaded, but temperature variations cannot be recognized.

3. Open the "Assays" drawer and the "Eluate and Reagents" drawer. The **Assay Setup/Loading Information** screen appears. Remove all racks, including the assay rack(s).

   Note: The loading instructions for the next QIAsymphony AS run are already displayed. It is possible but not necessary to proceed with loading the next batch now.

Note: In integrated mode, the sample rack staying in the QIAsymphony SP must not be removed in this step.

4. Close the "Assays" drawer and the "Eluate and Reagents" drawer.

5. In the **Assay Setup/Loading Information** screen, press **Cancel**. The **Overview** screen is opened.

6. If more AS runs are to be performed, proceed with loading the next AS run (see Section 2.6). If this is the last AS run, proceed with Section 2.9.1.

Note: If a USB stick is inserted while the system is finalizing a result file due to a user action, the system automatically transfers the result file and related cycler files to the USB stick, and notifies the user with a message.

2.9.1 Procedure after run completion

After the inventory scan is performed, the **Assay Setup/Loading Information** screen appears again. Proceed as follows:

QIAsymphony AS

1. Remove the sample rack(s) from the "Eluate" drawer, including adapter(s).
2. Remove the reagent tube(s) and bottles, including adapter(s).
3. Replace the tip disposal bag.

QIAsymphony SP

1. Remove consumables, reagent cartridges, buffer bottle and Accessory Troughs.

   Note: Be sure to seal partially used reagent cartridges with Reuse Seal Strips. Store partially used reagent cartridges according to the instructions in the kit handbook.
2. Empty the liquid waste container.
3. Unload the unit boxes from the "Waste" drawer.
4. Unload all elution racks.

2.10 Pausing, resuming and canceling an integrated run
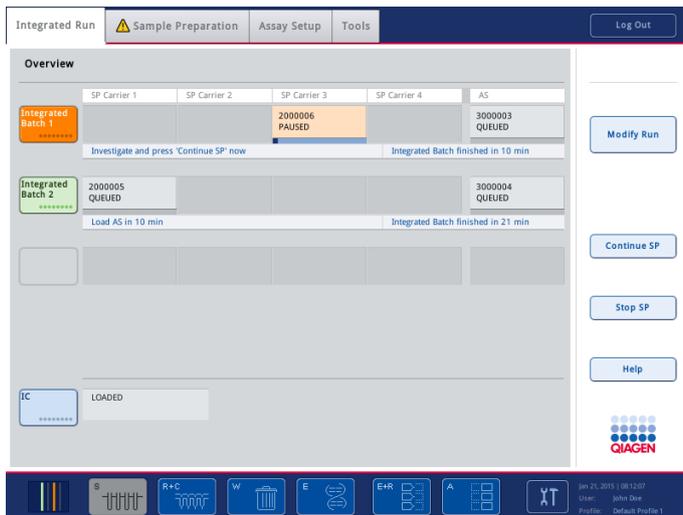
2.10.1 Pausing a run

QIAsymphony SP

A QIAsymphony SP run can be paused by pressing the **Pause SP** button in the **Integrated Run** screen. If a QIAsymphony SP run is paused, the command being processed is completed before the run pauses. All running SP batches will be paused.

If the run is paused, two options are available: the run can be resumed or the run can be stopped.

Note: Pausing a QIAsymphony SP run interrupts the sample preparation procedure. Only pause a run in an emergency.

Note: Processed samples will be flagged as "unclear" when the QIAsymphony SP is paused and then continued.
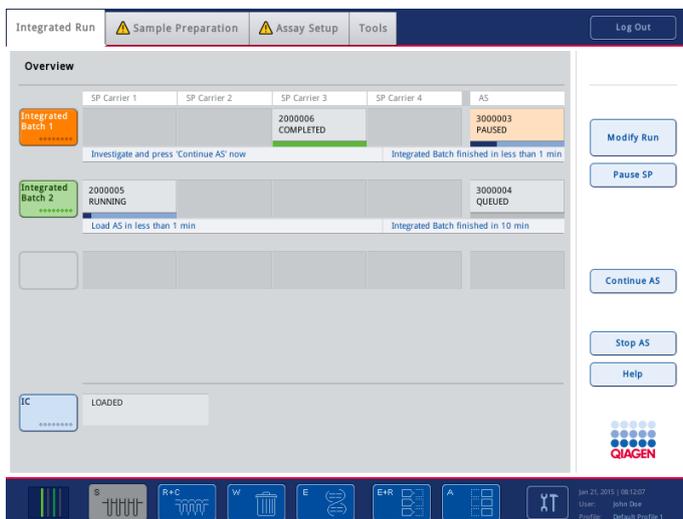
QIAsymphony AS

A QIAsymphony AS run can be paused by pressing the **Pause AS** button in the **Integrated Run** screen. If a QIAsymphony AS run is paused, the pipetting step is completed before the run pauses.

If the run is paused, two options are available: the run can be resumed or the run can be stopped.

Note: Pausing a run interrupts the assay setup procedure and may affect assay performance. Only pause a run in an emergency.

Note: Processed samples will be flagged as "unclear" when the QIAsymphony AS is paused and then continued.

2.10.2 Resuming a run

To resume a run, press the **Continue SP** or **Continue AS** button. Processed samples will be flagged as "unclear" when the QIAsymphony SP/AS is paused and then continued.

2.10.3 Stopping a run

Press the **Stop SP** or **Stop AS** button to stop the integrated run. On pressing **Stop SP**, all batches currently being processed will be stopped, although AS batches previously started will be completed. On pressing **Stop AS**, all SP batches currently being processed will be completed.

If the run is stopped, all processed samples are flagged with "invalid". It is not possible to process these samples further.

For more information, see "Sample status" in Section 8.9.1 of the *General Description*.

Note: When the QIAsymphony AS batch is stopped or finished and the batch removed, the QIAsymphony AS result file is finalized and data from the QIAsymphony SP (if available) is added. This includes general information about the QIAsymphony SP run such as: device serial number, time zone, run mode, user name, batch starting/finishing time and reagent cartridges (identification number, lot number, kit name, expiration date and homogeneity state). Additionally, for every assay output point, upstream information from QIAsymphony SP is added, such as labware and QIAsymphony SP batch ID.

2.10.4 Canceling a run

After stopping a QIAsymphony SP run or if the run stops due to an error, the "S" button flashes. Press the "S" button to display the warning or error message.


Canceled QIAsymphony SP run.

After stopping a QIAsymphony AS run or if the run stops due to an error, the buttons of the affected drawers flash. Press the flashing button(s) to display the warning or error messages.
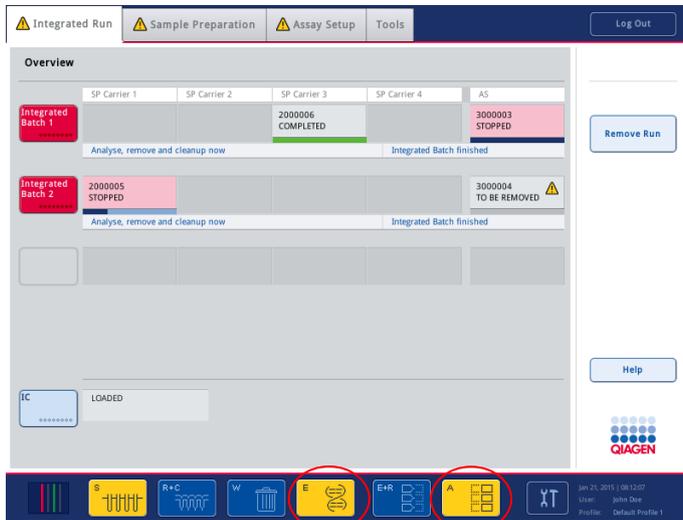
Canceled QIAsymphony AS run.

Switching from integrated operation to independent operation

After canceling an integrated run, the stopped batches will be indicated in the **Integrated Run/Overview** screen.
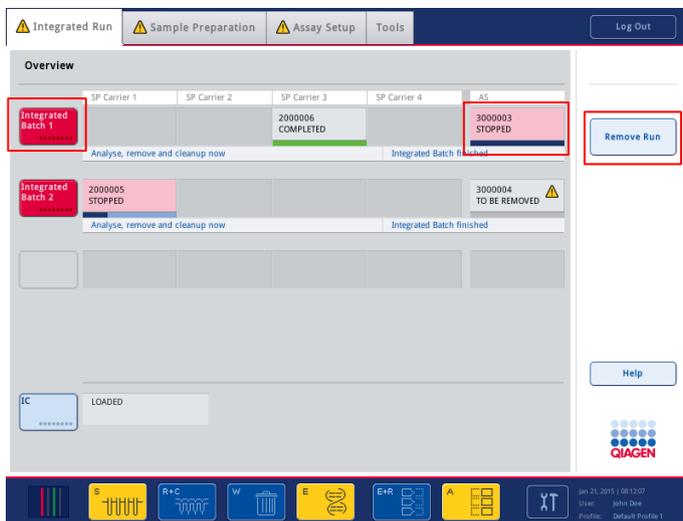

In this case, it is only possible to continue processing the stopped batches in independent mode. Press **Remove Run** to switch from integrated operation to independent operation. You can then select whether to keep the existing batches for the independent mode or to stay in the integrated run.

2.11 Switching from **Sample Preparation** to **Assay Setup** user interface

If the touchscreen displays the sample preparation user interface, you must switch to the assay setup user interface to be able to operate the QIAsymphony A S and define an assay run.
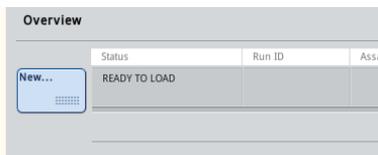
To do this, press the **Assay Setup** tab.

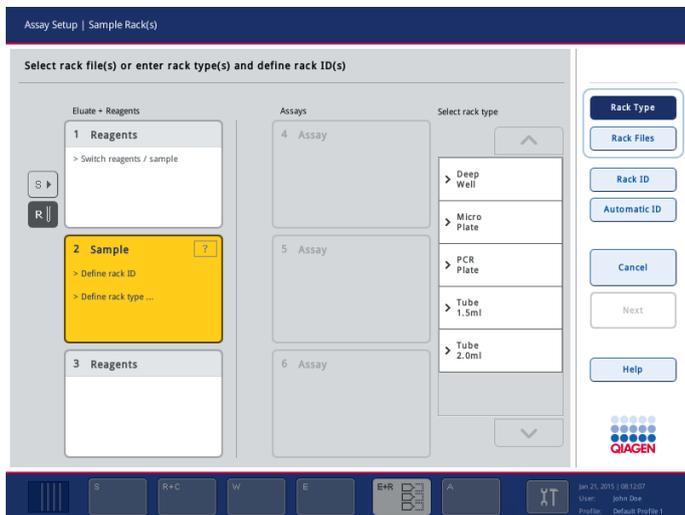The assay setup **Assay Setup/Overview** screen appears.
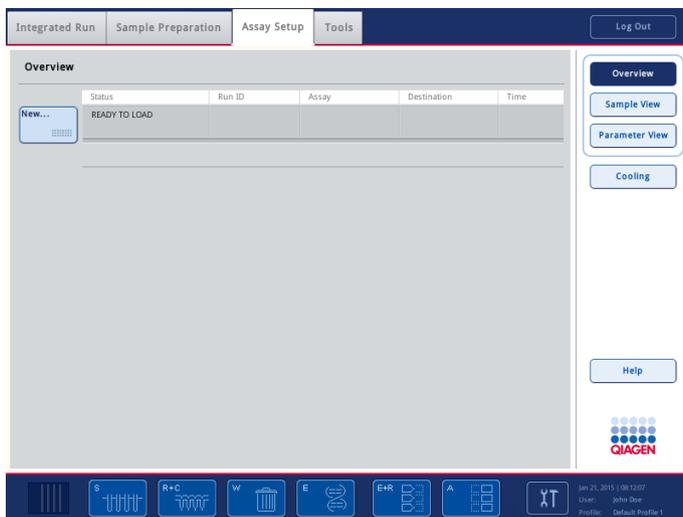
Assay Setup/Overview screen.

2.12 Defining an independent assay run

To start the assay definition process, press the light blue **New** button in the **Assay Setup/Overview** screen.

The **Sample Rack(s)** screen appears.

Sample Rack(s) screen.

### 2.12.1 Defining sample slot(s) and assigning sample rack(s)

By default, slot 2 is defined as a sample slot. This cannot be changed. Slot 2 is automatically preselected in the **Sample Rack(s)** screen and is highlighted dark yellow.

Slot 1 is by default defined as a reagents slot. If required, slot 1 can be redefined to create an additional sample slot.

Each sample slot must be assigned a rack type and a rack ID. If a rack file is available, a rack type and rack ID will be automatically assigned when the rack file is assigned to the sample slot. If no rack file is available, the rack type and rack ID must be manually assigned.
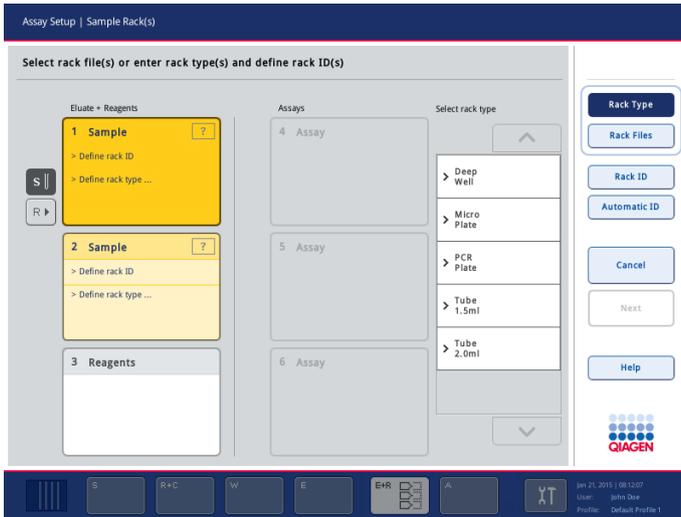
Defining an additional sample slot

Press the **S** button to the left of slot 1 in the **Sample Rack(s)** screen.
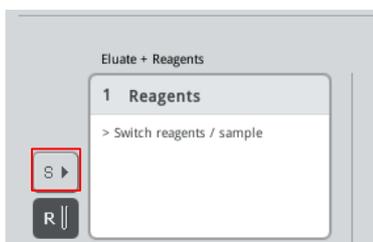
The reagents slot will then switch to a sample slot. This slot will be automatically selected and will be highlighted dark yellow.

Note: To switch slot 1 from a sample slot back to a reagents slot, press the **R** button.

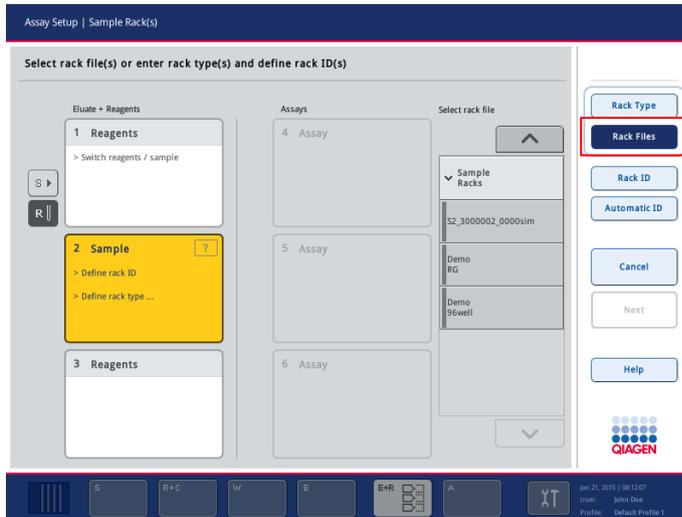**Sample Rack(s) screen with slots 1 and 2 defined as sample slots.**

Assigning a rack file

1. If not already selected, press on a sample slot to select it. A selected sample slot is highlighted dark yellow. Ensure that only one sample slot is selected.

    Note: To deselect a sample slot, press on it. It will then appear pale yellow.

2. Press **Rack Files**.

    The **Select rack file** list appears.

3. Press on a rack file to select it from the list.

    There are 3 types of rack files: **Sample Racks**, **Normalization Racks** and **Assay Racks**. **Sample Racks** are standard sample rack files for defining an assay run. In some cases, the assay rack

can be used as a sample rack (e.g., for setting up 2-step RT-PCR assays). In this case, an **Assay Rack** can be selected.

Note: If an **Assay Rack** file is selected, a warning message appears.
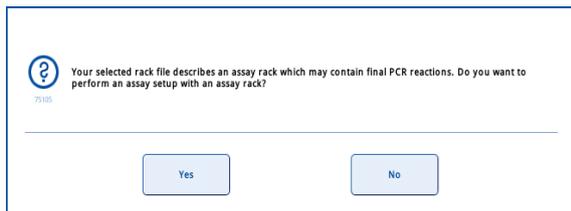
Press **Yes** to continue.

Note: In case of using an eluate rack with 2D bar coded tubes, the eluate tube bar code is appended to the sample ID with a blank in between within the result file. See Section 6.2.2 of the *General Description* for details on enabling eluate racks with 2D bar coded tubes.

4. The selected rack file will be assigned to the selected sample slot. The rack type and rack ID that are defined in the selected rack file will be assigned to the selected sample slot. The sample slot will now appear blue and the **Next** button becomes active.
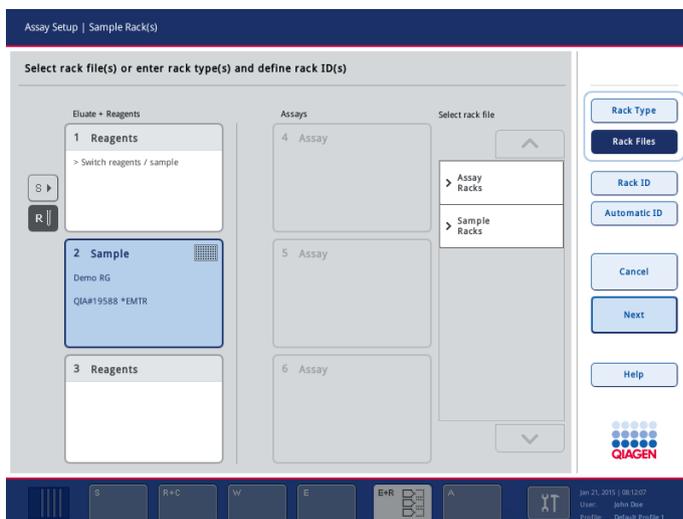
Sample Rack(s) screen with rack file assigned to slot 2.

Assigning a rack type

If a rack file will not be used, each defined sample slot must be assigned a rack type. Assign a rack type as follows:

1. Press **Rack Type**.
2. If not already selected, press on a sample slot to select it. A selected sample slot is highlighted dark yellow.

Note: If both slot 1 and slot 2 are defined as sample slots, it is possible to select both sample slots and assign the same rack type to both slots at the same time.

3. Select a rack type from the **Select rack type** list. Use the up and down arrows to scroll through the list.

   The selected rack type will be assigned to the selected sample slot(s).

   Note: If a rack ID has already been assigned to the "Sample" slot, the slot will now appear blue.

Assigning sample rack ID(s)

If a rack file will not be used, each defined sample slot must be assigned a rack ID.

A rack ID can be assigned manually or automatically. The assigned rack ID will be used to create a rack file. The name of the rack file has the format "RackFile_rack ID".

Note: Be aware that some symbols cannot be used in the rack file name and some symbols are converted.

Note: If the rack type is changed after a rack ID has been entered the rack ID will remain the same.

Note: In case of using an eluate rack with 2D bar coded tubes, the eluate tube bar code is appended to the sample ID with a blank in between within the result file. See Section 6.2.2 of the *General Description* for details on enabling eluate racks with 2D bar coded tubes.

Manually assigning a sample rack ID

1. Select a sample slot.

2. Press **Rack ID**.

3. The **Manual Input** screen will appear.

Assay Setup/Manual Input screen.

4. Manually enter a rack ID using the keyboard. Alternatively, use the bar code scanner to enter a rack ID.

5. Press **OK** to return to the **Sample Rack(s)** screen.

   The entered rack ID will appear in the corresponding sample slot. If a rack type has already been assigned to the sample slot, the slot will now appear blue.

Automatically assigning a sample rack ID

1. Select a sample slot.

   Note: If both slot 1 and slot 2 are defined as sample slots, it is possible to select both sample slots and to automatically assign rack IDs to both slots at the same time.

2. Press **Automatic ID**.

   The software automatically assigns an ID in the format SlotNo._RunID_Suffix (e.g., S2_1000002_000).

   A rack ID is automatically assigned to the selected sample slot(s). If a rack type has already been assigned to the sample slot(s), the slot(s) will now appear blue.

2.12.2 Defining/checking sample rack(s)

Once rack file(s) and rack type(s) have been assigned to sample slot(s), the positions of samples, controls and the associated volumes must be defined.

Press **Next** in the **Sample Rack(s)** screen. The **Sample Rack Layout** screen appears. This screen displays a schematic of the sample rack in the selected sample slot. If two sample slots were defined, the **Slot 1** and **Slot 2** buttons can be used to switch between views of the two sample slots.

If rack file(s) were assigned, sample positions, extraction controls and volumes are already defined and are displayed in the sample rack layout. It is only possible to modify the sample volumes. This may be necessary if some eluate was manually removed from the rack before being placed on the QIAsymphony AS. It is not possible to define additional sample positions.

Note: Samples and/or extraction controls that have been processed on the QIAsymphony SP and marked as "invalid" are marked in red. These "invalid" sample and extraction controls cannot be processed by the QIAsymphony AS and cannot be selected by the user in the **Assay Assignment** screen. In the **Assay Assignment** screen, any "invalid" samples appear as an empty well.

If rack file(s) were not assigned, sample positions, control positions and volumes must be manually defined. When a rack file has not been assigned it is also possible to edit the sample IDs.

Note: If an assay rack file is being used as a sample rack file, the abbreviations used for assay standards (Std), no template controls (NTC, NTC+IC, NTC–IC; where IC is internal control) and assay controls (AC) are not displayed; only the volume is visible. Press on the position (pale yellow) to select it, and then select **Sample**, **EC+** or **EC–** to define the sample type (where EC is extraction control). The **Next** button then becomes active.


Press **Zoom in** to view the name of the sample IDs.
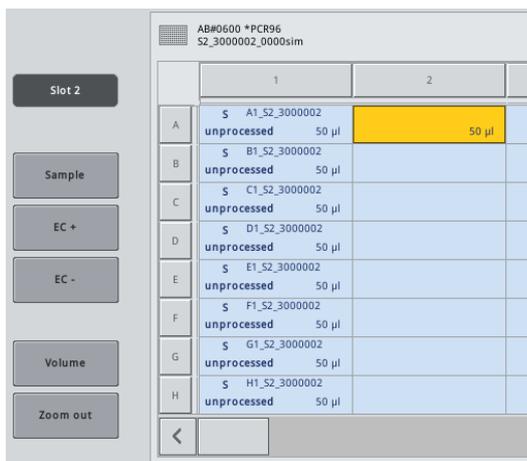
Note: Small fluctuations in the expected volume of eluate are dependent on the QIAsymphony SP protocol. This means that the maximum number of reactions that can be set up per sample may no longer correspond to the available volume of eluate. See the example below.

Example: When assigning the Assay Control Set to samples on the QIAsymphony SP, an eluate volume of 60 µl is selected. However, the actual eluate volume is around 60 µl. The selected assay requires 20 µl of eluate. This is pipetted twice from each position. Each position in the elution rack has a dead-volume associated with it that is not available for sample transfer. For the positions that,

for example, only contain less than 60 µl, sufficient eluate may not be available for sample transfer and this may result in PCR failure. However, visual inspection of the assay rack enables uniformity of sample volume to be easily checked and ensures PCR success.
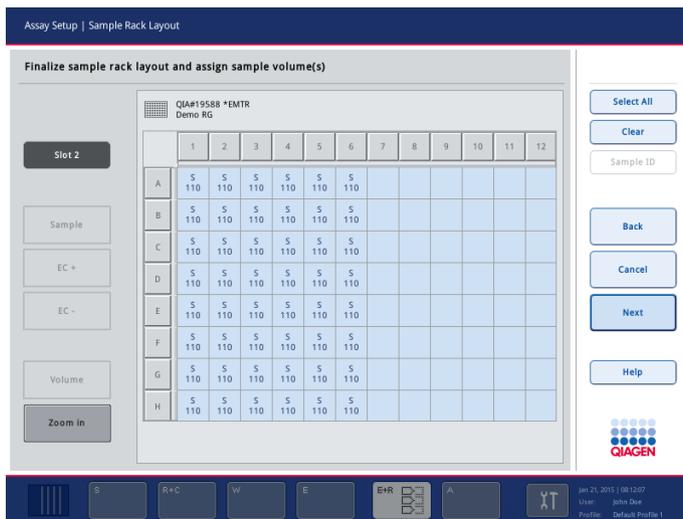
Sample Rack Layout screen, with rack file assigned.
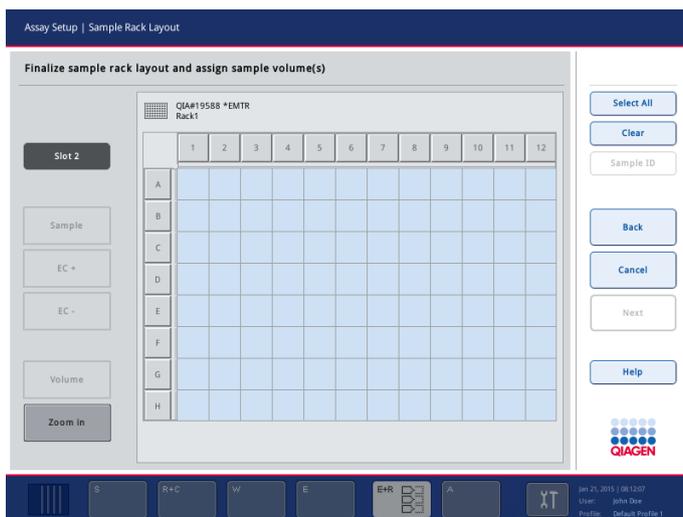
Sample Rack Layout screen, with no rack file assigned.

Selecting positions in the sample rack

Before samples, controls and volumes can be defined, positions in the sample rack must be selected.

● To select individual position(s), press on individual position(s) in the rack.

● To select a complete column or row, press on the number or letter that is associated with that particular column or row.

- To select all positions, press **Select All**.

- To select a block of positions, press on one position and drag your finger to select other adjacent positions.
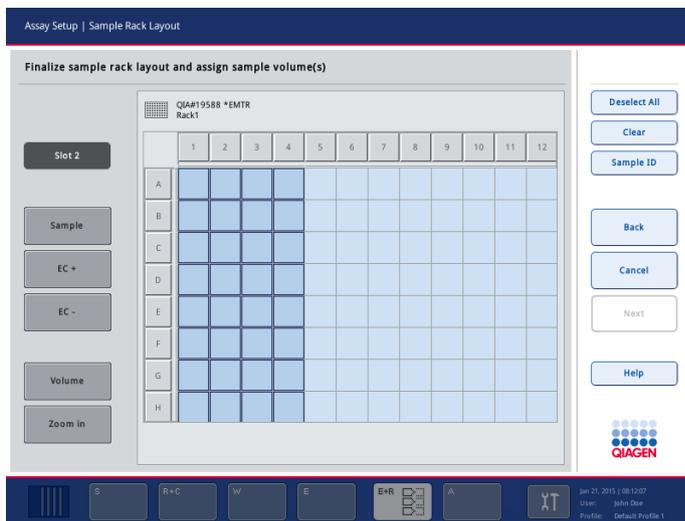
Note: Selected positions appear dark blue.

Note: To deselect all positions, press **Deselect All**. The **Deselect All** button is enabled in the **Sample Rack Layout** screen when at least one position is selected. To deselect individual positions, press on the individual positions again. To deselect a complete row or column, press on the letter or number that is associated with that row or column again. Deselected positions return to light blue.
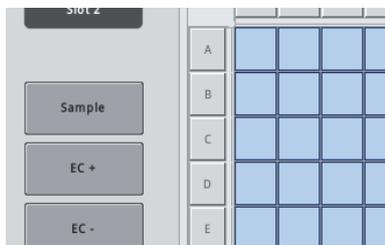
Define sample positions

If a rack file has not been assigned, sample positions must be assigned. To do this, proceed as follows:
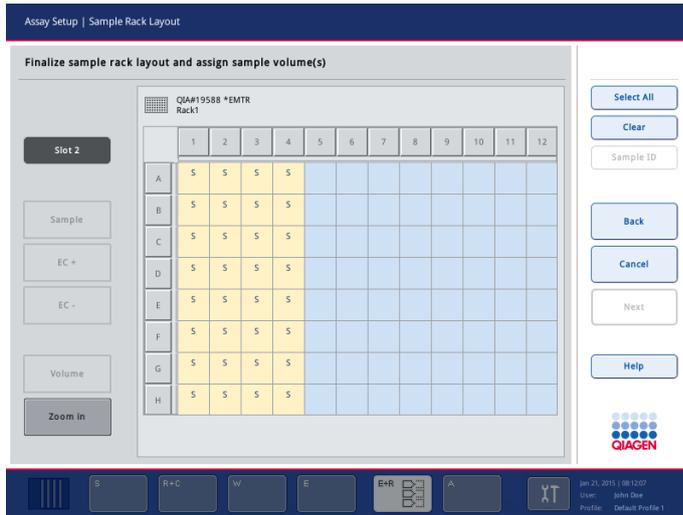
1. Select position(s) that contain samples.

2. Press **Sample** to assign samples to the selected positions.

An "S" will appear in each selected position. These positions will appear yellow and will be automatically deselected.

Note: To delete sample position(s) that have been assigned, select the position(s) and press **Clear**.

Modifying/defining sample volumes

The volume in each position of a sample rack is not checked during the inventory scan, therefore it is important that manually defined volumes are accurate.
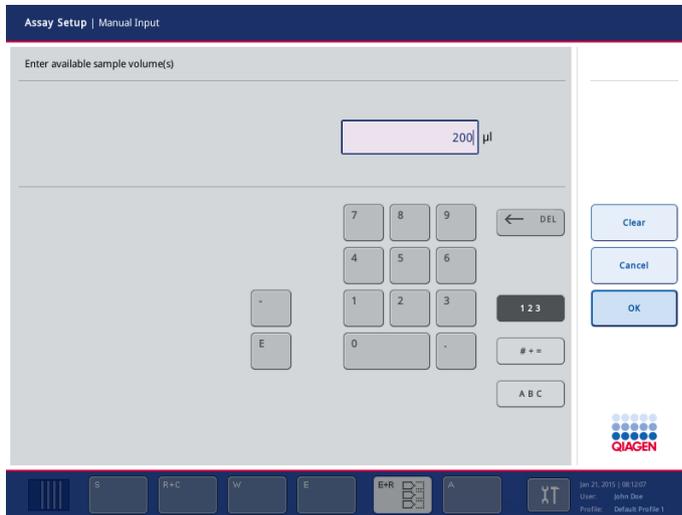
To modify or define a sample volume, proceed as follows:

1. Select the position(s) to be defined or modified in the displayed sample rack.
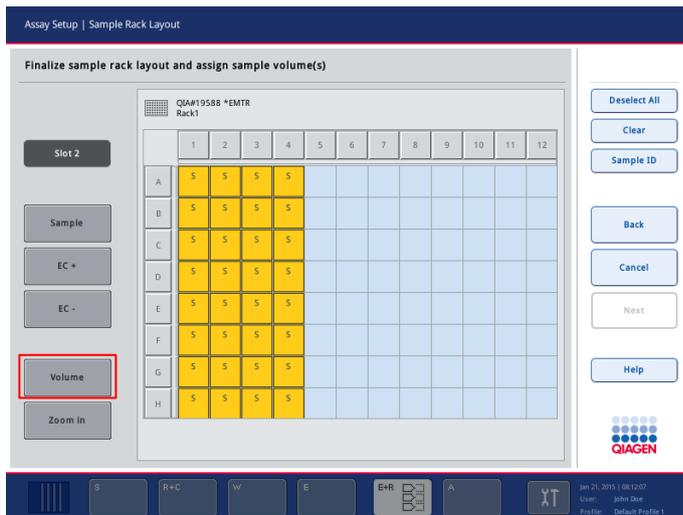
2. Press **Volume**.

The **Manual Input** screen appears.

3. Enter a volume using the keyboard.

   Note: 0 µl is not a valid volume. If a sample position contains no sample volume, clear the sample assignment from this position. To do this, select the sample position in the **Sample Rack Layout** screen, and press **Clear**. When a rack file is used, it is not possible to clear a sample assignment.

4. Press **OK**.

   The **Sample Rack Layout** screen appears and the updated volume(s) will be displayed.
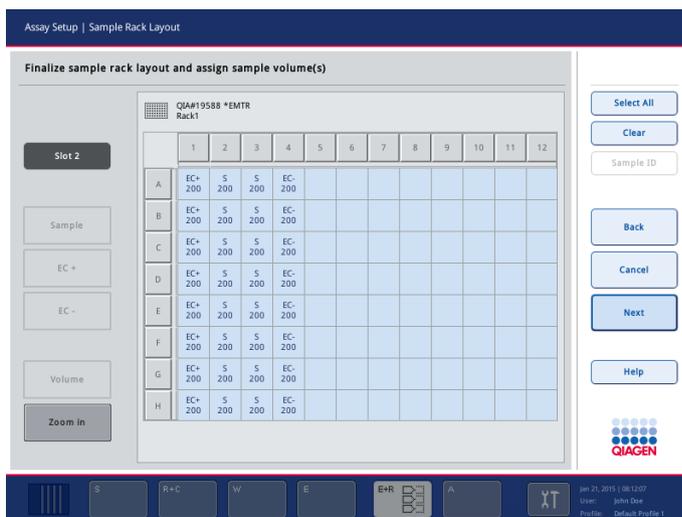
5. If other volumes for other positions need to be defined or modified, repeat steps 1–4.

   Note: To delete entries for particular sample position(s), select the sample position(s) and press **Clear**.

Defining extraction control positions

Note: If only samples are to be defined in a run, these steps do not have to be performed.

1. Select the position(s) that contain positive extraction control(s).

2. Press **EC+**.

   "EC+" will appear in each selected position. These positions will appear yellow if a volume has not already been defined and will be automatically deselected.

3. Select the position(s) that contain negative extraction control(s).

4. Press **EC–**.

"EC–" will appear in each selected position. These positions will appear yellow if a volume has not already been defined and will be automatically deselected.

Note: The volumes for each "EC+" or "EC–" must be defined. See "Modifying/defining sample volumes" (page 56).

Viewing and editing sample IDs

Samples are automatically assigned default IDs based on their position, slot number and run ID (e.g., B1_S2_100000061). Extraction controls are also marked as "EC+" or "EC–". To view the sample IDs, press **Zoom in**. Use the arrow buttons to scroll through the sample rack.

If desired, the automatically assigned sample IDs can be edited.

Note: If a rack file was used, the sample IDs cannot be modified.

To modify a sample ID, proceed as follows:

1. Press **Zoom in**. An enlarged view of the sample positions will appear. Use the arrows to scroll across the sample positions.

2. Select a sample position by pressing it. The selected position will appear dark blue.

3. Press **Sample ID**. The **Manual Input** screen will appear.

4. Enter a sample ID using the keyboard, or enter a sample ID using the bar code scanner.

5. Press **OK**.

6. The **Sample Rack Layout** screen will reopen and the new sample ID will be displayed.

7. Repeat steps 1–7 for all sample IDs that need to be modified.

8. To return to the original view, press **Zoom Out**.

Note: Sample positions with modified sample IDs will be marked with a small triangle in the top right corner.

2.12.3 Defining assay(s) to be processed in the run

To define which assay(s) will be processed in the run, press **Next** in the **Sample Rack Layout** screen. The **Assay Selection** screen appears. Assay panels and Assay Parameter Sets can be selected using this screen.
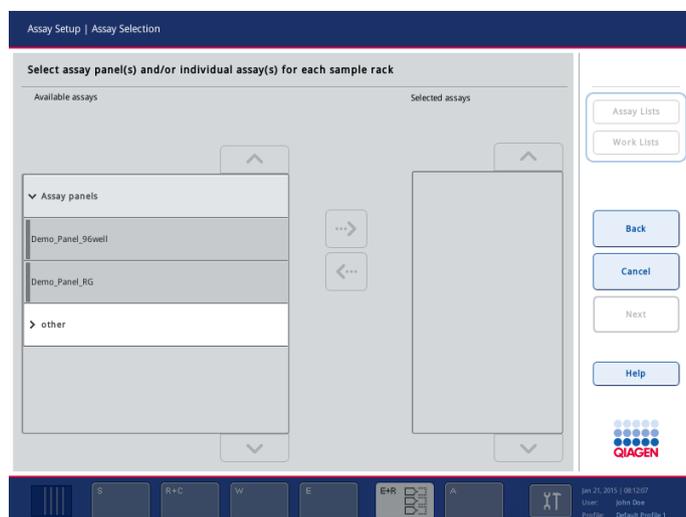
Assay Selection screen.

An Assay Parameter Set contains all information relating to an assay (e.g., number of replicates, assay controls and assay standards). Each Assay Parameter Set references an Assay Definition file. The Assay Definition defines the assay workflow, reagents and pipetting specifications. Additionally, an Assay Parameter Set references a Normalization Definition file, if the assay uses normalization. The Normalization Definition defines the reagents and pipetting specifications for the normalization step.

It is possible to perform several different assays in the same run, but only if the Assay Parameter Sets use the same output format. The number of replicates in an Assay Parameter Set, including the number of assay standards and controls for specific assays, can be defined/modified (see "Modifying assay parameters", page 69). The parameters can also be modified using the **Process Definition** editor tool of the QIAsymphony Management Console. See Section 14.7 of the *QIAsymphony Management Console User Manual* for more details.

Assay Parameter Sets can be grouped into **Assay panels**. A single Assay Parameter Set can be a member of more than one assay panel. When an assay panel is selected, all related Assay Parameter Sets are selected and displayed in the **Selected assays** list. If one of the related assays should not be processed it has to be deselected manually.

In addition, Assay Parameter Sets can be sorted into different categories. All available panel(s) and categories are listed in the **Available assays** list. All Assay Parameter Sets that are not part of a category are listed in **Other**.

Assay Parameter Sets can be assigned manually or using work list(s).

Assigning Assay Parameter Sets using a work list

A work list defines which samples should be processed by which Assay Parameter Sets. If at least one work list is available for the defined sample IDs, the work list mode is used by default. The **Work Lists** button is then active and appears dark blue.
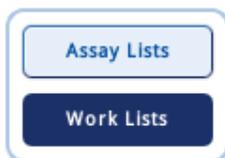
Only Assay Parameter Sets that are defined by the work list are displayed in the **Available assays** list.

See Section 8.13 of the *General Description* for more detailed information about work lists.

If a work list is not available, or if assays that are not specified in a work list need to be processed, assay panels and individual assays can be selected manually.

Note: If a normalization step is included in assays for use in a multi-assay run, there are some restrictions when selecting Assay Parameter Sets. The defined minimum, maximum and target concentrations defined in the selected Assay Parameter Sets must be the same.

Assigning Assay Parameter Sets manually

1. When in work list mode, press **Assay Lists** in the **Assay Selection** screen. If the buttons **Assay Lists** and **Work Lists** are disabled, proceed directly to step 2.

2. If more than one sample slot is defined, select the slot that you want the assays to be assigned to using the tabs at the top of the **Selected assays** list. If you want the assays to be assigned to both slots, press the **Slots 1/2** tab.
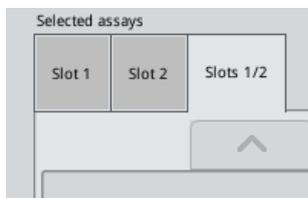
3. Press on assay panels or individual assays from the **Available assays** list to select them.

   Assays can be divided into sections (e.g., **Assay panels** and **Other**), but this can be modified using the **Process Definition** editor tool of the QIAsymphony Management Console.

4. Press on the category to be used. All related Assay Parameter Sets are displayed.

5. Select the Assay Parameter Set to be processed. If there are Assay Parameter Sets that are not part of a panel or category, press **Other** to view this list of Assay Parameter Sets.

   Note: Use the up and down buttons to scroll through the lists.

6. Press the arrow in the center of the screen in the right direction to move the selected assay panel or individual assay into the **Selected assays** list.
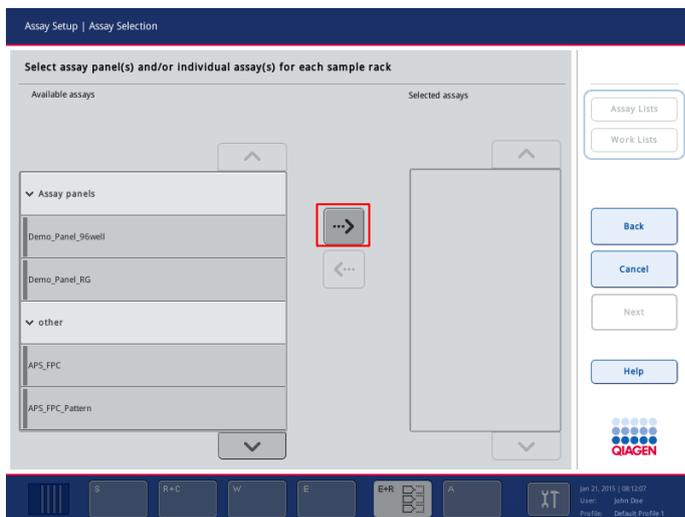
The **Available assays** list will now only display assays that can be processed in the same run as the assays which are listed in the **Selected assays** list.
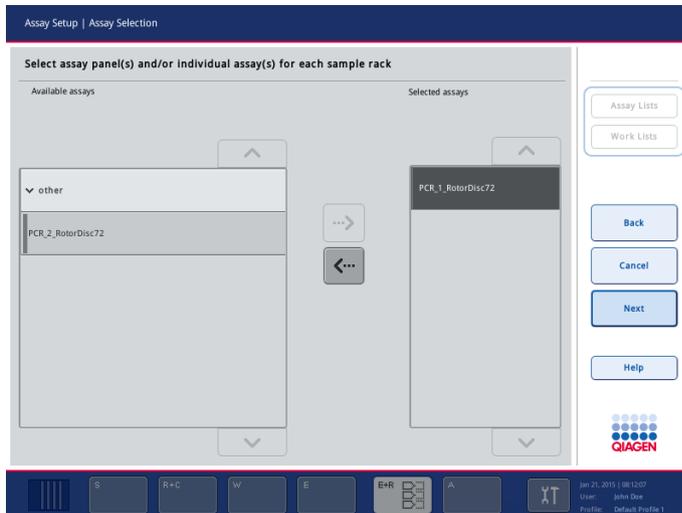
Note: If an assay panel is selected, all assays that are associated with this assay panel will be listed in the **Selected assays** list. If you do not want to process any of these listed assays, press on the assay to select it and then press the arrow button in the left direction. The assay will be deselected and will be removed from the **Selected assays** list.

7. Repeat steps 1–6 until all Assay Parameter Sets to be processed are selected for all sample slots.

2.12.4 Importing concentration data (only for an assay run with normalization)

Note: If the assay run has a normalization step, a concentration data file should be imported to the QIAsymphony SP/AS instruments before run definition (see Section 2.2.3). For details about how to create a concentration data file, see Section 8.18 in the *General Description*.

When **Next** is pressed in the **Assay Setup/Assay Selection** screen, the system searches for a concentration data file with corresponding sample IDs and establishes how many concentration values need to be imported and how many of these will overwrite existing concentration values.

If a concentration data file is found, the following message appears.
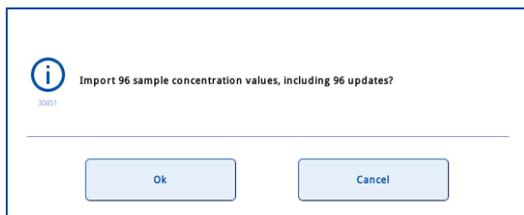
Press **OK** to import the concentration data.

Concentration values are imported and saved in the rack file. The concentration data file is deleted.

The **Assay Assignment** screen appears and a dialog box shows the number of imported concentrations that are outside the range that can be processed.

Press **OK**. Positions with concentrations values that can be processed can now be selected. Positions without concentration values or with c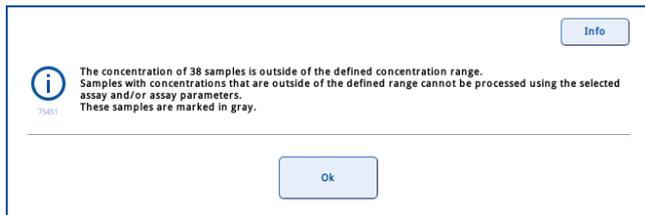oncentration values that are outside the range that can be processed are shown with a gray background and cannot be selected.

2.12.5 Assigning selected assays to sample positions

If more than one Assay Parameter Set is selected in the **Assay Selection** screen, the **Assign each assay individually?** option appears. **Yes** is selected by default. This means that the selected Assay Parameter Sets can be individually assigned to sample positions in a sample rack (i.e., each Assay Parameter Set does not have to be assigned to every sample).
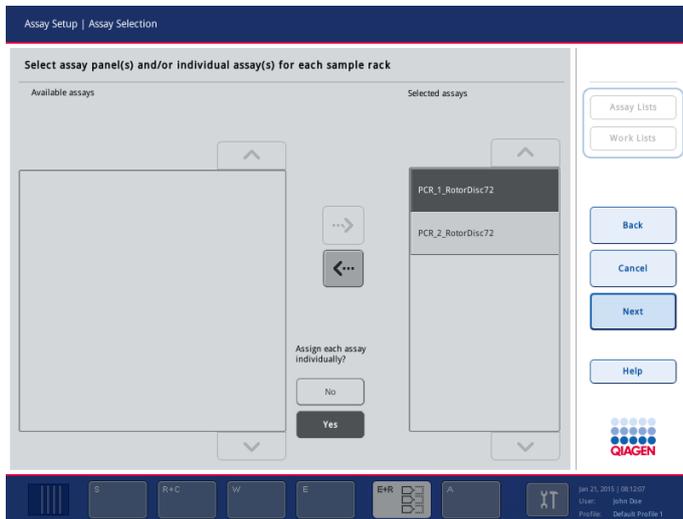
However, if samples are to be processed by all selected Assay Parameter Sets, select **No**.

Press **Next** to continue; the **Assay Assignment** screen appears. This screen displays a schematic of the sample rack in the selected sample slot. If more than one sample slot is defined, use the **Slot 1** and **Slot 2** buttons to switch between views of the two slots.
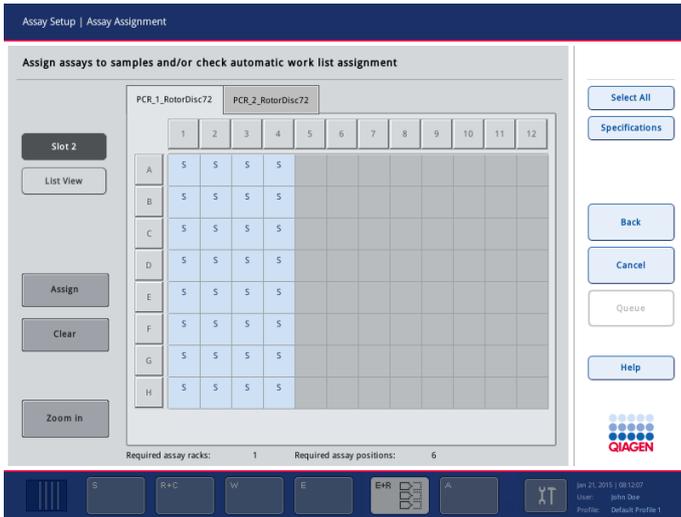
Assay Assignment screen with no work list assigned and Yes selected for Assign each assay individually?

If you press **Zoom in**, details for the assay positions are shown, including sample ID and, for an assay with normalization, concentration.

Assay Assignment screen, zoomed in.

Press **Zoom out** to return to the previous view of the Assay Assignment screen.

If work list(s) are used, Assay Parameter Sets are automatically assigned to samples, as defined in the work list(s). Those samples that have assays assigned to them appear green and are marked with a work list symbol in the top right hand corner.
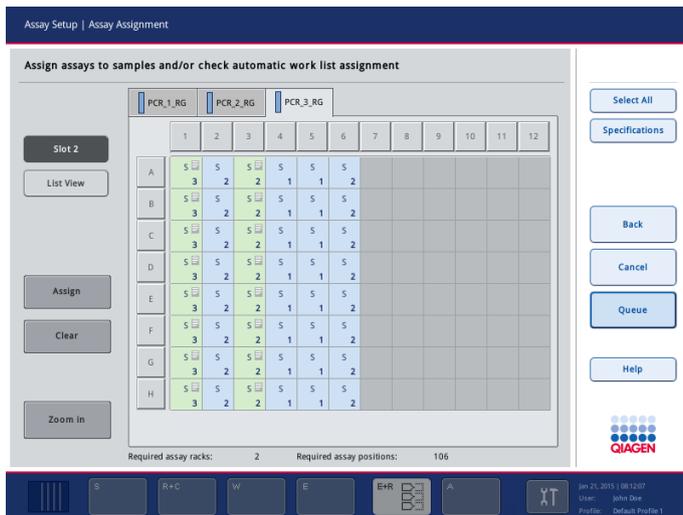
Assay Assignment screen with work list assigned.

Note: Depending on the configuration of your instrument it may or may not be possible to assign additional assays to samples that have been assigned assays by a work list. If **Yes** is selected for the configuration parameter **Allow information for single samples in work lists to be overwritten?**, then you can assign assays to samples that are not preassigned by the work list. It is also possible to clear assignments. If **No** is selected for this parameter, it is not possible to make changes to the assay assignments. In this case, if you attempt to make a change, an error message will appear. For more details about configuration, see Section 6.2, "Process settings", of the *General Description*.

If a work list is not available, Assay Parameter Sets must be manually assigned to samples.

Only samples that have assays assigned to them will be processed in the assay setup run.

To view a detailed overview of each sample position, press **List View**.

After assigning assays to sample positions, press **Queue** in the **Assay Assignment** screen to proceed with loading the QIAsymphony AS. The **Loading Information** screen appears. The **Queue** button is only active when each Assay Parameter Set has been assigned to at least one position in each sample slot that has been defined.

Note: It is only possible to proceed to the **Loading Information** screen if run validation was successful. See Section 2.12.7 for more details about assay run validation.

Note: After pressing **Queue**, the assignment and modification of Assay Parameter Sets is saved and cannot be changed. It is not possible to return to the **Assay Assignment** screen. If you press **Cancel**, all defined settings will be deleted. Press **Yes** to confirm.

Manually assigning Assay Parameter Sets

1. If more than one sample slot is defined, press **Slot 1** or **Slot 2** to select the slot to which assays should be assigned.

2. Select an Assay Parameter Set to be assigned from the tabs. If **No** was selected for **Assign each assay individually?** in the **Assay Selection** screen, it is not possible to select individual assays. A single tab, **All Assays**, is automatically selected.
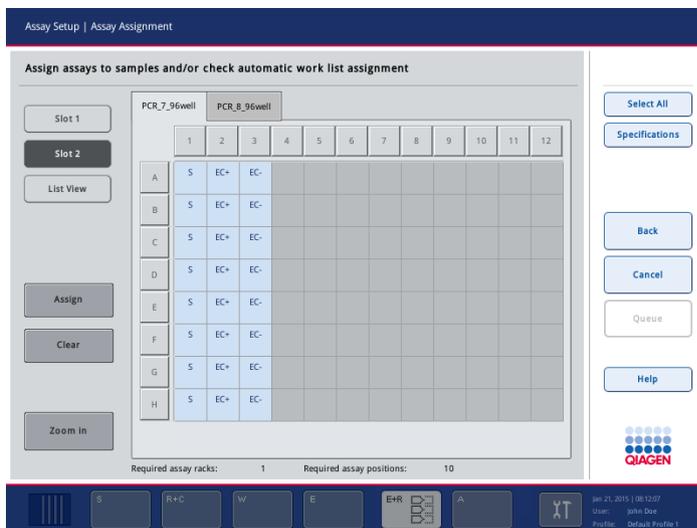
3. Select the sample positions to which the Assay Parameter Set(s) should be assigned.

4. Press **Assign**.
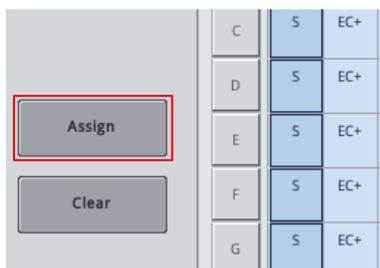
The selected Assay Parameter Set(s) will be assigned to the selected positions. A number will appear in the bottom right corner of the assigned sample positions. This number indicates the number of Assay Parameter Sets that have been assigned to a particular sample.
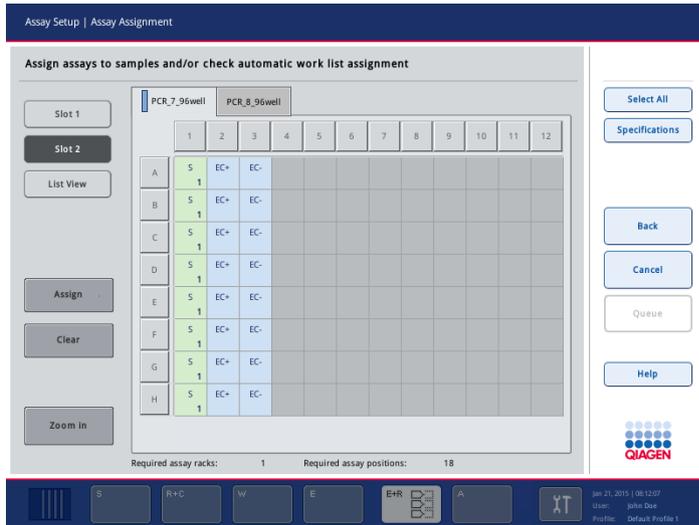
5. If there is more than one Assay Parameter Set to be assigned, repeat steps 2–4 for all Assay Parameter Sets.

6. If assays need to be assigned to more than one sample slot, switch to the other sample slot using the **Slot 1** and **Slot 2** buttons, and then repeat steps 1–5.

Note: The Queue button becomes active when at least one sample is assigned to every assay and when at least one sample is assigned to each slot.

Note: If the sample volume at any position is insufficient for the assigned assay, a warning symbol will appear in the corresponding slot button, and the sample position with insufficient volume will appear yellow. Either remove an assigned Assay Parameter Set from the sample position (page 69) or modify the assay parameters (see Section 2.12.6).
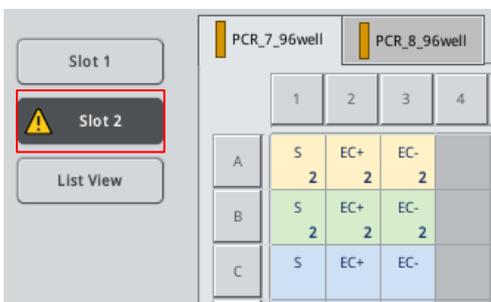
Note: If there is insufficient space in the assay racks or reagent holder, or if insufficient adapters have been configured to process the defined samples, the corresponding drawer button will flash yellow. Pressing this button will display hints about what to do.

Removing Assay Parameter Sets assigned to samples

1. Select the Assay Parameter Set to be unassigned from the tabs.

2. Select the sample position(s) that you do not want to be processed with the selected Assay Parameter Set.
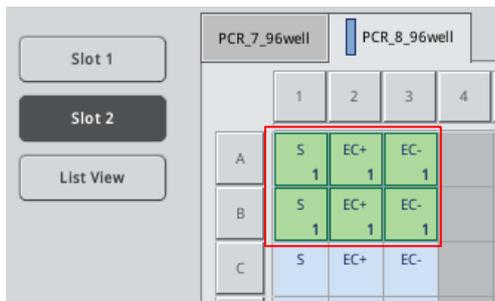
3. Press **Clear**.

   The Assay Parameter Set will be removed from that sample position and the number that indicates the number of assigned assays will decrease by 1.
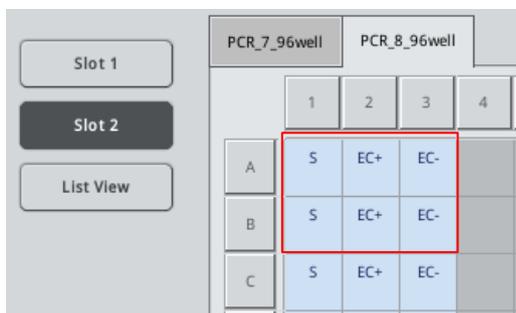
2.12.6 Modifying assay parameters

Depending on the assay definition it is possible to modify certain assay parameters for the run that is being defined.

Note: For "Read only" Assay Parameter Sets, only the number of replicates can be modified.

Note: For user-defined output patterns, the number of replicates for assay controls and for assay standards cannot be modified.

Note: It is not possible to modify assay parameters in work list mode.

In the **Assay Assignment** screen, press **Specifications**, the **Assay Specifications** screen will appear.
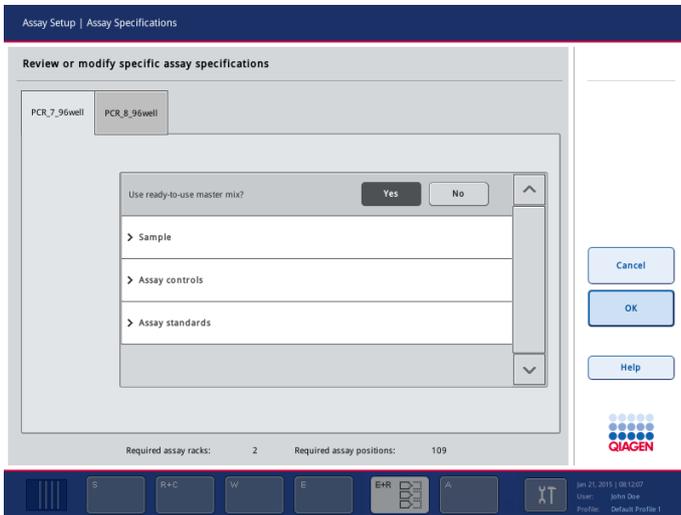
Assay Specifications screen.

The assigned Assay Parameter Set defines the default parameters for a run. To change the assay parameter(s), proceed as follows:

1. Select the Assay Parameter Set, from the tabs, for which the parameter will be changed.

2. Press **Yes** or **No** to define whether or not a ready-to-use master mix will be used.

3. Parameters are listed under **Sample**, **Assay controls** and **Assay standards** headings. Press one of these headings to view a list of parameters. To scroll through the list, use the up and down arrows.

4. Modify the desired parameter(s). After modifying a parameter, the associated value appears green. In addition, a hand symbol is displayed in the active assay tab and next to the modified parameter.
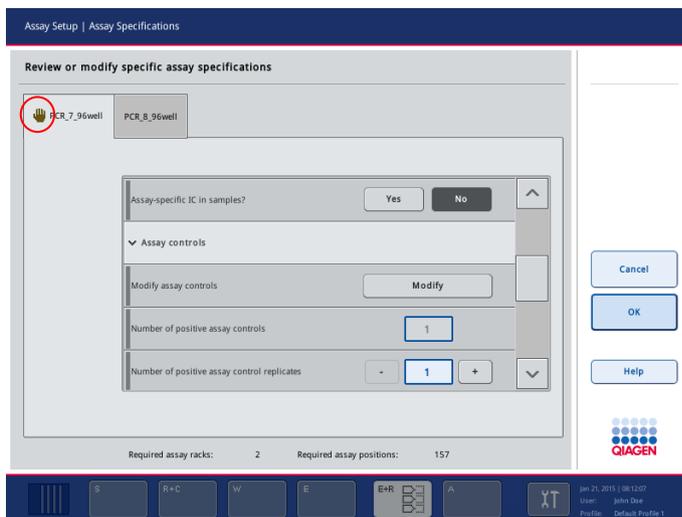
5. If the parameters for more than one Assay Parameter Set need to be modified, repeat steps 1–4 for the other Assay Parameter Set(s).

6. Press **OK** to save the changes and to return to the **Assay Assignment** screen.

Note: If the parameters are modified, the changes will not be saved in the Assay Parameter Set. They will be used for the actual run only. To change parameters in an Assay Parameter Set for future runs, use the **Process Definition** editor tool of the QIAsymphony Management Console. For further details, see the *QIAsymphony Management Console User Manual.*

2.12.7 Queuing an independent assay run

When assay definition is completed, the assay run can be queued. Proceed as follows:
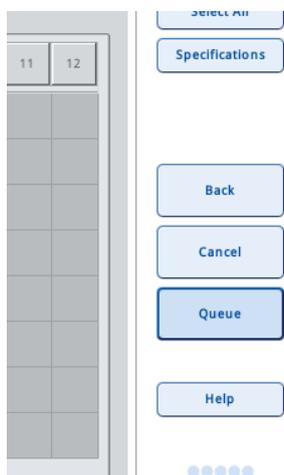
Press **Queue** in the **Assay Assignment** screen.

The QIAsymphony SP/AS instruments now validate the assay run and create a loading information file.

Note: Once an assay run is queued it is not possible to return to the assay definition process.

The **Loading Information** screen appears. You can now load the instrument worktable. Proceed to Section 2.6.

Validating the assay run for queuing

The QIAsymphony SP/AS instruments validate all defined values for the assay run and determine whether the assay run can be loaded. The validation process includes the following checks:

● Checks that the number of assay positions required does not exceed the number of positions available on the assay rack(s), according to the defined Assay Parameter Set(s) (internal software check).

- Checks that the total volume of master mix required does not exceed the available volume in the largest master mix bottle (internal software check).
- For sample positions that need normalization, checks that the dilution parameters are in specified range.

If anything is incorrect, an error message will appear informing the user about exactly what is incorrect. The run cannot be loaded until the message is acknowledged and the problem is corrected.

Loading information file

When **Queue** is pressed, the loading information file will be created. It is also printed if **Auto Transfer** is active. The loading information file contains all information that the user requires for loading reagents, sample rack(s), assay rack(s) and disposable filter-tips into the QIAsymphony AS drawers.

For more detailed information about how to download the loading information file, see Section 8.3.2 of the *General Description*. For more detailed information about the **Auto Transfer** tool, see Section 8 of the *QIAsymphony Management Console User Manual*.

2.13 Loading an independent run

For details about how to load the QIAsymphony AS, see Section 2.6.

If your independent run includes a normalization step, also see the following sections (Section 2.13.1 and Section 2.13.2) about how to load the normalization rack.

2.13.1 Viewing loading information

Normalization slot (only for assay run with normalization)

Press the normalization slot in the **Loading Information** screen to view detailed information about the required normalization rack.
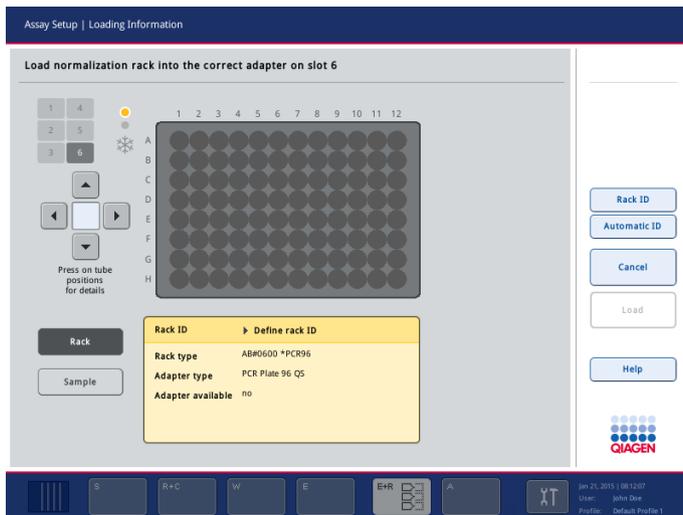
2.13.2 Loading a normalization rack (only for assay run with normalization)

To load a normalization rack, proceed as follows:

1. If not already open, open the "Assays" drawer. Temporary cooling for defined slots is started.

2. In the **Assay Setup/Loading Information** screen, press the normalization slot (highlighted yellow). Detailed loading information for the slot is shown.

3. Place the empty normalization rack in the appropriate adapter on slot 6.

4. Press **Load**. The A**ssay Setup/Loading Information** reappears. The loaded slot is now highlighted blue.

5. Leave the "Assays" drawer open to enable loading of disposable filter-tips (Section 2.6.4).

Note: Ensure that the appropriate adapter is used with the normalization rack.

Note: Do not load partially filled normalization racks.

2.14 Checking cooling temperatures

For instructions about how to check cooling temperatures, see Section 2.7.
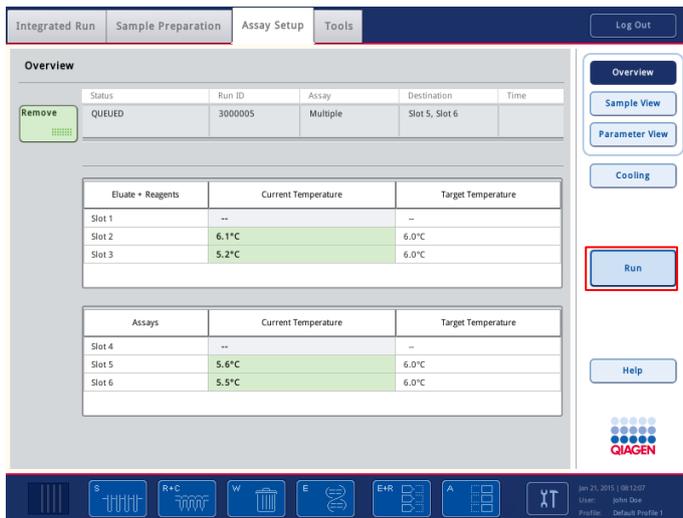
2.15 Starting an independent run

Wait until the cooling positions have reached their target temperatures (i.e., when they appear green in the **Assay Setup/Overview** screen).

Press **Run** in the **Assay Setup/Overview** screen.

If an inventory scan was performed after pressing the **Queue** button, and the validation showed no error and nothing was changed after that point, the inventory scan will be skipped and the assay run starts immediately.

If an inventory scan was not performed after pressing the **Queue** button, a message will appear, asking whether to perform an inventory scan for each drawer.

Note: Within the integrated mode, the assay run is triggered automatically. Start the integrated run by pressing **Run** in the **Integrated Run/Overview** screen (see Section 2.8).

Validating the assay run

The QIAsymphony SP/AS instruments validate all defined values for the assay run and determine whether the assay run can be started. The validation process includes the following checks:

● Checks that sufficient disposable filter-tips are available.

● Checks that the correct sample slot(s) are loaded with the appropriate adapter(s).

● Checks that the correct reagent slot(s) are loaded with the appropriate reagent adapter(s).

● Checks that the correct assay slot(s) are loaded with the appropriate assay rack adapter(s).

● Checks that a normalization rack is loaded, if required.

Note: If anything is missing or incorrect, a warning message will appear, informing the user about what exactly is missing. The run cannot be started until the message is acknowledged and the problem is corrected.
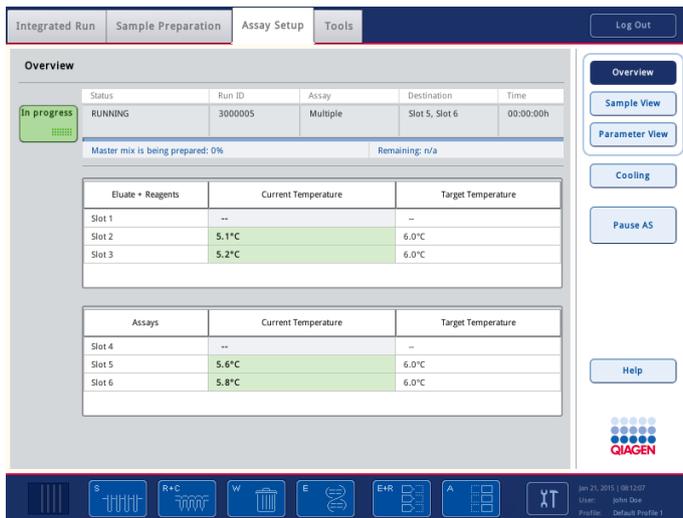
Assay Setup/Overview screen ("In progress").

Status of a run

The status of an independent assay run can be viewed in the **Assay Setup/Overview** screen. See Section 3.4.1 for further details.

2.16 Removing assays

When an assay run is completed or canceled, the assays must be removed from the "Assays" drawer. The assays will not be automatically removed from the QIAsymphony AS.

If the status of a run is shown as **QUEUED**, **STOPPED** or **COMPLETED**, the assay rack(s) and adapter(s) can be removed.

Note: This procedure can also be used after an integrated run.

2.16.1 Unloading assays

1. Open the "Assays" drawer. The **Assay Setup/Loading Information** screen appears.
2. Press on the first assay rack to be removed. The detailed screen for the slot appears.
3. Press **Remove** and unload the rack. The **Assay Setup/Loading Information** screen appears again. The assay slot now appears white.
4. Repeat steps 2–3 for the other assay racks.
5. Close the "Assays" drawer.

6. Press **Scan**. A dialog box appears.

7. Select **Yes** for **Adapters right** only. Press **Scan**.

2.16.2 Unloading the worktable

After the inventory scan is performed, the **Assay Setup/Loading Information** screen appears again. Proceed as follows:

1. Open the "Eluate and Reagents" and "Assays" drawers. The **Loading Information** screen appears.

2. Press on a sample rack to be removed. The detailed screen for that slot appears.

3. Unload the selected sample rack from the drawer and then press **Remove** in the touchscreen.

   If there is a second sample rack, repeat this process for the other rack.

4. Press on a reagent rack to be removed. The detailed screen for that slot appears.

5. Unload the reagent rack from the drawer and then press **Remove** in the touchscreen.

   If there is a second sample rack, repeat this process for the other rack.

6. If there is a normalization rack, press on this slot. The detailed screen for that slot appears.

7. Unload the normalization rack from the drawer and then press **Remove** in the touchscreen.

   Note: A normalization rack containing unused positions cannot be used for subsequent runs.

8. Remove empty tip racks.

9. Empty the tip disposal bag.

10. Close the drawers. Press **Scan** to perform an inventory scan. When the inventory scan is complete, the **Assay Setup/Overview** screen appears.

11. Press **Remove** in the **Assay Setup/Overview** screen to remove the batch.

2.17 Pausing, resuming and canceling an independent run

To pause or cancel a run when a run is in progress, press **Pause AS** in the **Assay Setup/Overview** screen.
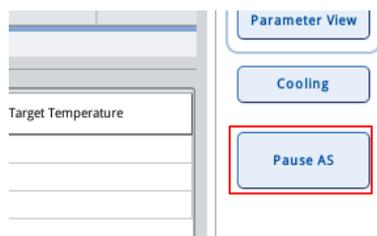
Note: The QIAsymphony AS will complete the current pipetting step before pausing.

Note: Pausing a run interrupts the assay setup procedure and may affect assay performance. Only pause a run in an emergency.

After pressing **Pause AS**, the **Continue** and **Stop AS** buttons appear. The run can now be resumed or canceled.

Note: Samples will always be flagged as "unclear" if the run has been paused.

Assay Setup/Overview screen when run is paused.

To resume a run, press **Continue AS**. To cancel a run, press **Stop AS**.
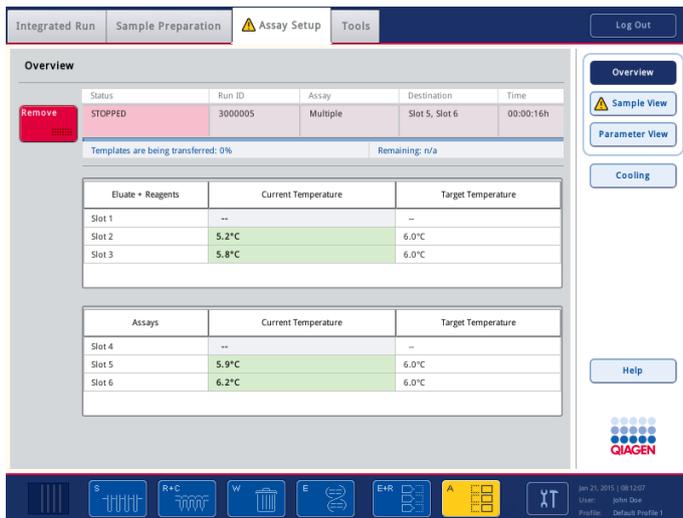
Assay Setup/Overview screen when run is canceled.

If a run is canceled, all samples are flagged as "invalid" in the result file. It is not possible to process these samples further on the QIAsymphony AS. For more information, see "Sample status" in Section 8.10.1 of the *General Description*.

If a run is canceled, follow the procedure outlined in Section 2.9 to remove assays. It may be possible to continue manually processing the samples. For details, see Section 2.19.

2.18 Pipetting order

The QIAsymphony AS uses a predefined pipetting scheme that determines the order of the pipetting steps and the layout of assays in the assay racks.

Note: The pipetting scheme is defined by QIAGEN and cannot be modified.

The following table describes the symbols that will be used in this section to provide a detailed description of the pipetting order.

○	Empty well
◔	Well contains master mix without IC
◉	Well contains master mix with IC
⊜	Well contains master mix and no template control
⊘	Well contains master mix and assay standard
●	Well contains master mix and sample

2.18.1 General pipetting scheme for an assay with internal control (IC)

1. Transfer of reagents to the first empty master mix tube.
2. Mixing step for the final master mix solution.
3. Transfer of the required master mix volume for the master mix with IC to a second empty tube.
4. Transfer of IC to the second master mix tube, followed by an additional mixing step.
5. Transfer of master mix without IC (multi-dispense) from the first master mix tube to the assay rack(s).
6. Transfer of master mix with IC (multi-dispense) from the second master mix tube to the assay rack(s).
7. Transfer of assay standards and assay controls from the reagent rack.
8. Transfer of the no template control adjacent to the assay standard and assay control positions.
9. Transfer of the samples. Extraction controls (EC+ and EC–) from the sample rack are treated as samples. If possible, the order of the samples remains as it was on the sample rack.

Example pipetting scheme for an assay with IC

This assay has 24 samples, 4 assay standards and 1 no template control. The samples contain internal control and therefore 2 master mixes are prepared and pipetted. The schematic plates below show the status of a 96-well assay rack after each step of the pipetting scheme.
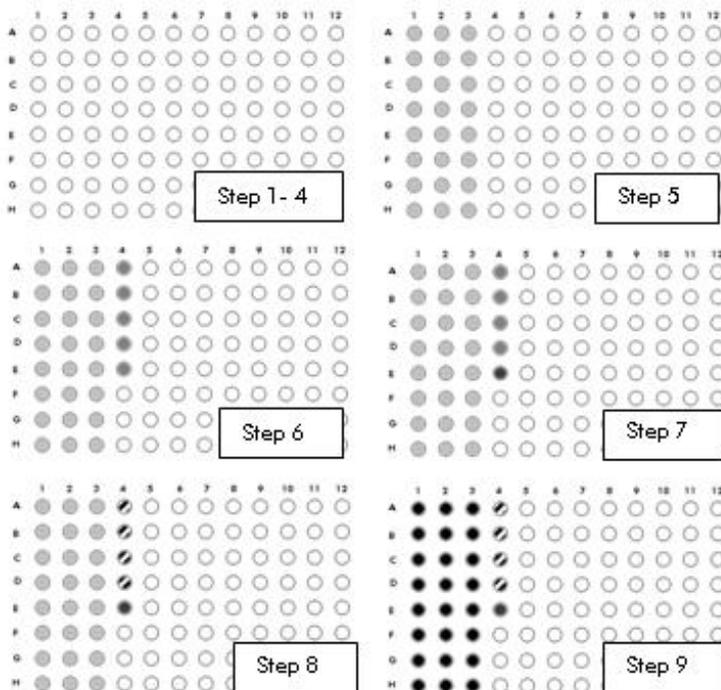
2.18.2 General pipetting scheme for an assay without internal control (IC)

1. Transfer of reagents to an empty master mix tube.
2. Mixing step for the final master mix solution.
3. Transfer of master mix (multi-dispense) to the assay rack(s).
4. Transfer of assay standards and assay controls from the reagent rack. They are pipetted in positions behind the samples.
5. Transfer of the no template control behind the assay standard and assay control positions.
6. Transfer of the samples. Extraction controls (EC+ and EC–) from the sample rack are treated as normal samples. If possible, the order of the samples remains as it was on the sample rack.

Example pipetting scheme for an assay without IC

This assay has 24 samples, 4 assay standards and 1 no template control. The schematic plates below show the status of a 96-well assay rack after each step of the pipetting scheme.

2.18.3 General pipetting scheme
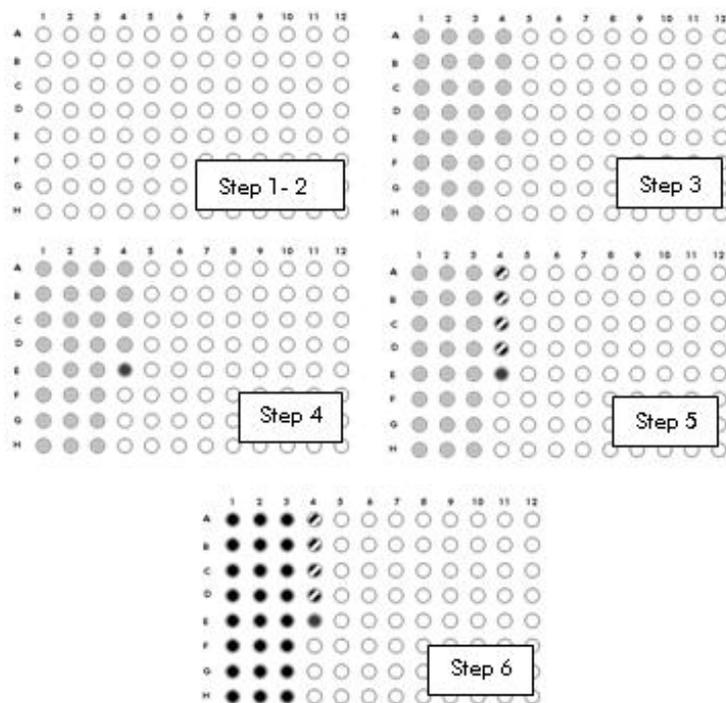
On the assay rack, samples are followed by assay standards. The assay controls are located after the positions of the assay standards. The no template control is positioned at the end. If assay

standards or assay controls are not used, the others are shifted accordingly. Replicates are pipetted in series vertically. There are no empty wells between assay points. The plate schematic below shows 24 samples, 4 assay standards and 1 no template control.
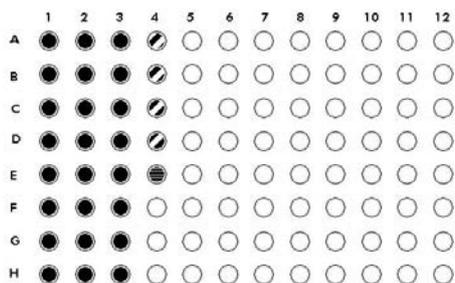
2.18.4 Pipetting scheme for a multi-assay run

The pipetting scheme for a multi-assay run is similar to the general pipetting scheme. First, the master mixes for all assays are prepared and transferred. This is followed by the transfer of the assay standards, assay controls and samples for each assay. If several assays are pipetted in one assay rack, the reactions are positioned one assay after another. There are no empty wells between the different assays.

2.18.5 Pipetting scheme for standard curve

When the QIAsymphony AS creates a standard curve, the following steps are performed before the master mix is prepared. First, the diluent is transferred from a tube provided by the user to all empty tubes reserved for the standard curve. Then, the initial standard is transferred from the tube provided by the user to the first tube reserved for the standard curve. This diluted standard is transferred to the second tube reserved for the standard curve. The diluted standard in the second tube is then transferred to the third tube reserved for the standard curve, and so on. The initial standard is included when numbering, i.e., Std1 = the initial standard, etc.
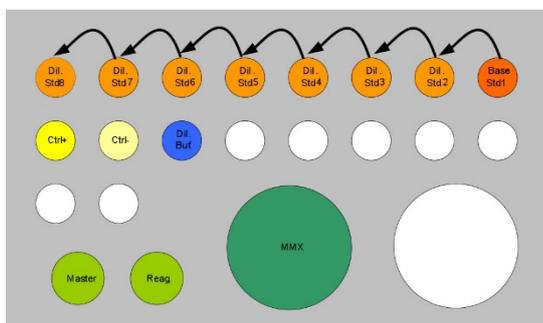
In case of a multi-assay run, all standard curves for the assays are prepared before the first master mix is prepared.

2.18.6 Pipetting scheme for assay with normalization

If a QIAsymphony AS run includes normalization, the system chooses one of the following 4 normalization strategies for each eluate, depending on the concentration of the eluate:

- Use of a normalization point: dilution buffer and eluate are transferred to a normalization position

- Direct normalization: dilution buffer and eluate are transferred directly to an assay position, without using a normalization position

- Undiluted transfer: eluate is transferred directly to an assay position without adding diluent, without using a normalization position

- Two-step dilution: dilution buffer and eluate are diluted in two consecutive, equally split dilution steps. First, to a predilution position, and then to the dilution position. Afterwards, it is transferred to the assay position. Depending on the number of samples, the dilution is performed in one normalization plate, unless a second plate is necessary.

Pipetting a normalization rack

The following steps are performed after standard curves are created and before master mix is prepared. First, diluent for all eluates that use a normalization point is transferred to the normalization rack (if a two-step normalization is necessary, a previous predilution step is performed and the eluates are prediluted). Then, all eluates that use a normalization point are transferred to the normalization positions. All transfers to the normalization rack use individual transfer volumes.

Note: In case of a multi-assay run, the same normalization position is used for all assays.

Pipetting an assay rack

For an assay with normalization, the step "Transfer of the samples" (see Sections 2.18.1 and 2.18.2) is divided into the following steps:

- Transfer diluent to assay: diluent for all assay positions that use direct normalization is transferred to the assay positions. All the transfers use individual transfer volumes.

- Transfer diluted eluate to assay: diluted eluates are transferred from the normalization positions to the eluate positions.

- Transfer eluate to assay: eluate positions that use direct normalization or undiluted transfer are transferred to the assay positions. All the transfers for direct normalization use individual transfer volumes.

- Two-step normalization: transfer of prediluted eluate from predilution normalization rack to dilution normalization rack. Then, transfer diluted eluates (transferred from the normalization positions) to the eluate positions.

2.19 Protocol recovery

If an error occurs during a protocol run, it is possible to continue manually. Use the result file to check at which step the protocol stopped, which positions are filled with prepared liquids, and which wells on the assay rack are reserved for the assay. For further details about how to download the result file, see Section 8.3.2 of the *General Description*.

To continue assay setup, remove the samples, normalized samples and reagents from the QIAsymphony AS. Refer to the relevant kit handbook and continue manually.

If a final result file is not available, note the step at which the protocol stopped. It is possible to view the step at which the protocol stopped below the status bar.
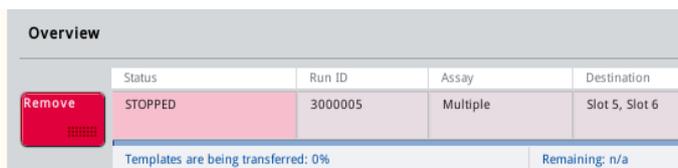
A protocol can stop during one of the following 3 stages of a run.

Series dilution is being created

If an error occurred during the creation of standards series due to liquid-level–related problems, liquids can be refilled and the run can be continued.

If the user decides to skip the assay, the status of the standard series is not documented in the result file. Assay setup can be continued manually, if the content of the standards containers is checked by eye.

Samples are being normalized

If an error occurred during pipetting of the normalization rack, it is possible to see in the result file which eluates have already been normalized (in table **Detailed information for Normalization Rack on Slot X**, columns **Diluent transfer** and **Template transfer**). Assay setup can be continued manually. For more information, see Section 8.10.1 in the *General Description*.

Master mix is being prepared

If an error occurred during the preparation of the master mix, it is not possible to see which reagent(s) have already been pipetted. The assay setup cannot be continued manually.

Proceed with one of the following 2 options.

Start at the beginning of the protocol

1. Cancel the current assay by pressing **Stop**.

2. Press **Remove** to remove the assay run.

3. Redefine the assay run.

4. Load the reagents for the master mix into the appropriate tubes in the corresponding adapter positions.

5. Load the adapter onto the appropriate slot position.

6. Press **Run** to start the assay run.

Start at the beginning of the protocol with ready-to-use master mix

1. Press **Stop** to cancel the current assay run.

2. Press **Remove** to remove the assay run.

3. Redefine the assay run.

    Note: Select ready-to-use master mix for the appropriate assay.

4. Manually prepare the master mix.

5. Load the adapter onto the appropriate slot position.

6. Press **Run** to start the assay run.

Master mix is being pipetted

After master mix has been prepared, it is distributed. Find out whether the master mix was already pipetted on the assay rack. It is then possible to check the **Detailed information for Assay Rack X on Slot Y** section of the result file. In the **MM transfer** column, it is indicated which well or tubes already contain master mix. "–" indicates that master mix was not transferred, and "done" indicates that master mix was transferred. For more information, see Section 8.10.1 in the *General Description*.

If a result file is not available, check the wells or tubes visually. If a well is empty, the master mix has not yet been distributed.

To continue assay setup, remove the samples and reagents from the QIAsymphony AS. Refer to the relevant kit handbook and continue manually.

Note: If the protocol contains master mix with IC and master mix without IC, the master mix without IC will be pipetted first. In this case, check both master mix tubes to be sure which master mix was transferred.

Templates are being transferred

After the master mix is pipetted the templates (e.g., samples, EC+, EC–, assay standards, assay controls and normalized samples) are transferred to the assay rack(s).

The result file contains information about the transfer status of each template. The status is documented in the **Template transfer** and **Diluent transfer** column in the **Detailed information for Assay Rack X on Slot Y** list. "–" indicates that sample/diluent was not transferred and "done" indicates that sample/diluent was transferred. For more information, see Section 8.10.1 in the *General Description*.

Manually transfer the remaining template/diluent, continuing from the position of the last template/diluent that was transferred before the run was interrupted. Do this according to the relevant kit handbook.

For an assay without normalization, if a result file is not available, check the volumes in the assay rack by eye. It will be possible to see whether or not sample was transferred to a particular position. For an assay with normalization, it might not be possible with direct normalization to identify whether diluent only or diluent and template were already transferred.

3 Assay Setup User Interface

The QIAsymphony Operating Software is developed exclusively for use with the QIAsymphony SP/AS instruments.

In addition to the menus described in Section 3 of *Operating the QIAsymphony SP*, the software also has the following menus that are required for operation of the QIAsymphony AS:

- **Maintenance AS** menu for performing routine maintenance procedures. See Section 9 of the *General Description* for more details about maintenance procedures.
- **Service AS** menu for performing service protocols and initializing the instrument.

The **Labware AS** tab of the **Labware Browser** enables users to view detailed labware information for the QIAsymphony AS.

An Assay Definition is a set of instructions that allows the QIAsymphony AS to perform an assay run.

An Assay Parameter Set is the combination of an Assay Definition plus additional parameters, such as replicate count and number of assay standards.

3.1 Software features

See Sections 3.2, 3.3, and 3.4 of *Operating the QIAsymphony SP* for detailed information about "Software features common to all screens", the "Status bar" and the "Command bar". In addition, read the following sections for features that are specific to the assay setup user interface.

3.1.1 Status bar

The status bar allows the user to view information about the status of each of the QIAsymphony SP drawers and the QIAsymphony AS drawers.
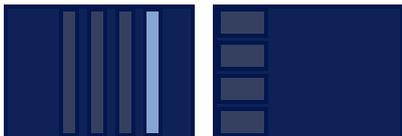

Status bar.

Note: See Section 3.3 of *Operating the QIAsymphony SP* to see what the status bar looks like in the sample preparation user interface.

Batch status icon

The way the batch status icon is displayed varies according to whether samples are loaded in a tube or plate carrier on the QIAsymphony SP.

Batch status icon. The batch status icon provides the user with information about each sample batch.

The color of each tube carrier denotes the status of the associated batch (see "Colors of drawer buttons", in Section 3.3.2 of *Operating the QIAsymphony SP* for more information).

The status of batch 4 is QUEUED.

3.1.2   Drawer buttons

In the status bar of the assay setup user interface there is a button for each of the QIAsymphony AS drawers adjacent to the QIAsymphony SP drawer buttons.

Note: See Section 3.3.2, "Drawer buttons" of *Operating the QIAsymphony SP* for more details for each of the QIAsymphony SP drawers in the status bar.

 When an assay run has been defined, press the "E+R" button to open the **Loading Information** screen. This button flashes yellow if there are insufficient adapters or rack positions available for the defined runs. In this situation, if you press on the button, a message appears informing the user why it is not possible to start the run.

 When an assay run has finished, this button flashes green. In this situation, if you press on the button, a message appears informing the user that the run has been completed. Press **OK** to confirm the message.

If there are insufficient assay racks available for the selected assays, this button flashes yellow. In this situation, if you press on the button, a message appears informing the user why it is not possible to start the run.

3.1.3 Help button

Press for information about the current screen and how to proceed. For more information about this function, see "Troubleshooting", Section 10 in the *General Description*.

3.2 **Tools** tab

The **Tools** tab provides access to several menus required for operation of the QIAsymphony SP/AS instruments.

Note: The **Tools** tab cannot be accessed from every screen; for instance, it cannot be accessed during run definition.

Access rights to the menus are dependent on the role assigned to the user. A "Supervisor" can access all of the menus, and an "Operator" can access all of the menus except the **Configuration** menu.

After initialization, the **Sample Preparation** menu is displayed.

To access any of the other **Tools** menus:

1. Press the **Tools** tab.

2. Select the menu to be accessed by pressing the appropriate button in the **Tools** screen.
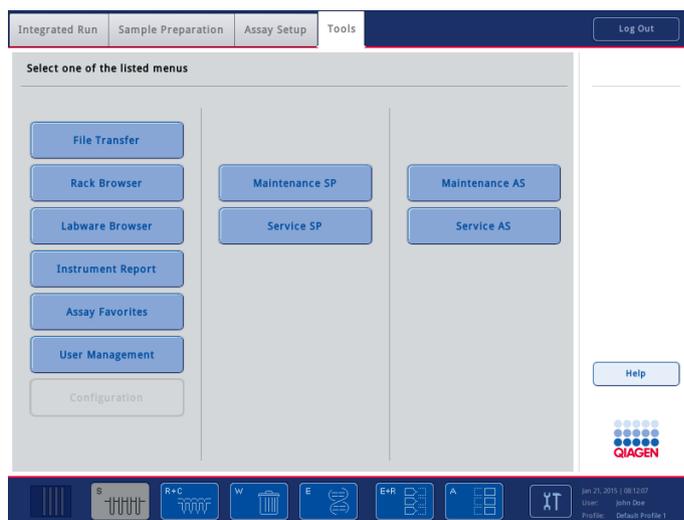
Tools screen ("Operator" logged in).

Dialog panel

The dialog panel contains buttons that enable access to other menus. Some buttons may be disabled if the user does not have access rights, if a batch is running, or if an unfinished workflow is opened.

Note: For detailed information about the menus that are required for operation of the QIAsymphony SP (**Maintenance SP** and **Service SP**), refer to Section 3 of *Operating the QIAsymphony SP*.

File Transfer	Opens the **File Transfer** menu. For detailed information, see Section 3.13 of *Operating the QIAsymphony SP*.
Rack Browser	Opens the **Rack Browser** menu. For detailed information, see Section 3.8 of this manual and Section 3.15 of *Operating the QIAsymphony SP*.
Labware Browser	Opens the **Labware Browser** menu. For detailed information, see Section 3.7 of this manual and Section 3.16 of *Operating the QIAsymphony SP*.
Instrument Report	Opens the **Instrument Report** menu. For detailed information about how to create an instrument report file, see Section 10.3.2 in the *General Description*.
Assay Favorites	Opens the **Assay Favorites** menu. For detailed information about how to configure favorite assays for an integrated run, see Section 2.2.4.
User Management	Opens the **User Management** menu. This button has different functionality depending on whether a "Supervisor" or an "Operator" is logged in. For detailed information about managing users, see Section 7 of the *General Description*.
Configuration	Opens the **Configuration** menu. This button is only active if the "Supervisor" is logged in. After configuration, the QIAsymphony SP/AS instruments may need to be restarted. Therefore, this button is only active if there is no output on the QIAsymphony SP or on the QIAsymphony AS. For detailed information about how to configure the QIAsymphony SP/AS instruments, see Section 6 of the *General Description*.

|	
Maintenance SP	Opens the **Maintenance SP** menu.
	For detailed information, see Section 3.10 of *Operating the QIAsymphony SP*.
Service SP	Opens the **Service SP** menu.
	For detailed information, see Section 3.12 of *Operating the QIAsymphony SP*.
Maintenance AS	Switches to the **Assay Setup** user interface and displays the **Maintenance AS** menu for the QIAsymphony AS.
	For detailed information, see Section 3.5.
Service AS	Switches to the Assay Setup user interface and opens the **Service AS** menu.
	For detailed information, see Section 3.6.

3.3 **Integrated Run** tab

The **Integrated Run** tab is used to:

- Define integrated runs
- View information about the status of defined integrated runs (i.e., progress, batch status, estimated time remaining and the next user interaction required for each integrated batch)
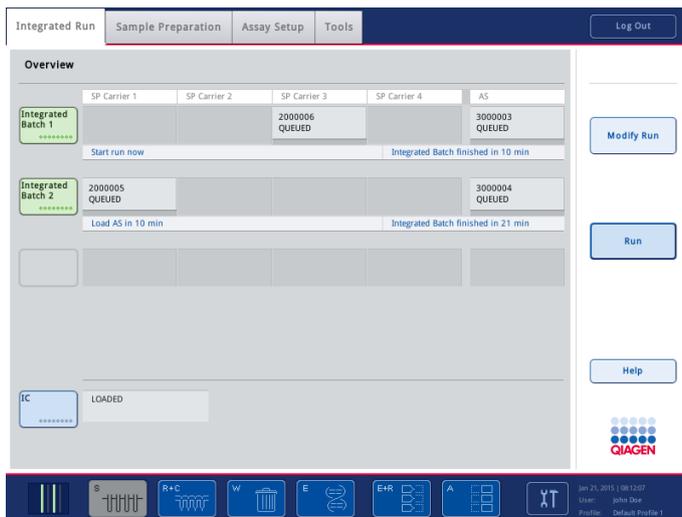
Integrated Run tab.

Each row represents one integrated batch with its related SP and AS batches. Columns **SP Carrier 1–4** indicate where in the "Sample" drawer an SP batch was loaded. AS batches are shown in the column **AS**. The **Integrated Run** screen shows the status of all SP and AS batches within an integrated run.

	SP Carrier 1	SP Carrier 2	SP Carrier 3	SP Carrier 4	AS
Integrated Batch 1			2000006 QUEUED		3000003 QUEUED
	Start run now			Integrated Batch finished in 10 min	

Integrated Batch row.

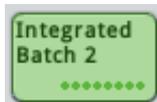### Integrated batch status

The status of an integrated run is indicated by the color of the batch button.

Light green

An integrated run is loaded and queued. Press to remove the integrated run, or press **Run** to start the integrated run.

Green

An integrated run is currently being processed.

Orange

An integrated run has been paused. The run can be continued or canceled. See Section 2 for more details.

Red

An integrated run has been canceled by the user or terminated due to an error.
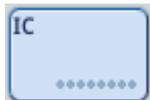
Dark green

An integrated run has been processed and the assays can be removed from the "Assays" drawer. After pressing to remove the integrated run, remove the assays. For more information, see Section 2.9.

Yellow

An integrated run has loading errors or the integrated run has an AS batch and can be replanned.

If the **IC** button is pressed, the **Sample Preparation/Internal Controls** screen is displayed. This screen enables the user to view the loaded internal controls. If tubes are not bar code labeled or if an error occurred during bar code reading, this can be resolved in this screen (for more information, see Section 2.16.2 of *Operating the QIAsymphony SP*).

Command bar

The **Run** button is enabled if an integrated run has been queued. Press **Run** to start the run.

If an assay run is in progress, the **Pause AS** button is available. The **Pause AS** button should only be pressed in an emergency. After pressing **Pause AS**, the QIAsymphony AS completes the current command and then pauses the assay run. Samples will always be flagged as "unclear" if the run has been paused.

If the assay run has been paused by the user or due to an error, the **Stop AS** and **Continue AS** buttons appear (see Section 2).

Note: The QIAsymphony AS drawers will be unlocked.

Note: An assay run should only be paused in an emergency.

If a run is in progress, the **Pause SP** button is visible. The **Pause SP** button should only be pressed in an emergency. After pressing **Pause SP**, the QIAsymphony SP completes the current command being processed and then pauses the protocol. Samples will always be flagged as "unclear" if the run has been paused.

If the protocol has been paused either by the user or due to an error, the **Stop SP** and **Continue SP** buttons appear (see Section 2).

Note: The drawers of the QIAsymphony SP will be unlocked.

Note: A run should only be paused in an emergency.

The **Stop AS** button appears if the current assay run is paused. Press **Stop AS** to cancel the assay run that is currently being processed.

Note: For information about removing assays if an assay run has been aborted, see Section 2.9 or Section 2.16.

Stop SP

The **Stop SP** button appears if the current run is paused. Press **Stop SP** to stop all currently running batches. Batches that have been queued but have not yet been processed remain queued.

Note: Refer to Section 2.23 in *Operating the QIAsymphony SP* for information about worktable cleanup.

Continue AS

The **Continue AS** button appears if the current assay run is paused. Press **Continue AS** to continue the assay run. Samples will always be flagged as "unclear" if the run was paused.

Continue SP

The **Continue SP** button appears if the current run is paused. Press the **Continue SP** button to continue the run. Samples will always be flagged as "unclear" if the run was paused.

Refresh AS

The **Refresh AS** button appears if an SP batch was removed from an integrated run. The AS Batch may become switched to **REFRESHABLE** (this means that some eluates were removed from the AS batch as a result of the remove action). The batch can continue to run, leaving the removed positions empty. Samples are marked as "Removed" on the screen and in the result file.

Alternatively, the user can press **Refresh AS**. In this case, the AS batch is replanned without the removed eluates. The system generates new loading instructions (since fewer reagents are needed for fewer eluates). The old loading instructions remain, but must not be used.

Note: Check cooling of the assay setup cooling positions after pressing the **Refresh AS** button or reload the AS batch as soon as possible to avoid potential cooling interruptions.

Remove Run

The **Remove Run** button appears after stopping a QIAsymphony AS or QIAsymphony SP run (see Section 2). The system asks the user if he wants to keep batches. If **Refresh AS** is currently available, a second message box asks if the user wants to refresh now.

Dialog panel

Integrated Batch X   The status of each integrated batch is shown. Depending on the batch status, pressing the **Integrated Batch** button may result in an action being performed.

- **READY TO LOAD** – the **Integrated Batch** button is inactive in this state.

- **LOADED** – the **Integrated Batch** button is inactive in this state.

- **STOPPED/COMPLETED** – if the **Integrated Batch** button is pressed, the integrated batch will be removed. This includes all SP and AS batches from the integrated batch.

Note: The "X" represents the batch number as a substitute for the Batch ID.

Table

The assigned batch ID is shown here. Current batch progress is displayed.

SP Carrier 1–4   The batch status is displayed.

QUEUED – samples are loaded and the batch is defined. The batch is queued for processing.

RUNNING – the batch is running. Loaded samples in the batch are being processed.

COMPLETED – all samples in the batch have been processed. If the elution rack will not be used for collection of eluates in further batches, the elution rack can be removed from the "Eluate" drawer and the result file can be downloaded.

PAUSED – processing of the batch has been paused. Samples will always be flagged as "unclear" if the run was paused.

STOPPED – the batch has been stopped either by the user or due to an error. The samples are lost and cannot be manually processed.

AS   The assay run status is displayed.

   QUEUED – the assay run is queued for processing.

   **RUNNING** – the assay is in progress. Loaded samples are being processed.

   COMPLETED – all samples in the assay run have been processed.

   PAUSED – processing of the assay run has been paused. Samples will always be flagged as "unclear" if the run was paused.

   STOPPED – the assay run has been stopped either by the user or due to an error. The samples are lost and cannot be manually processed.

Status bar

The status bar displays information about the next required user interaction and the estimated duration of integrated batch execution.

Start run now	Integrated Batch finished in 10 min
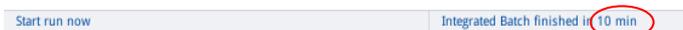
3.3.1   **Integrated Setup** screen

The **Integrated Setup** screen shows the QIAsymphony SP batches and their related QIAsymphony AS batches, if any. The user can assign or unassign one or more assays to/from all sample positions.
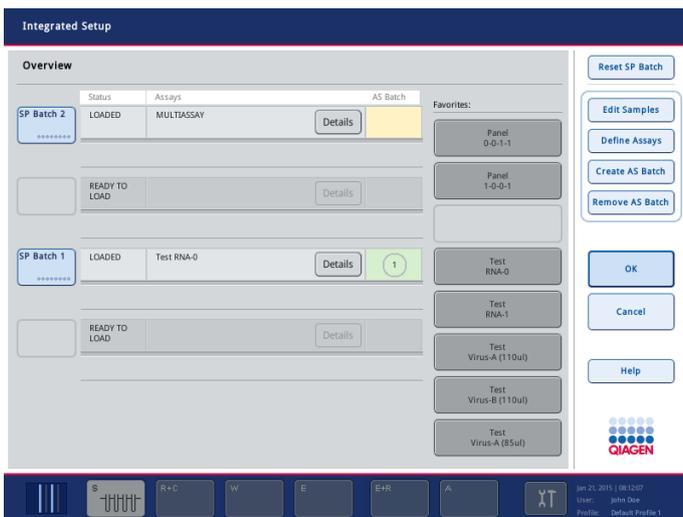
Integrated Setup screen.

Command bar

Reset SP Batch	Removes all assigned assays from the selected SP batch (i.e., all actions performed in the screen **Define Assays** are undone). This action can only be performed while the SP batch is in the **LOADED** state.
Edit Samples	The **Edit Samples** button opens the **Sample Preparation/Batch X/Define Samples** screen (see Section 3.3.2 about using the tube carrier) (see Section 3.3.3 about using the plate carrier).
Define Assays	The **Define Assays** button opens the **Assay Assignment** screen (see Section 3.3.4 about using the tube carrier).
Create AS Batch	The **Create AS Batch** button assigns a new AS batch to a previously selected SP batch(es).
Remove AS Batch	The **Remove AS Batch** button removes an assigned AS batch from its related SP batch(es).
Cancel	Closes the screen without saving the changes and cancels the assay definition process.
OK	Press to save changes and proceed to the **Integrated Setup** screen.

Dialog panel

|	
Favorites: Panel 0-0-1-1	Buttons in the **Favorites** list enable the user to assign favorite assays to previously selected SP batch(es) (see "Assigning favorite assays", page 18.
Details	Opens a message box that provides detailed information about the assigned assays and the integrated batch with its AS and SP batches. In addition, it shows the required assay positions and assay racks on the QIAsymphony AS.
Blue New ... :::::::	The sample batch is loaded. ● For samples in tubes, the position of the batch button corresponds to the slot number that the tube carrier was loaded into. ● For samples in plates, the first available batch button becomes blue and is labeled **New**.
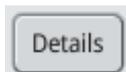
Light green		The batch is loaded and queued. Assay Control Set and elution slot have been assigned.
Green		The samples in the batch are being processed.
Dark green		The samples in the batch have been processed and purified nucleic acids or proteins eluted. If further batches are to be eluted into separate elution racks, this elution rack can be unloaded.
Orange		All batches currently being processed are paused. The batches can be either continued or stopped.
Yellow		The batch has errors regarding sample/internal control tubes or sample IDs (see Section 2.8 of *Operating the QIAsymphony SP*).

3.3.2   **Integrated Setup/Batch X/Define Samples** screen (tube carrier)

The **Define Samples** screen is displayed when selecting **Edit Samples** in **Integrated Setup/Overview**. This screen displays information about all 24 positions of the tube carrier.

It enables the user to edit sample tube information and also to manually correct any bar code reading errors (only if the software configuration of the QIAsymphony SP allows sample IDs to be edited).

Positions where errors are detected (e.g., unknown bar codes or duplicate bar codes) become yellow. The information below refers to samples loaded in the tube carrier. For information about samples loaded in the plate carrier, see Section 3.3.3.
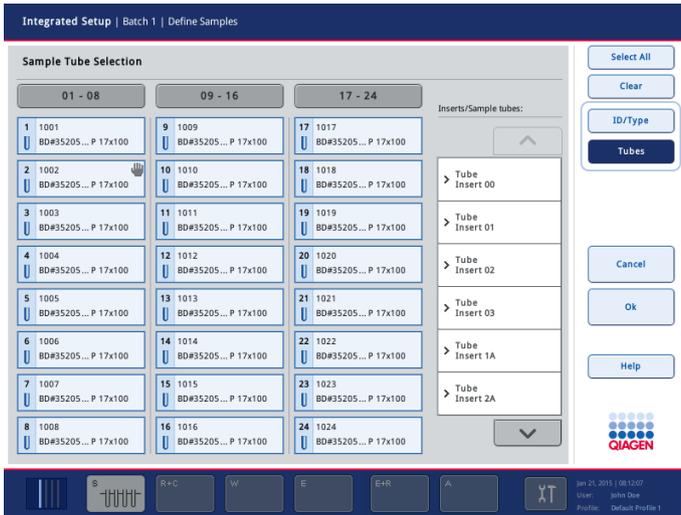
Integrated Setup/Batch X/Define Samples screen (Tubes mode).

Integrated Setup /Batch X/Define Samples screen (ID/Type mode).

Command bar (Tubes mode)

Select All	Enables the user to select all samples.
ID/Type	Allows the user to edit sample IDs and sample types. If sample tube types can be selected, the button is active. When the button is pressed, the dialog switches to **ID/Type** mode, which is described below. (This button is active even when sample IDs cannot be edited.)

The **Edit Sample ID** screen appears.

Tubes	Enables the user to change the tube type. The button is inactive if sample tubes cannot be edited by pressing the sample position buttons in the dialog panel.

The button is active if the sample ID can be edited when the sample position button is pressed.

Note: Before a tube type can be assigned or a sample ID edited, the user must first select the position in which the information should be edited.

Command bar (ID/Type mode)

Select All	Enables the user to select all samples.

ID/Type	Select to view and edit sample IDs and sample types.

When pressed, the dialog switches to **ID/Type** mode.

Note: Before a tube type or ID can be assigned, the user must select the position in which the information should be edited. It is possible to select more than one position to assign multiple tube types at the same time.

Tubes	Select to view and change the tube type.

When pressed, the dialog switches to **Tubes** mode.

Note: Before a tube type can be assigned, the user must first select the position in which the information should be edited. It is possible to select more than one position to assign multiple tube types at the same time.

Dialog panel

01 - 08	Press to select/deselect sample positions 1–8.
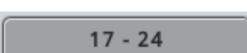
09 - 16	Press to select/deselect sample positions 9–16.

17 - 24	Press to select/deselect sample positions 17–24.

Individual sample buttons (1–24)	**Tubes** mode: Each sample button displays information about the sample ID (bar code or virtual bar code) and the detected/assigned tube type.
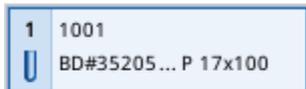
Individual positions can be selected by pressing the appropriate sample button. If the **Sample ID** button is then pressed, the **Keyboard** screen appears. This enables the user to enter a sample ID.

Note: The button becomes yellow if a bar code reading error or a duplicate bar code is detected.

The bar code symbol in the example above shows that the insert bar code was not read. If the bar code appears in the sample ID position, this signifies that the tube bar code was not read.

If the QIAsymphony SP detects duplicate bar codes (the software configuration of your QIAsymphony SP may not allow duplicate bar codes in one run) the positions with the same bar codes become yellow. A bar code symbol, which denotes a reading error, is not displayed.

If sample information was entered manually, a hand symbol is displayed at the top right of the sample position button.
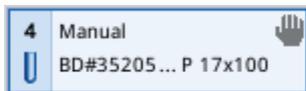
Individual sample buttons (1–24)	**ID/Type** mode: Each sample button displays information about the sample ID (bar code or virtual bar code) and the detected/assigned sample type.
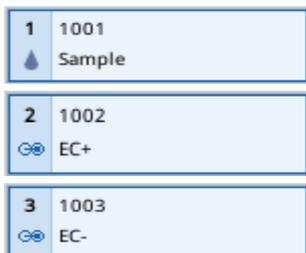
Inserts/Sample tubes list

If the dialog panel is in **Tubes** mode, a list of inserts and sample tubes is displayed. The inserts are listed first; after an insert has been selected, the user can select a tube type from the list. To change the insert or tube type, follow the steps below.

1. Select the position(s) to be corrected.

2. Press the appropriate tube insert item in the list.

   The list shows all available sample tube types that can be used with the selected insert.

3. Assign a tube type by selecting it from the list.

   Note: If sample tubes cannot be edited an error message is displayed.

   Note: For details on new types of labware, contact your local QIAGEN sales application specialist.

Note: If the **ID/Type** mode is active, the **Inserts/Sample tubes** list is not displayed.

ID and sample type editing

If the dialog panel is in **ID/Type** mode, buttons for editing ID and sample type are displayed.
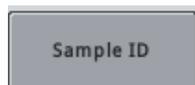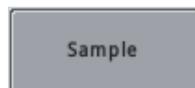
|	
Sample ID	Allows the user to edit sample IDs. When the button is pressed, the **Edit Sample ID** screen appears.
	The button is inactive if the software configuration of your QIAsymphony SP/AS instrument does not allow sample IDs to be edited.
Sample	When pressed, the sample type of the selected samples is set to "Sample".
EC+	When pressed, the sample type of the selected samples is set to "EC+" (positive external control).
EC-	When the button is pressed, the sample type of the selected samples is set to "EC−" (negative external control).

3.3.3 **Integrated Setup/Batch X/Define Samples** screen (plate carrier)

This screen displays information about all positions of the plate carrier. It enables the user to edit sample IDs.

For information about samples loaded in the tube carrier, see Section 3.3.2.

Integrated Setup/Batch X/Define Samples screen (Plate mode).

Command bar

Select All	Enables the user to select all samples.
Back	Enables the user to go back to the **Sample Preparation/Define Sample Rack Type** screen.
Clear	Enables the user to delete selected sample positions.

Dialog panel

01 - 08	Press to select/deselect sample positions 1–8.
09 - 16	Press to select/deselect sample positions 9–16.
17 - 24	Press to select/deselect sample positions 17–24.

Individual sample buttons (1–24)	Each sample button displays information about the sample ID (manually entered ID or position_batchID e.g., 2000) and sample type.

Individual positions can be selected by pressing the appropriate sample button.

Note: The button becomes yellow if a duplicate sample ID is detected.

If the sample ID was entered manually, a hand symbol is displayed at the top right of the sample position button.

Sample ID	Allows the user to edit sample IDs. When the button is pressed, the **Edit Sample ID** screen appears.

The button is inactive if the software configuration of your QIAsymphony SP/AS instrument does not allow sample IDs to be edited. |
Sample	When pressed, the sample type of the selected samples is set to "Sample".
EC+	When pressed, the sample type of the selected samples is set to "EC+" (positive external control).
EC-	When the button is pressed, the sample type of the selected samples is set to "EC–" (negative external control).

3.3.4 **Assay Assignment** screen

After selecting **SP Batch X** in the **Integrated Setup** view, press **Define Assays**. The **Assay Assignment** screen shows the positions of defined samples, and selected assays are shown in tabs. The user can assign or unassign one or more assays to/from the sample positions.
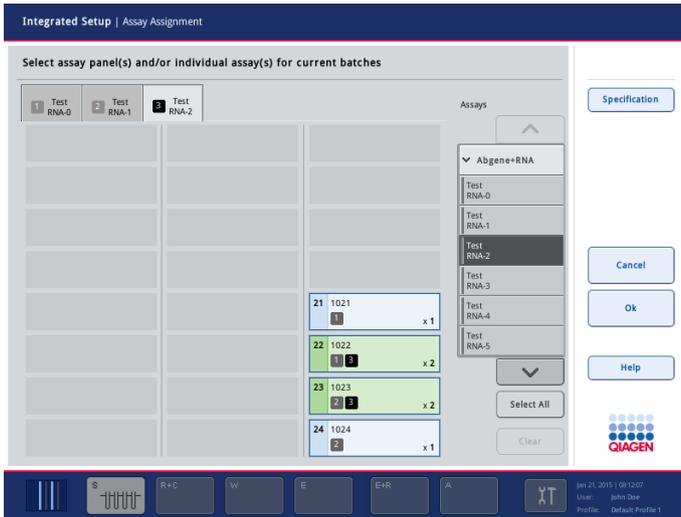
Assay Assignment screen.

Command bar

Specification	Opens the **Assay Specifications** screen (see Section 3.3.5).
Cancel	Closes the screen without saving the changes and cancels the assay definition process.
OK	Saves changes and opens the **Integrated Setup** screen. The button is active if no conflicts are present.

Dialog panel

Clear	Deletes the assigned Assay Parameter Set(s) from selected sample position(s).
Select All	Enables the user to select all positions that are defined on the rack. Only available when no position on the rack is selected. Otherwise, the **Deselect All** button is enabled.
Deselect All	The **Deselect All** button enables the user to deselect all selected positions.
[1][2][3] / [1] Test RNA-0	Shows the assigned assays on sample positions. Each number on a sample position represents an assay on its assay tab. For example, the sample position has assignments for assay "Test RNA-0" and 2 other assays.

Assays list	Available assays and panels are displayed in a list. To select an assay or panel, select the entry from the list.
Tab view	The tab view shows all assigned assays. Each assay tab has at least one assigned sample.

3.3.5 **Assay Specifications** screen

After pressing **Specification** in the **Assay Assignment** screen, the **Assay Specifications** screen shows the specifications that can be modified for each selected assay. It enables the user to change the parameters according to the requirements of the current assay definition.
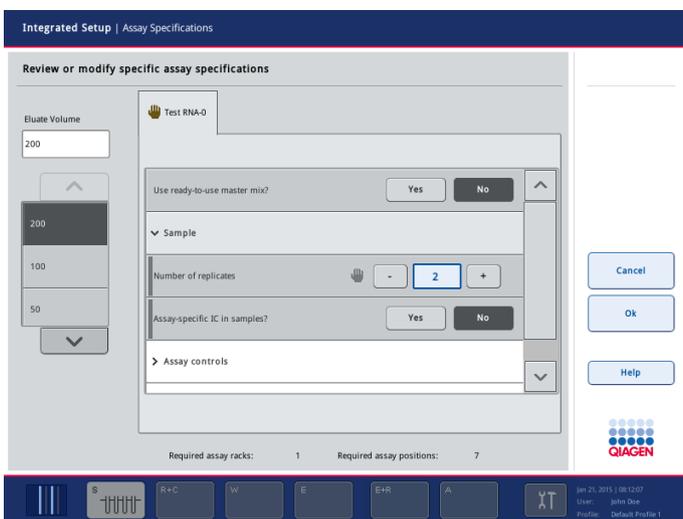
Assay Specifications screen.

For a detailed description of this screen, see Section 3.4.8.

Dialog panel

Eluate Volume	The default eluate volume defined in the Assay Control Set is displayed here. If the default elution volume was edited by the user, the new eluate volume will be displayed in this field.

Review or modify assay controls

The **Review or modify specific assay specifications** screen for assay controls shows the assay control specific parameters. It enables the user to change the parameters of mandatory assay controls and to add custom assay controls to the assay.

For a detailed description of this screen, see Section 3.4.8.
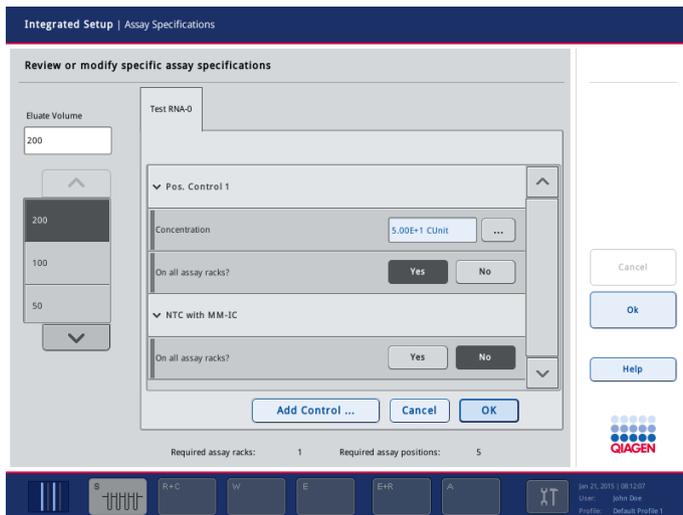
**Assay controls: Review or modify specific assay specifications screen.**

Review or modify assay standards

The **Review or modify specific assay specifications** screen for assay standards shows the assay standard specific parameters. It enables the user to change the parameters of assay standards and to activate optional assay standards.

For a detailed description of this screen, see Section 3.4.8.
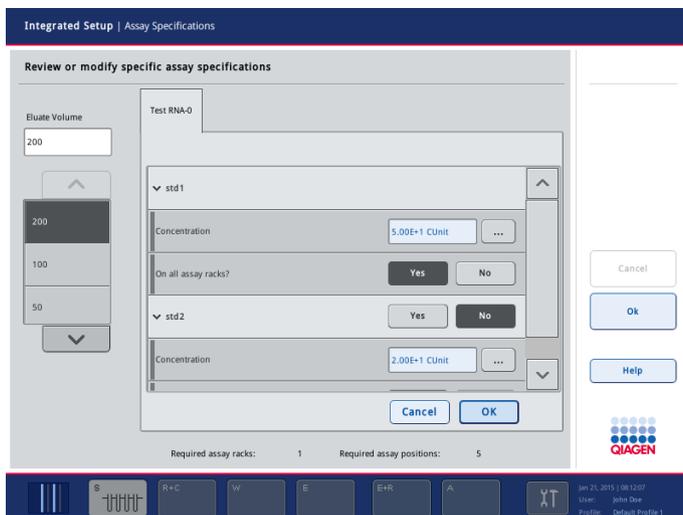
Assay standards: Review or modify specific assay specifications screen.

3.3.6   Sample Preparation/Internal Controls screen

For more information about this screen, see Section 3.8.14 of *Operating the QIAsymphony SP*.

3.4 Assay Setup tab

The **Assay Setup** tab is used to define independent runs on the QIAsymphony AS. In this tab, the user can:

- Assign Assay Parameter Sets
- View information about the QIAsymphony AS, including the progress and status of assay setup
- Remove completed assays
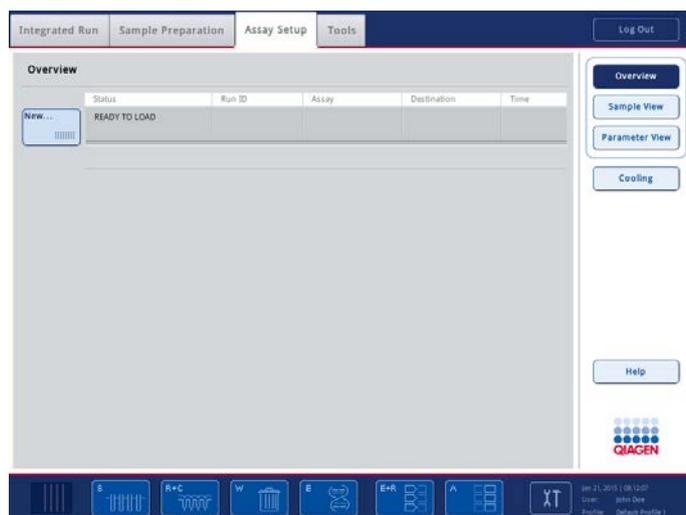
3.4.1 Assay Setup/Overview screen

The **Assay Setup/Overview** screen indicates the status of an independent assay setup run. It also enables the user to define an assay run or remove assays.

If an assay run is queued or in progress, the temperature of the cooling positions can be seen in real time.
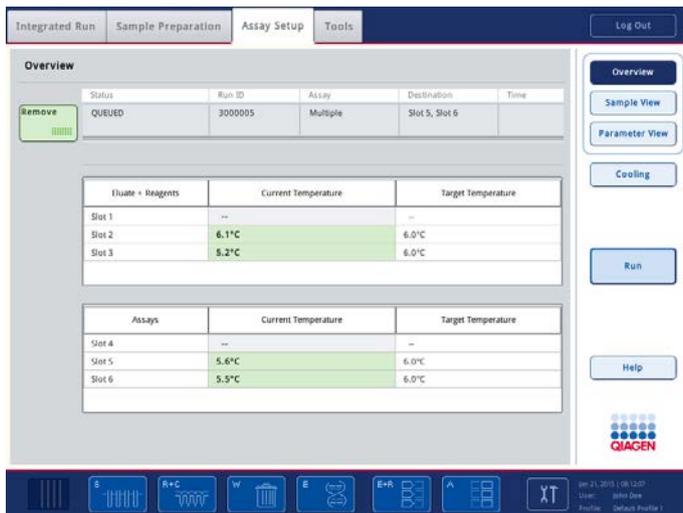
Assay Setup/Overview screen.

Assay run status

The status of the assay run is indicated by the color of the batch button.

Blue	No assay run is currently defined. Press to define a new assay run.
Light green	An assay run is loaded and queued. Press to remove the assay, or press **Run** to start the assay run.
Green	Samples in the assay run are currently being processed.
Orange	The assay run currently being processed has been paused. The run can be continued or canceled. See Section 2.17 for more details.
Red	The assay run has been aborted by the user or terminated due to an error. If processing was stopped due to an error, the "E+R" button, which corresponds to the "Eluates and Reagents" drawer, becomes yellow.
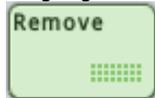
Dark green	An assay run has been processed and the assays can be removed from the "Assays" drawer. After removing the assays, press to remove the assay run.

Command bar

	Opens the **Temperature Status** screen. This screen enables the temperatures of the cooling slots to be checked and, if allowed by the assay, enables cooling to be switched on or off. The **Temperature Status** screen also appears after pressing the **Cooling** button in the **Assay Setup/Loading Information** screen (see Section 3.4.9).
	This button is enabled when either the **Sample View** or **Parameter View** is open. Press this button to open the **Assay Setup/Overview** screen.
	Opens the **Sample View** screen. This screen displays information in a tabular format about samples that will be processed, are currently being processed, or that have been processed.
	Opens the **Parameter View** screen. This screen displays information in a tabular format about Assay Parameter Sets and specifications for samples that will be processed, are currently being processed, or that have been processed.
	The **Run** button is enabled if an assay run has been queued. Press **Run** to start batch validation. If the defined assay run is successfully validated, the assay run will start. If there is a problem with the defined assay run during validation, a warning will appear with more information.
	If an assay run is in progress, the **Pause AS** button is available. The **Pause AS** button should only be pressed in an emergency. After pressing **Pause AS**, the QIAsymphony AS completes the current command and then pauses the assay run. Samples will always be flagged "unclear" if the run has been paused. If the assay run has been paused by the user or due to an error, the **Stop AS** and **Continue AS** buttons appear (see Section 2.17). **Note**: The QIAsymphony AS drawers will be unlocked.

Stop AS

The **Stop AS** button appears if the current assay run is paused. Press **Stop AS** to cancel the assay run that is currently being processed.

Note: For information about removing assays if an assay run has been canceled, see Section 2.9.

Continue AS

The **Continue AS** button appears if the current run is paused. Press **Continue AS** to continue the run. Samples will always be flagged as "unclear" if the instrument was paused and then continued.

Note: An assay run should only be paused in an emergency.

Dialog panel

Buttons

Batch button

The assay run status is displayed. Depending on the assay run status, pressing the batch button may result in an action being performed.

- **READY TO LOAD** – Press the batch button **New** to start the assay definition process.
- **QUEUED** – Press the batch button **Remove** to remove the assay run and stop cooling.
- **STOPPED/COMPLETED** – Press the batch button **Remove** to remove the assay run and stop cooling.
- **PAUSED** – The batch button is inactive in this state.

Table view

Status

The assay run status is displayed.

- **READY TO LOAD** – A new assay run can be defined.
- **QUEUED** – Samples have been loaded and the assay run is defined. The assay run is queued for processing.
- **RUNNING** – The assay run is in progress. Loaded samples are being processed.
- **COMPLETED** – All samples in the assay run have been processed.
- **PAUSED** – The assay run has been paused. Samples will always be flagged as "unclear" if the instrument is paused.
- **STOPPED** – The assay run has been stopped by the user or due to an error. Processing of the samples cannot be restarted and cannot be manually processed.

Run ID	Run ID is assigned by the QIAsymphony SP/AS instruments is displayed here.
Assay	If an assay run is queued, the name of the Assay Parameter Set is displayed, if only a single Assay Parameter Set has been assigned.
	If more than one Assay Parameter Set has been assigned, "Multiple" is displayed. More detailed information can be found in the **Sample View** and **Parameter View** screens (see Sections 3.4.2 and 3.4.3).
Destination	The "Assay" slot in which the assay will be set up is displayed.
Time	The actual elapsed time is displayed.

Progress bar

The progress bar displays information about the protocol that is currently being run. The step of the protocol that is currently being performed and the progress as a percentage of the whole protocol is displayed. Additionally, the progress bar displays the estimated duration of batch execution.
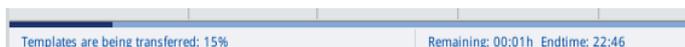
Note: Run time estimation is based on stored run times of previous, valid runs with identical settings.

Cooling display

The cooling display becomes visible on the **Assay Setup/Overview** screen if an assay run is queued or in progress. Temperature information for all used cooling positions for the current batch is displayed.

A green background indicates that the current temperature is within the defined range and a yellow background indicates that the temperature is currently outside the defined target range.

3.4.2 **Assay Setup/Sample View** screen

The **Sample View** screen displays information about samples that will be processed, are currently being processed, or that have been processed.

Note: A warning symbol appears in the **Sample View** screen if one or more samples are flagged as "invalid".
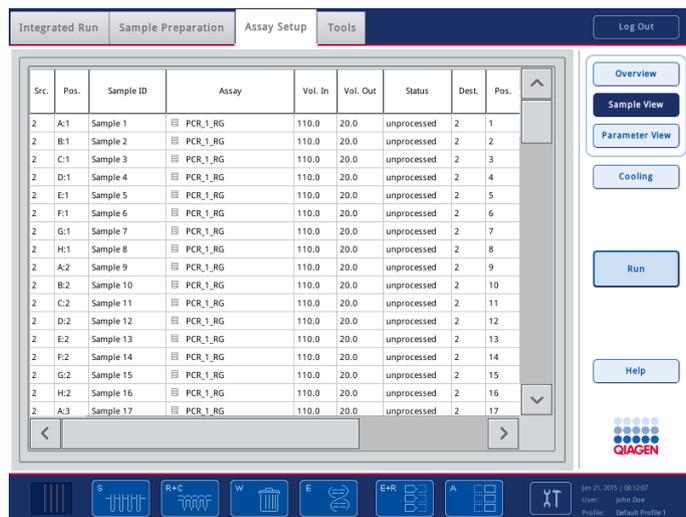
Sample View screen.

Command bar

For descriptions of the buttons in the command bar, see the "Command bar" section of the **Assay Setup/Overview** screen (Section 3.4.1, page 109).

Dialog panel

Information about the samples is provided in a table. When an assay run is removed, all information about the samples is automatically removed from the table.

Table view

Src.	The slot position of the sample rack is displayed.
Pos.	The position in the sample rack is displayed.
Sample ID	ID (bar code, virtual bar code or automatic ID assigned by the instrument) is shown.

Assay	The name of the assigned Assay Parameter Set is displayed.
	If the Assay Parameter Set was assigned by the work list, the symbol ▤ is displayed. If the sample is not linked to the Assay Parameter Set in the work list, but is linked to a different Assay Parameter Set, the symbol 🖑 is displayed.
Vol. In	The input volume is displayed.
Vol. Out	Template volume for assay point is displayed. For normalization with normalization position: Assay volume that goes to normalization rack.
Status	The sample state is displayed. There are 6 possible sample states: "unprocessed", "in process", "valid", "unclear", "invalid" and "removed" (see "Sample status", Section 8.9.1 of the *General Description* for more information).
	The state of individual samples is also shown by the color in the table.
	● Light green – "valid"
	● Light pink – "unclear"
	● Pink – "invalid"
	● White – "unprocessed"
	● White – "in progress"
Dest.	The slot of the assay rack is displayed.
Pos.	The position in the assay rack is displayed.
Assay Definition	The name of the assigned Assay Definition is displayed.

3.4.3 **Assay Setup/Parameter View** screen

The **Parameter View** screen displays information about Assay Parameter Sets and specifications for samples that will be processed, are currently being processed, or that have been processed. Depending on whether an Assay Parameter Set includes a user-defined output pattern, different parameters are listed.
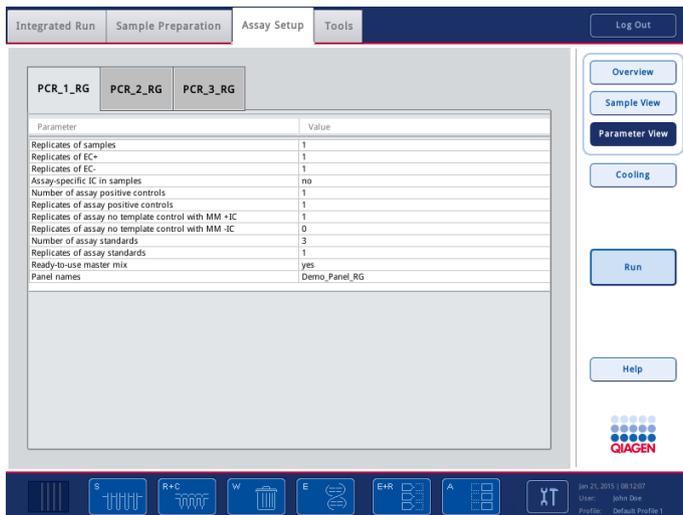
Parameter View screen.
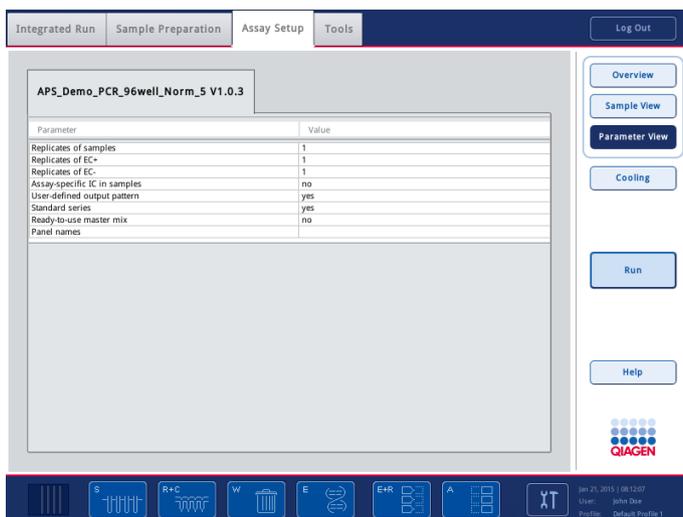
Parameter View screen (user-defined output pattern).

The screen is different in assays with a user-defined output pattern. The replicate count-related parameters come from the user-defined output pattern and are thus not defined.

Command bar

For descriptions of the buttons in the command bar, see the "Command bar" section of "**Assay Setup/Overview** screen" (Section 3.4.1).

Dialog panel

Information about the assay parameters is provided in tabular format for each Assay Parameter Set. The parameters show either the default values or the values that were manually entered during the assay definition process (i.e., the values that will be used for the run).

Parameter	Value
Replicates of samples	Number of replicates for a sample.
Replicates of EC+	Number of replicates for a positive extraction control.
Replicates of EC–	Number of replicates for a negative extraction control.
Assay-specific IC in samples	**Yes**, if IC is included in samples, or **No** if IC for samples should be added to the master mix.
User-defined output pattern	**Yes**, when Assay Parameter Set defines a user-defined output pattern. This field is only displayed when a user-defined output pattern has been defined. **Note**: Empty positions defined with the user-defined output pattern cannot be analyzed with Rotor-Gene AssayManager®.
Replicates of assay positive controls	Number of replicates for an assay positive control. Not for user-defined output pattern.
Number of assay positive controls	Number of assay positive controls. Not for user-defined output pattern.
Replicates of assay no template control with MM+IC	Number of replicates for the no template control with MM+IC. Not for user-defined output pattern.
Replicates of assay no template control with MM-IC	Number of replicates for the assay no template control with MMC-IC. Not for user-defined output pattern.
Number of assay standards	Number of assay standards. Not for user-defined output pattern.
Standard series	Denotes whether the QIAsymphony AS will create standard series automatically during the process.
Ready-to-use master mix	If **Yes**, the user must provide premixed master mix. If **No**, the QIAsymphony AS prepares the master mix.
Panel name	Name of the panel.

3.4.4 Assay Setup/Sample Rack(s) screen

To open the **Sample Rack(s)** screen, press **New** in the **Assay Setup/Overview** screen.

The **Sample Rack(s)** screen shows the worktable (i.e., sample, reagent and assay slots in the "Eluate and Reagents" and "Assays" drawers) and the available rack types. It enables the user to define sample slot(s), assign rack type(s) and rack IDs.

By default, slot 2 is defined as a sample slot. In addition, slot 1 can be optionally defined as a sample slot. This cannot be changed. To proceed, all defined sample slots must be assigned a rack type and a rack ID.
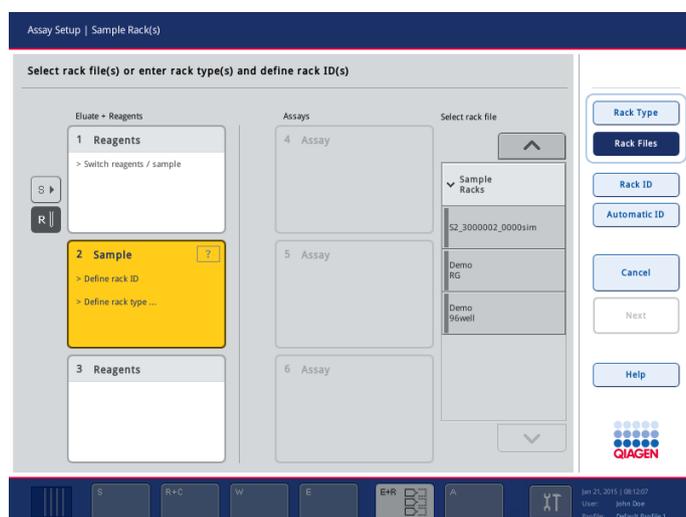
Sample Rack(s) screen displaying the rack file list.

Command bar

Press **Rack Type** to view the rack type list. If the **Rack Type** button is pressed, the rack type list is displayed in the dialog panel. This enables the user to assign the correct rack type to the selected slot(s).

This button is inactive if the rack file list is displayed.

When the **Rack Files** button is pressed, the rack file list appears. If the **Rack Files** button is active, the rack file list is displayed in the dialog panel. This enables the user to assign the correct rack file to the selected slot.

This button is inactive if the rack type list is displayed.

Button	Description
Rack ID	Allows the user to edit rack IDs. The button is inactive if more than one slot is selected. When the button is pressed, the **Manual Input** screen appears.
Automatic ID	Automatically generates a rack ID for each selected slot. This rack ID is a combination of slot number, batch ID and instrument serial number.
Cancel	Closes the screen without saving the changes and cancels the assay definition process.
Next	Press to save changes and proceed to the **Sample Rack Layout** screen. This button is active if a rack type, rack ID or a rack file has been assigned to all sample slots.

Dialog panel

R and **S** buttons	Press the **S** button to redefine slot 1 as a sample slot.
[S / R icon]	Press the **R** button to redefine slot 1 as a reagent slot.

Eluate + Reagents

Slot 1 (Sample/Reagent)	If the **S** button is pressed, slot 1 is a sample slot. Press slot 1 to select it.
	If the **R** button is active, slot 1 is a reagent slot. If it is inactive, it cannot be selected by pressing on it.
Slot 2 (Sample)	Slot 2 is a sample slot. Press to select sample slot 2.
Slot 3 (Reagent)	The reagent slot 3 button is inactive.

Assays

Assay slots 4–6	The assay slot buttons 4–6 are inactive.
Select rack type list	Available rack types are listed in categories (e.g., Deep Well, Micro Plate). Press on a category to see the list of available rack types. To assign a rack type to the selected slot(s), select the rack type from the list.
Select rack file list	Available rack files are displayed in a list. There are 3 categories of rack files: **Sample Racks**, **Normalization Racks** and **Assay Racks**. To assign a rack file to the selected slot(s), select the rack file from the list.

3.4.5 Assay Setup/Sample Rack Layout screen

To open the **Sample Rack Layout** screen, press **Next** in the **Sample Rack(s)** screen.

The **Sample Rack Layout** screen shows the positions on the defined sample racks. It enables the user to define the sample type (Sample/EC+/EC–), the sample volume, the sample ID and the sample positions.

If slot 1 is also defined as a sample rack, the user can switch between views of the 2 sample slots by pressing the **Slot 1** and **Slot 2** buttons in the dialog panel.

All defined positions must be assigned a sample type, a volume and an ID to proceed.
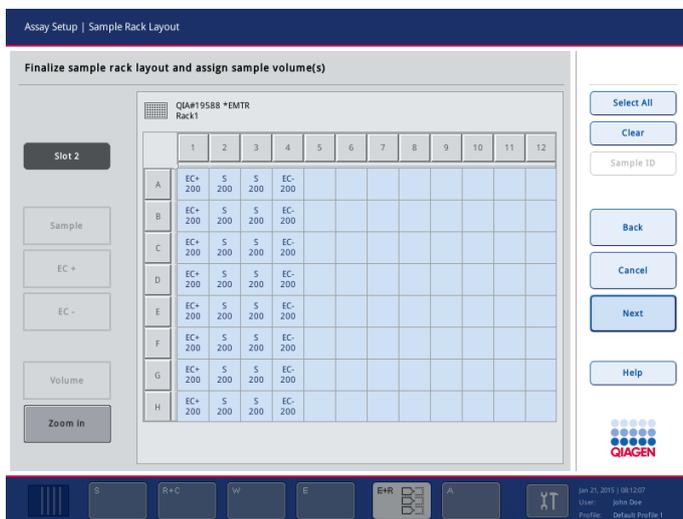
Sample Rack Layout screen (zoomed out).

Sample Rack Layout screen (zoomed in).

Command bar

Select All	The **Select All** button is visible if no position on the rack grid is selected. Otherwise, the **Deselect All** button is visible.
	If no position on the rack is defined, the **Select All** button enables the user to select all positions on the whole rack. If at least one position on the rack is defined, the **Select All** button enables the user to select all positions that are defined on the rack.
Deselect All	The **Deselect All** button enables the user to deselect all selected positions.
Clear	This button is inactive if no position on the rack grid is selected.
	The **Clear** button enables the user to clear the content of the selected position(s) from the rack.
	Clearing positions is not possible if a rack file was selected for this slot.
Sample ID	Allows the user to edit the IDs of the selected position(s) on the rack grid. When the button is pressed, the **Manual Input** screen appears.
Back	Enables the user to go back to the **Sample Rack(s)** screen (see Section 3.4.4).
Cancel	Closes the screen without saving the changes and cancels the assay definition process.
Next	Press **Next** to save changes and proceed to the **Assay Selection Per Slot** screen. This button is active for each available sample slot when at least one Sample/EC+/EC– is assigned, and all assigned positions have a defined volume.

Dialog panel
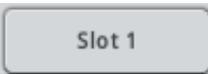
Slot 1	This button is only visible if slot 1 is defined as a sample slot.
	When the **Slot 1** button is pressed, the button becomes inactive and the rack grid of slot 1 is displayed.
Slot 2	When the **Slot 2** button is pressed, the button becomes inactive and the rack grid of slot 2 is displayed.

Sample	This button is inactive if no position on the rack grid is selected.
	The **Sample** button enables the user to define a sample on the selected position(s) on the rack grid.
	Changing positions is not possible if a rack file was selected for this slot, except if an assay rack file is used. In this case, the positions with NTC, Assay Standards and Assay Controls are automatically predefined as samples. Only in the "zoomed in" screen are the abbreviations (e.g., "NTC", "Std1") visible.
EC +	This button is inactive if no position on the rack grid is selected.
	The **EC+** button enables the user to define a positive extraction control on the selected position(s) on the rack grid.
	Changing positions is not possible if a rack file was selected for this slot, except if an assay rack file is used. In this case, the positions with NTC, Assay Standards and Assay Controls are automatically predefined as samples. Only in the "zoomed in" screen are the abbreviations (e.g., "NTC", "Std1") visible.
EC -	This button is inactive if no position on the rack grid is selected.
	The **EC−** button enables the user to define a negative extraction control on the selected position(s) on the rack grid.
	Changing positions is not possible if a rack file was selected for this slot except if an assay rack file is used. In this case, the positions with NTC, Assay Standards and Assay Controls are automatically predefined as samples. Only in the "zoomed in" screen are the abbreviations (e.g., "NTC", "Std1") visible.
Volume	This button is inactive if no position on the rack grid is selected.
	Allows the user to edit the volume of the selected position(s) on the rack grid. When the button is pressed, the **Manual Input** screen appears.
Zoom in	The **Zoom in** button enables the user to magnify the rack grid view.
Zoom out	The **Zoom out** button then enables the user to return to the normal view.

Rack grid	The rack grid mirrors the selected rack.

Press a position in the rack grid to select the corresponding position.

Press a row title to select the positions of the whole row.

Press a column title to select the positions of the whole column.

To select a block of positions, press on one position and drag your finger to select other adjacent positions.

Color coding	The status of samples transferred from the QIAsymphony SP is indicated with color.

"Unclear" samples are highlighted light yellow.

"Invalid" samples are highlighted pink.
"Invalid" samples cannot be processed on the QIAsymphony AS.

3.4.6 **Assay Setup/Assay Selection** screen

To open the **Assay Selection** screen, press **Next** in the **Sample Rack Layout** screen.

The **Assay Selection** screen shows the available and selected Assay Parameter Sets. It enables the user to assign one or more Assay Parameter Sets to the sample slots.

After selecting an Assay Parameter Set, the remaining Assay Parameter Sets in the available assays list are filtered according to the same assay output format. Only these Assay Parameter Sets can be selected.

If slot 1 is also defined as a sample slot, the user can assign the Assay Parameter Sets to one or both slots in the **Selected assays** list.
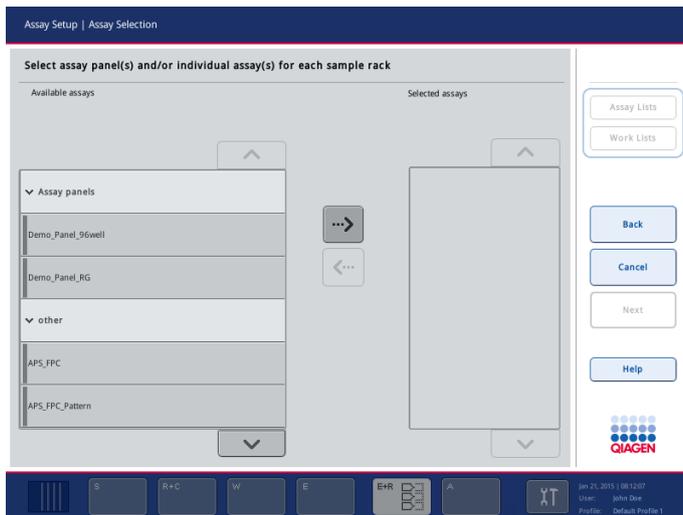
Assay Selection screen.

Command bar

Assay Lists	If at least one work list is available for the samples and the screen is in the work lists mode, the **Assay Lists** button is active.
	Press to manually assign Assay Parameter Sets.
Work Lists	If at least one work list is available for the samples and the screen is in the manual mode, the **Work Lists** button is active.
	Press to switch to the work list mode.
Back	Press to go back to the **Sample Rack Layout** screen (see Section 3.4.5).
Cancel	Closes the screen without saving the changes. Cancels the assay definition process.
Next	Press to save changes and proceed to the **Assay Assignment** screen. This button is active if at least one Assay Parameter Set has been assigned.

Dialog panel

Available assays list	Available Assay Parameter Sets and panels are displayed in a list. Assay Parameter sets are grouped in categories. To select an Assay Parameter Set, first select the category and then select the Assay Parameter Set from the list.

Selected assays list	Selected Assay Parameter Sets and panels are displayed in a list. To select an Assay Parameter Set, first select the category and then select the Assay Parameter Set from the list.
Slot 1	This tab is only visible if 2 sample slots have been defined.
	When this button is pressed, the **Selected assays** list switches to the Assay Parameter Sets/Panels assigned to slot 1.
Slot 1/2	This tab is only visible if 2 sample slots have been defined.
	When this button is pressed, the **Selected assays** list switches to the Assay Parameter Sets/Panels assigned to slot 2.
Both Slots	This tab is only visible if 2 sample slots have been defined.
	When this button is pressed, the **Selected assays** list switches to the Assay Parameter Sets/Panels assigned to both slots.
⋯>	This button is inactive if no entry in the **Available assays** list is selected.
	When this button is pressed, the selected Assay Parameter Set/Panel in the **Available assays** list will be removed from the list and added to the **Selected assays** list.
	If an Assay Parameter Set is not compatible with an already selected Assay Parameter Set, it will disappear from the **Available assays** list. Be aware that it is not possible to combine assays with normalization with assays without normalization.
<⋯	This button is inactive if no entry in the **Selected assays** list is selected.
	When this button is pressed, the selected Assay Parameter Set/Panel in the **Selected assays** list will be removed from the list and added to the **Available assays** list.
Individual position selection for all assays	The **Yes/No** buttons control the option **Individual position selection for all assays**.
	To select an option, press the corresponding button.
Yes/No	These buttons are not visible in work list mode.

3.4.7 **Assay setup/Assay Assignment** screen

To open the **Assay Assignment** screen, press **Next** in the **Assay Selection** screen.

The **Assay Assignment** screen shows the positions of the defined sample racks and the selected Assay Parameter Sets in tabs. The user can assign or unassign one or more Assay Parameter Sets from the sample positions.

If slot 1 has been defined as a sample slot, the user can switch between the views of slot 1 and slot 2.
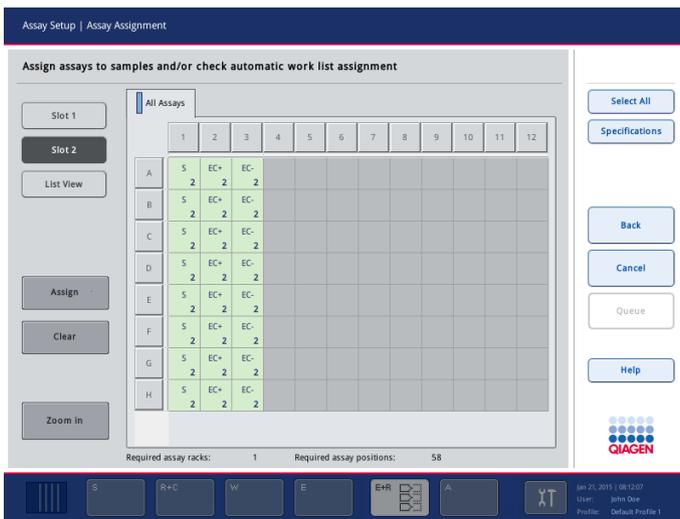
Assay Assignment screen ("No" selected for Individual position selection for all assays).
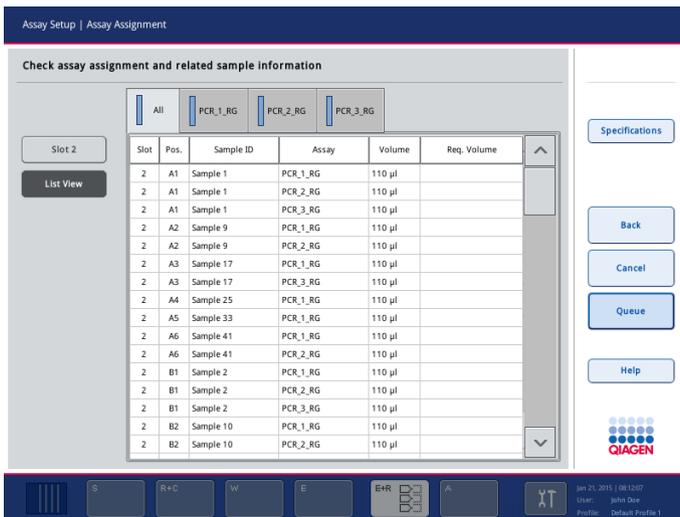
Assay Assignment screen (list view).

Command bar

Select All	The **Select All** button is visible if no position on the rack grid is selected. Otherwise, the **Deselect All** button is visible.
	The **Select All** button enables the user to select all positions that are defined on the rack.
Deselect All	The **Deselect All** button enables the user to deselect all selected positions.
Specifications	The **Specifications** button opens the **Assay Specifications** screen (see Section 3.4.8).
Back	Press to go back to the **Assay Selection** screen (see Section 3.4.6).
Cancel	Closes the screen without saving the changes and cancels the assay definition process.
Queue	Press to save changes and proceed to the **Loading Information** screen. The button is active for all Assay Parameter Sets when at least one position is assigned.
Zoom in	The **Zoom in** button enables the user to magnify the rack grid view.
Zoom out	The **Zoom out** button then enables the user to return to the normal view.
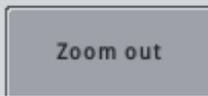
Dialog panel
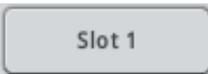
Slot 1	This button is only visible if slot 1 is defined as a sample slot.
	This button is inactive if the rack grid shows the rack on slot 1.
	When the **Slot 1** button is pressed, the rack grid of slot 1 is displayed.
Slot 2	This button is inactive if the rack grid shows the rack on slot 2.
	When the **Slot 2** button is pressed, the rack grid displays the rack on slot 2.

The tab view shows all selected Assay Parameter Sets.

Each Assay Parameter Set must be assigned to at least one sample position on each slot.
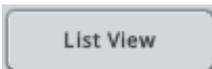
Press the **List View** button to display a screen that contains information about the assigned Assay Parameter Sets in a table. To return to the previous view, press the slot button (i.e., **Slot 1** or **Slot 2**).
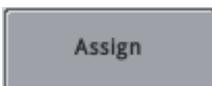
The **Assign** button enables the user to assign an Assay Parameter Set, selected in the tab in the slot 1 or slot 2 view, etc., to the selected sample position(s). After an Assay Parameter Set is assigned to a sample, the color changes and the number 1 appears. If 2 Assay Parameter Sets are assigned, the number 2 appears, and so on.
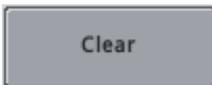
The **Clear** button enables the user to delete the assigned Assay Parameter Set(s) from selected sample position(s).

Required assay racks

Displays the required number of assay racks.

Required assay positions

Displays the total number of positions that are required in all assay racks.

Rack grid

The rack grid mirrors the selected rack.

Zoomed mode shows the sample type, the sample ID and the concentration.
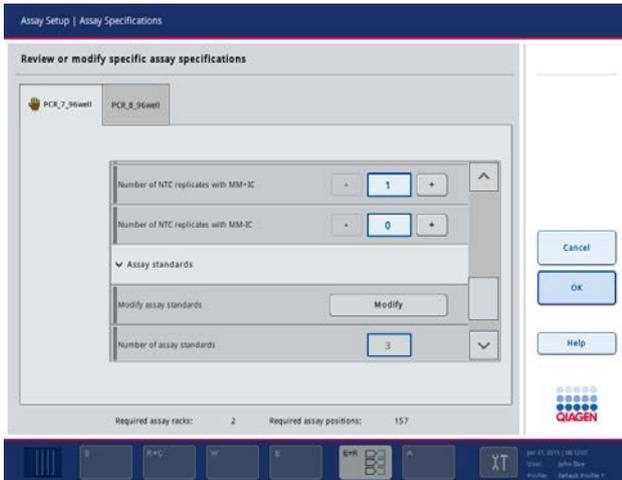
3.4.8 Assay Setup/Assay Specifications screen

After pressing **Specifications**, the **Assay Specifications** screen shows the assay parameters that can be modified for each selected Assay Parameter Set. It enables the user to change the parameters according to the requirements of the current assay definition.
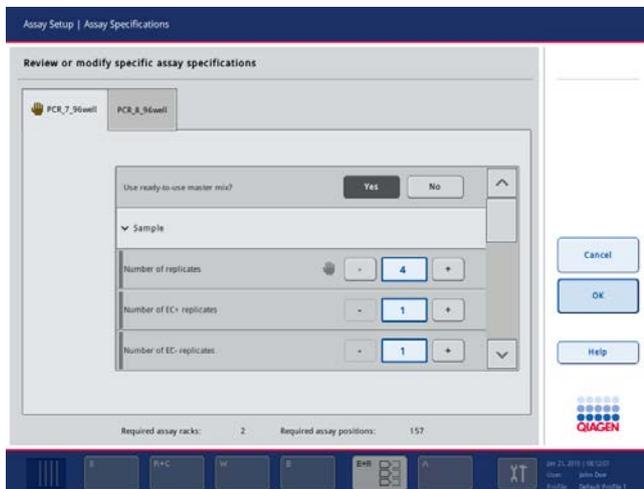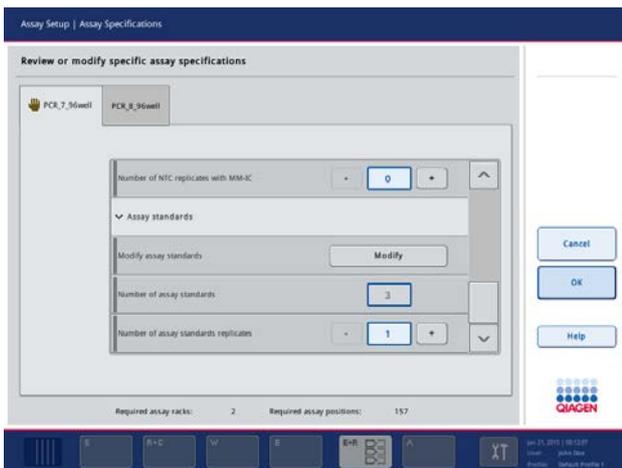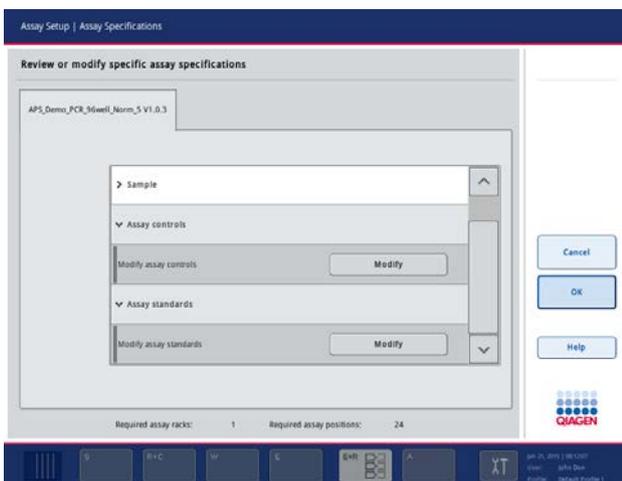

Assay Specifications screen (1/4).
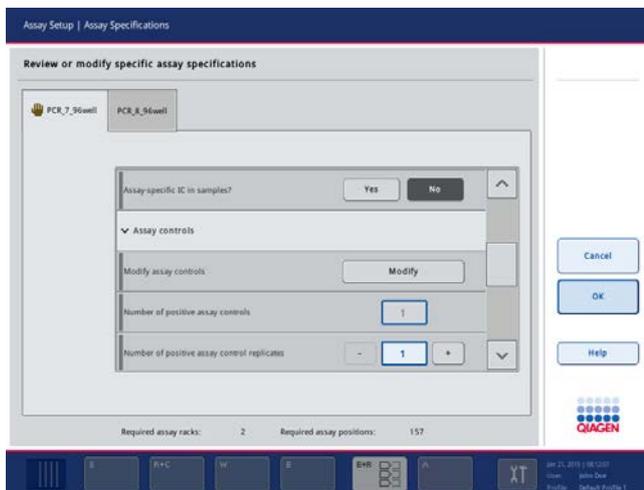
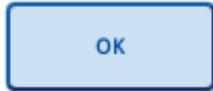**Assay Specifications screen (2/4).**

Assay Specifications screen (3/4).

Assay Specifications screen (4/4).

Assay Specifications screen (user-defined output pattern).

Command bar

OK	Press the **OK** button to save changes and return to the **Assay Assignment** screen.
Cancel	Press the **Cancel** button to discard changes and return to the **Assay Assignment** screen.

Dialog panel

APS_Demo_PCR_96well_Norm_5 V1.0.3	The tab view shows all Assay Parameter Sets that were selected in the **Assay Selection** screen. Selecting a tab updates the parameter values in the **Assay Specifications** screen.
Use ready-to-use master mix?	If **Yes** is selected the user must provide premixed master mix. If **No** is selected, the QIAsymphony AS prepares the master mix.
🖐	The hand symbol indicates that a parameter has been modified.

Sample (1/4)

Parameter	Description
Number of replicates	The **Number of replicates** field displays the number of replicates for samples. Pressing the **–/+** buttons increases or decreases the value by one. When the field containing the value is pressed, the **Number of replicates** screen appears, enabling the user to input a new value. Cannot be modified for user-defined output patterns. The minimum replicate count is 1.
Number of EC+ replicates	This parameter is invisible if no input position with type EC+ is defined. The **Number of EC+ replicates** field displays the number of replicates for samples. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of EC+ replicates** screen appears to enable the user to input a new value. Cannot be modified for user-defined output patterns. The minimum replicate count is 1.

Parameter	Description
Number of EC– replicates	This parameter is invisible if no input position with type EC– is defined.
	The **Number of EC– replicates** field displays the number of replicates for samples. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of EC– replicates** screen appears to enable the user to input a new value. Cannot be modified for user-defined output patterns. The minimum replicate count is 1.
Assay-specific IC in samples?	This parameter is only visible if the assay uses an internal control.
	If **Yes** is selected, the samples, EC– and EC+ contain internal control (IC). If **No** is selected, the samples, EC– and EC+ do not contain internal control.

Assay controls (2/4 and 3/4)

| Parameter	Description
Modify assay controls	When the **Modify** button is pressed, the **Review or modify specific assay specifications** screen for assay controls appears (page 132).
	Modify
Number of positive assay controls	Indicates the number of positive assay controls. This parameter is intended only to provide information and cannot be changed. Not shown for user-defined output patterns.
Number of positive assay control replicates	The **Number of positive assay control replicates** field displays the number of replicates for positive assay controls. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of positive assay control replicates** screen appears to enable the user to input a new value. Not shown for user-defined output patterns. The minimum replicate count is 1.

| Parameter	Description
Number of NTC replicates	The **Number of NTC replicates** field displays the number of replicates for NTC. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of NTC replicates** screen appears, enabling the user to input a new value. Not shown for user-defined output patterns. The minimum replicate count is 1.
Number of NTC replicates with MM+IC	This parameter is only visible if the assay uses an internal control. The **Number of NTC replicates with MM+IC** field displays the number of replicates for NTC with master mix containing IC. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of NTC replicates with MM+IC** screen appears, enabling the user to input a new value. Not shown for user-defined output patterns. The minimum replicate count is 1.
Number of NTC replicates with MM–IC	This parameter is only visible if the assay uses an internal control. Not shown for user-defined output patterns. The **Number of NTC replicates with MM–IC** field displays the number of replicates for NTC with master mix not containing IC. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of NTC replicates with MM–IC** screen appears to enable the user to input a new value. The minimum replicate count is "0". "0" indicates that the NTC with MM–IC is not used for this assay run.

Assay standards (4/4)

Parameter	Description
Modify assay standards	When the **Modify** button is pressed, the **Review or modify specific assay specifications** screen for assay standards appears (page 134). Modify
Number of assay standards	This parameter is intended to provide information and cannot be changed. Not shown for user-defined output patterns.
Number of assay standards replicates	The **Number of assay standards replicates** field displays the number of replicates for assay standards. Pressing the **–/+** buttons decreases/increases the value by one. When the field containing the value is pressed, the **Number of assay standards replicates** screen appears to enable the user to input a new value. Not shown for user-defined output patterns. The minimum replicate count is 1.

Modify assay controls

The **Review or modify specific assay specifications** screen for assay controls shows the assay control specific parameters. It enables the user to change the parameters of mandatory assay controls and to add custom assay controls to the assay.
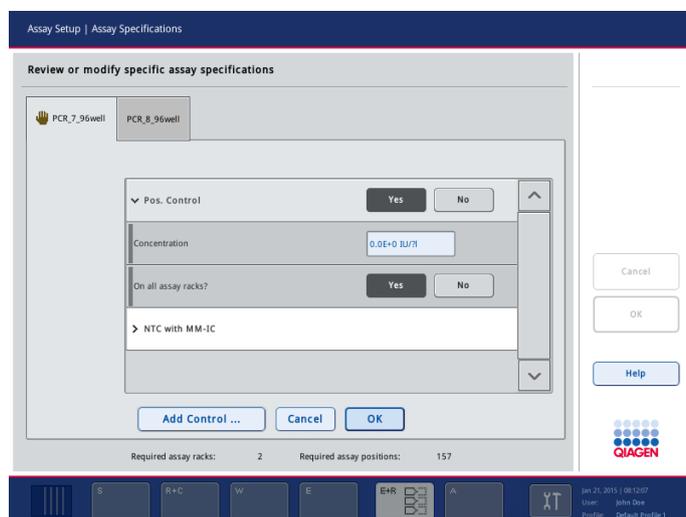
Assay controls (1/2): Review or modify specific assay specifications screen.
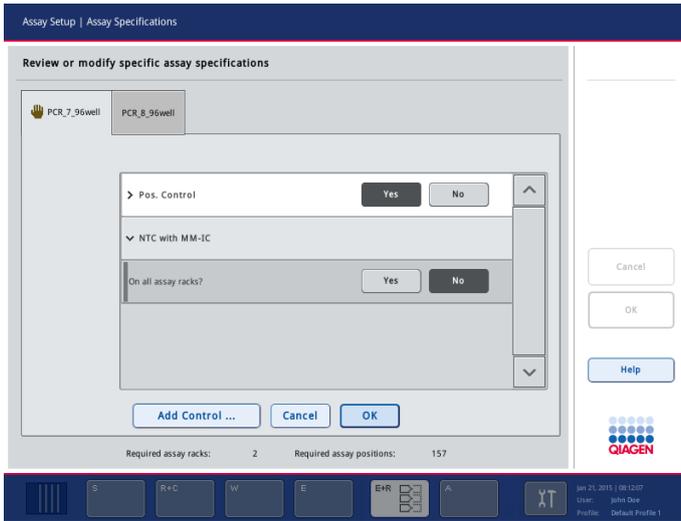
Assay controls (2/2): Review or modify specific assay specifications screen.

Dialog panel

The tab view shows all Assay Parameter Sets that were selected in the **Assay Selection** screen.

Activating a tab updates the parameter values in the parameter view.

Assay controls list

The **Assay controls** list displays all assay controls for the Assay Parameter Set that is currently selected in the tabs.

To show/hide details press on the line of the corresponding assay control.

Press **Add Control** to create a custom assay control and add it to the list of assay controls.

This feature cannot be used in combination with user-defined output patterns.

Press **Cancel** to discard changes and return to the **Assay Specifications** screen.

Press **OK** to save changes and return to the **Assay Specifications** screen.

| Concentration	The **Concentration** field displays the concentration of the assay control. When the **Concentration** field is pressed, the **Concentration** screen appears, enabling the user to input a new value. The unit for assay controls can be defined using the QIAsymphony Management Console. See the *QIAsymphony Management Console User Manual* for further details.
On all assay racks?	If **Yes** is selected, the assay control will be distributed to all assay racks. If **No** is selected, the assay control will only be distributed to the first rack of the assay. Not for user-defined output pattern.
Name	This parameter is only visible if the assay control is a custom assay control. The **Name** field displays the name of the custom-defined assay control. When the field containing the value is pressed, the **Name of assay control** screen appears to enable the user to input a new value.

Modify assay standards

The **Review or modify specific assay specifications** screen for assay standards shows the assay standard specific parameters. It enables the user to change the parameters of assay standards and to activate optional assay standards.
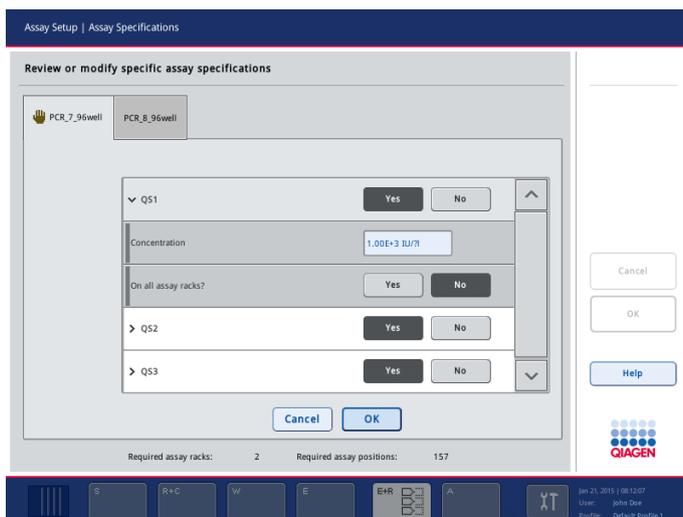
Assay standards: Review or modify specific assay specifications screen.

Dialog panel

PCR_7_96well	The tab view shows all Assay Parameter Sets that were selected in the **Assay Selection** screen.
	Activating a tab updates the parameter values in the parameter view.
Assay standards list	The **Assay standards** list displays all assay standards for the Assay Parameter Set that is currently selected in the tabs.
	To show/hide details press on the line of the corresponding assay standard.
Cancel	Press **Cancel** to discard changes and return to the **Assay Specifications** screen.
OK	Press **OK** to save changes and return to the **Assay Specifications** screen.
Concentration	The **Concentration** field displays the concentration of the assay standard. When the **Concentration** field is pressed, the **Concentration** screen appears, enabling the user to input a new value.
On all assay racks?	If **Yes** is selected, the assay standard will be distributed to all assay racks. If **No** is selected, the assay standard will only be distributed to the first rack of the assay. Not for user-defined output pattern.
Optional assay standard	To activate/deactivate an optional assay standard, press the **Yes**/**No** buttons in the corresponding line. Not for user-defined output pattern.

- **Yes**: The assay standard will be used for the assay.
- **No**: The assay standard will not be used for the assay.

3.4.9 **Assay Setup/Loading Information** screen

To open the **Loading Information** screen, press **Queue** in the **Assay Assignment** screen.

The **Loading Information** screen shows the worktable and its positions. Slots that must be loaded with racks are highlighted yellow. The user can press a slot to view detailed loading information for that slot and to load it. In addition, required, available and missing numbers of tips are displayed.
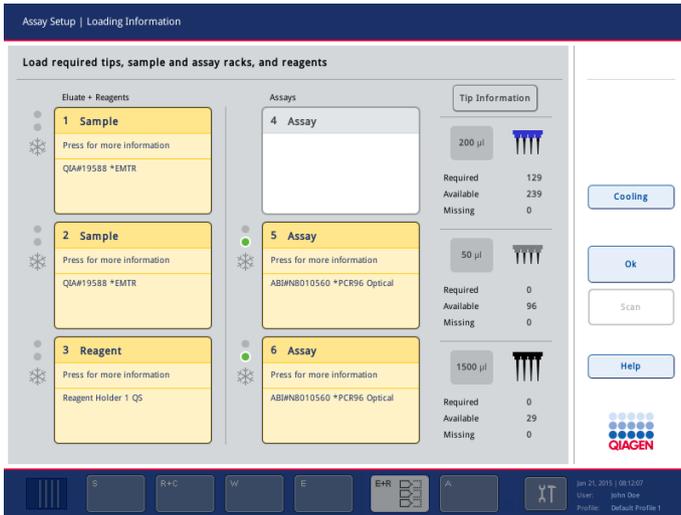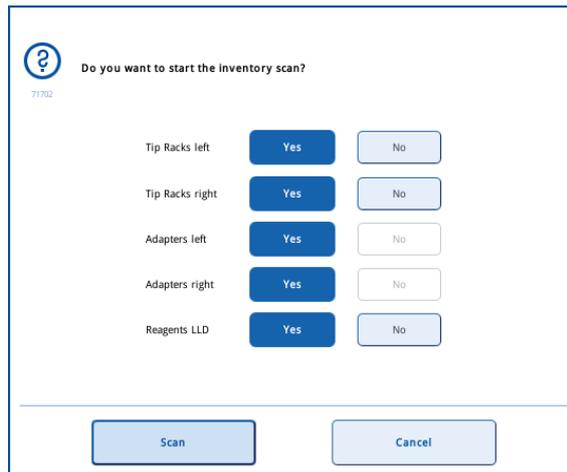
Loading Information screen.
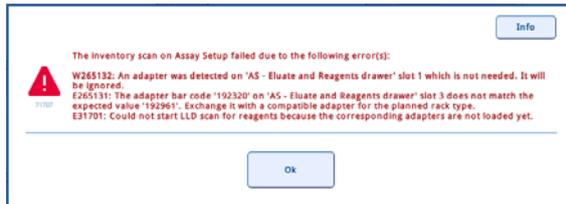
Command bar

Enables the user perform an inventory scan.

When **Scan** is pressed, the following message appears.

To scan and validate the loading, choose the components, then press **Scan**.

If system detects loaded/removed racks differing from information given by the user, an error message appears.

In this case, press **OK** to return to the **Loading Information** screen. Make the required modifications, and then perform the inventory scan again.

Note: Additional validations are performed when the run is started. A successful validation after loading does not mean that the run can be successfully started.

Note: The scan dialog on the QIAsymphony AS can only be closed when the scan confirms the correct loading of the adapters according to the loading information.

This button appears when an inventory scan is in progress. Press to cancel the current inventory scan. A message will appear. Press **OK** to return to the **Loading Information** screen.

Enables the user to go to the **Temperature Status** screen.

Closes the screen.

Dialog panel

Sample slot	Press on a sample slot to view detailed loading information for that slot.
Reagent slot	Press on a reagent slot to view detailed loading information for that slot.
Assay slot	Press on an assay slot to view detailed loading information for that slot.
Normalization slot	Press on a normalization slot to view detailed loading information for that slot.

Sample or assay slot

The **Plate View** and **List View** provide detailed loading information for the selected sample or assay rack.

In case of an integrated run, slot 2 may be shown with **Adapter available** information "yes (currently on the QIAsymphony SP)". This means that the rack is loaded on the QIAsymphony SP and will be moved automatically to the QIAsymphony AS when it is needed for pipetting eluates. Therefore, it is not possible to load another rack on the slot; a rack is loaded, but it is not visible to the user on the QIAsymphony AS.

Plate View screen: Example slot 1.

List View screen: Example slot 5.

Command bar

Plate View	Opens the **Plate View** screen. This screen provides detailed loading information about the selected sample or assay slot.
List View	Opens the **List View** screen. This screen provides detailed loading information about the selected sample or assay slot in a tabular format (i.e., position, sample ID, sample type, sample status, sample volume and the assays that will be processed with the sample).
Rack ID	Press to scan or manually enter a rack ID (only for assay racks).
Automatic ID	Press to generate a rack ID (only for assay racks).
Cancel	Closes the screen without saving the changes.
Load	Press when loading the rack. If the **Assay Setup/Manual Input** screen appears, scan the bar code with the bar code scanner, or enter the rack ID manually and press **OK** (this step may be skipped depending on configuration settings). See Appendix A of the *General Description* for a list of compatible bar code types. The **Assay Setup/Loading Information** screen reappears. The system will check during the inventory scan whether the rack was loaded correctly.
Remove	Press when unloading the rack. If the **Assay Setup/Manual Input** screen appears, scan the bar code with the bar code scanner, or enter the rack ID manually and press **OK** (this step may be skipped depending on configuration settings). The **Assay Setup/Loading Information** screen reappears. The system will check during the inventory scan whether the rack was unloaded correctly.

Reagent slot

The **Plate View** and **List View** provide detailed loading information for the selected reagent slot.
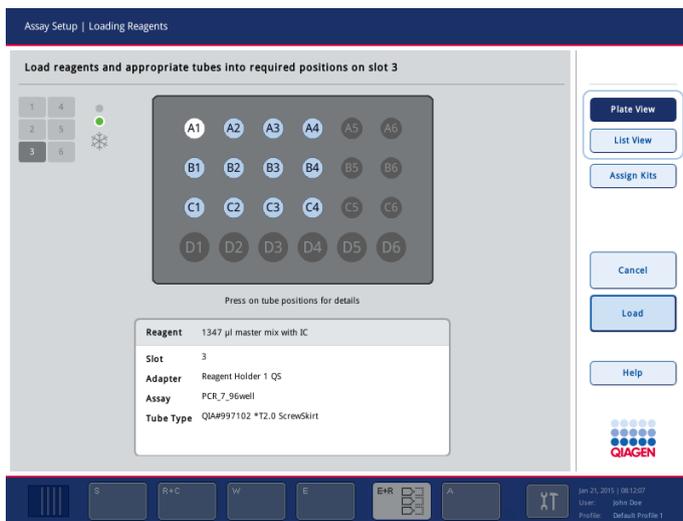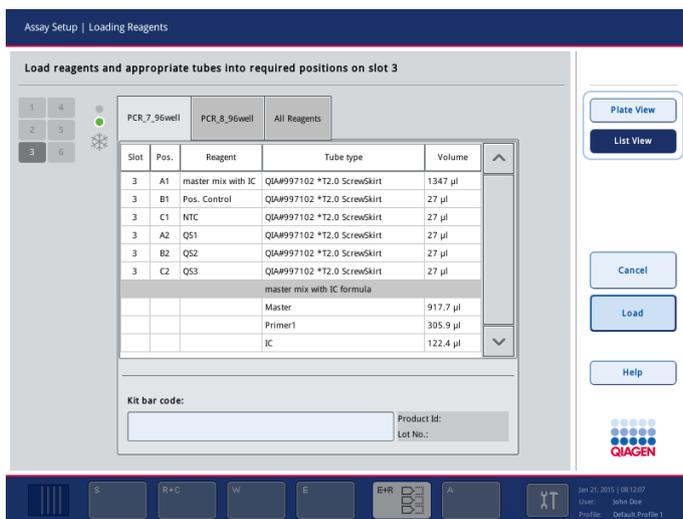

Plate View screen: Example slot 3.

List View screen: Example slot 3.

Command bar

Opens the **Plate View** screen. This screen provides detailed loading information about the selected reagent slot. See "Schematic plates", Section 3.5 of *Operating the QIAsymphony SP*, for detailed information about schematic plates.

List View	Opens the **List View** screen. This screen provides detailed loading information about the selected reagent slot in a tabular format (i.e., slot number, reagent position, reagent, tube type, reagent volume). When more than one assay is configured, each assay is displayed in a separate tab.
Cancel	Closes the screen without saving the changes.
Load	Press when loading the rack. The system will check during the inventory scan whether the rack was loaded correctly.
Remove	Press when unloading the rack. The system will check during the inventory scan whether the rack was unloaded correctly.
Assign Kits	Enables the user to enter a kit bar code. Press on the **Kit bar code** field and enter a bar code in the screen that appears.

Normalization slot

Press on a normalization slot to view detailed information required to load and unload the normalization rack. It does not provide a **Plate View** and **List View**.

Note: A normalization rack must be empty when it is loaded. It is not possible to use a partly filled normalization rack from a preceding run.

A normalization rack does not have a rack ID and a rack file.

The content of the normalization rack during the run can be found in the result file, when the run is completed.
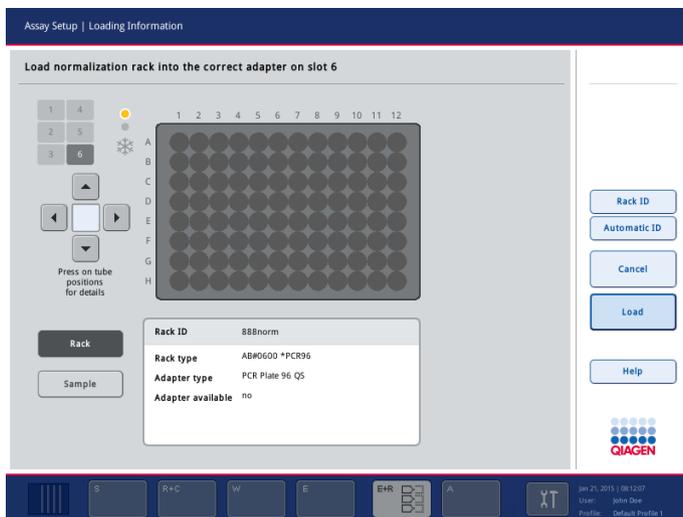
Normalization rack screen: Example slot 6.

Command bar

|	
Cancel	Closes the screen without saving the changes.
Load	Press when loading the normalization rack. The system will check during the inventory scan whether the rack was loaded correctly.
Remove	Press when unloading the normalization rack. The system will check during the inventory scan whether the rack was unloaded correctly.

3.4.10 **Assay Setup/Temperature Status** screen

To open the **Temperature Status** screen, press **Cooling** in the **Loading Information** screen or the **Assay Setup/Overview** screen.

The **Temperature Status** screen shows the worktable and its cooling positions. For each cooling position used during the run, the current and the target temperature is shown. The screen enables the user to switch on/off cooling for slots.
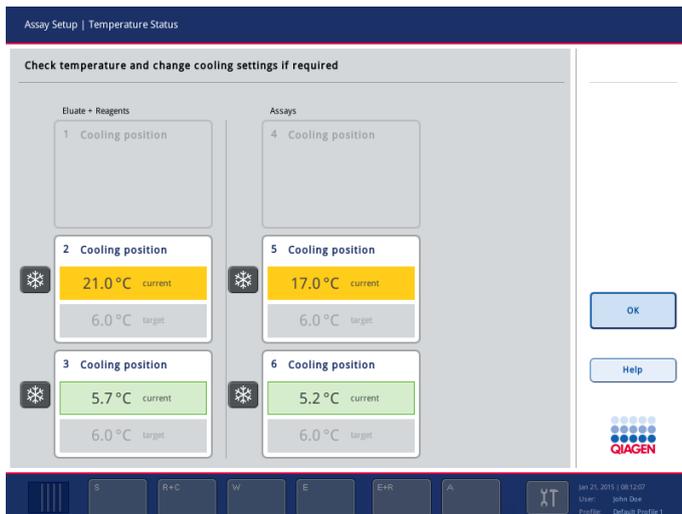
Temperature Status screen.

Command bar

OK	Press **OK** to save changes and return to the **Loading Information** screen or the **Assay Setup/Overview** screen.

Dialog panel

The ❄ button of a cooling position is visible if the slot will be used in the run.

If the Assay Definition allows cooling to be switched off for a slot, this button is active.

Pressing the ❄ button switches the cooling on or off for this position.

If cooling is switched off, the button appears lighter gray.

Note: It is not possible to switch off cooling for a loaded rack. It is only possible to switch off cooling if cooling was switched on manually before.

3.5 Maintenance AS menu

The **Maintenance AS** menu enables operation of parts of the QIAsymphony AS without performing an assay run. Tools for performing routine maintenance procedures and for worktable cleanup are also available.

Note: Detailed information about maintenance procedures and the cleanup tools, see Section 9 of *General Description*.

3.5.1 Maintenance AS screen
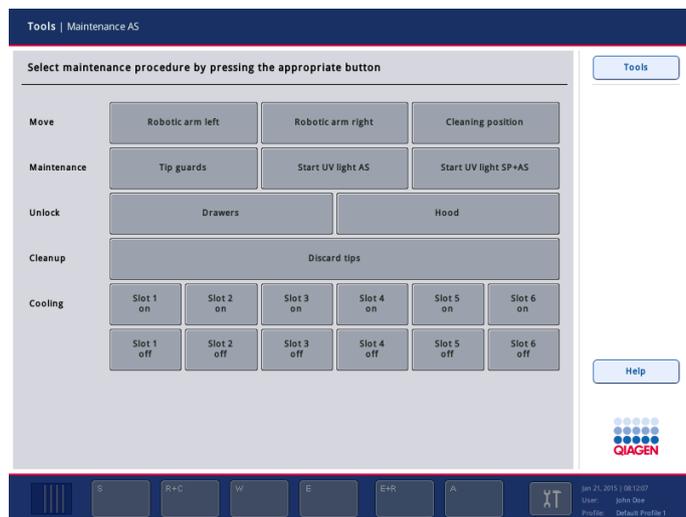
Maintenance AS screen.

Dialog panel

Move

Robotic arm left	Moves the robotic arm to the left.
Robotic arm right	Moves the robotic arm to the right.
Cleaning position	Moves the robotic arm to the middle and front.

Maintenance

Tip guards	Moves the robotic arm to the middle and front.
Start UV light AS	Opens the **Input/UV cleanup** screen. Enter the duration (min) of the UV decontamination, and then press **OK**. For more information, see Section 9.7 in the *General Description*.
Start UV light SP+AS	**Start UV light SP+AS** opens the simultaneous UV light procedure for QIAsymphony SP and AS with the **Input/UV cleanup** screen. Enter the duration (min) of the UV decontamination on QIAsymphony SP first, then press **OK**. Afterwards, enter the duration (min) on QIAsymphony AS and press **OK**. For more information, see Section 9.7 in the *General Description*.

Unlock

Drawers	Unlocks all instrument drawers. If a malfunction results in the drawers remaining locked, this script allows the user to manually unlock the drawers.
	If the drawers remain locked after performing the script, switch off the instrument. If the problem persists, contact QIAGEN Technical Services.
Hood	Unlocks the hood of the QIAsymphony AS. If an error results in the hood remaining locked, this script enables the user to manually unlock it.
	If the hood remains locked after performing the script, switch off the instrument. If the problem persists, contact QIAGEN Technical Services.

Cleanup

Discard tips	Discards tips from the tip adapters.

Cooling

|	
Slot 1 on	Turns on the cooling on slot 1 to 4°C.
Slot 1 off	Turns off the cooling on slot 1.

Note: There are corresponding buttons for slots 2–6.

3.6   Service AS menu

3.6.1   Script Execution tab

The **Script Execution** tab of the **Service AS** menu enables the user to run "Operator scripts" which are service protocols. The available scripts are displayed in the **Operator scripts** list. Use the up and down arrows to scroll through the list. Select the script to be run by pressing the appropriate script.

Note: The selected script is indicated at the bottom left of the screen.
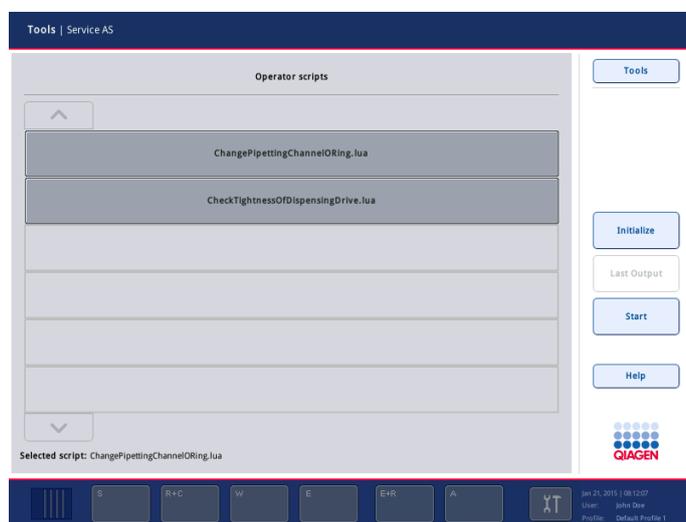
Script Execution tab of the Service AS menu.

Command bar

Initialize	Allows the user to initialize the QIAsymphony AS. When the button is pressed, a message appears that asks the user whether to initialize the instrument. Press **Yes** to initialize the QIAsymphony AS; press **No** to cancel the initialization.

Note: If the QIAsymphony SP/AS hoods are closed, the initialization is carried out automatically when the instruments are started. If one or both of the hoods are open, the initialization cannot be completed. An error message will appear. If both hoods are open, the instruments will not initialize during startup.

Last Output	The output dialog panel is displayed, which enables review of the output information of the last script performed.
Start	Starts the selected operator service script. While the selected script is being performed, an output message appears that provides information about the script being performed and the results.

Dialog panel

Operator scripts list	Scripts available to the current operator are displayed and can be selected by pressing the appropriate button.
Selected script	The selected script is displayed here.

Operator scripts

The following scripts are available.

ChangePipetting Channel ORing.lua	Enables the tip-adapter O-ring to be replaced. See Section 9.8 of the *General Description* for more information

Output dialog

The **Output** dialog displays the output of the selected operator service script.
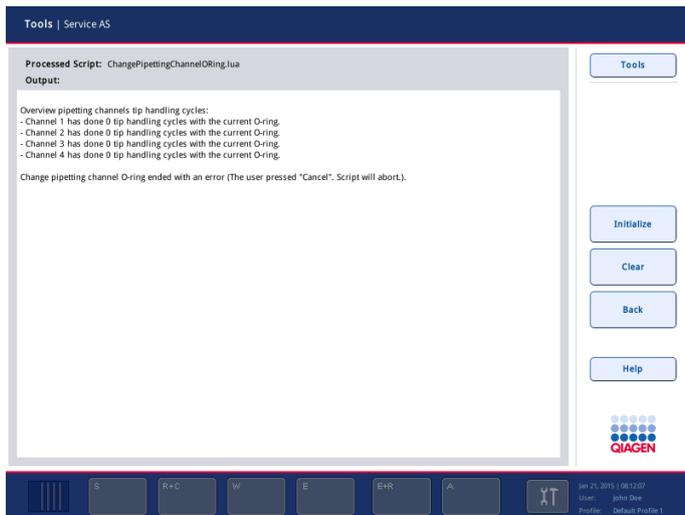
Output dialog.

Command bar

Allows the user to initialize the QIAsymphony AS. When the button is pressed, a message appears that asks the user whether to initialize the instrument. Press **Yes** to initialize the QIAsymphony AS; press **No** to cancel the initialization.

Note: If the QIAsymphony SP/AS hoods are closed, the initialization is carried out automatically when the instruments are started. If one or both of the hoods are open, the initialization cannot be completed. An error message will appear. If both hoods are open, the instruments will not initialize during startup.

Clears the content of the **Output** dialog.

Displays the **Operator scripts** list.

Dialog panel

If the **Clear** button has not been pressed, the output of the selected service script is shown here.

3.7 Labware Browser menu

The **Labware AS** tab of the **Labware Browser** menu enables the user to view information about labware that can be used with the QIAsymphony AS.

3.7.1 Labware AS tab
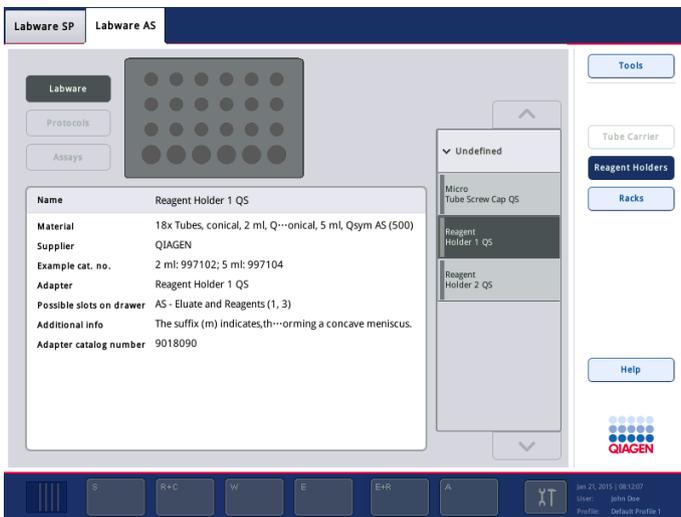
Reagent Holders view.
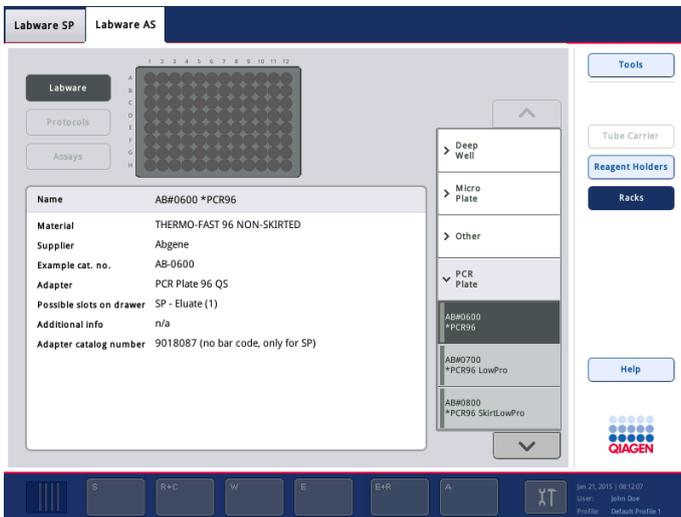
Racks view.

Command bar

Tube Carrier	This button is not active in the **Labware AS** tab. It is only active in the **Labware SP** tab.
Reagent Holders	Opens the **Reagent Holders** view in which information about reagent holders is displayed.
Racks	Opens the **Racks** view in which information about racks is displayed.

Dialog panel

Labware	This button has no function in the **Labware AS** tab.
Protocols	This button is inactive in the **Labware AS** tab.
Assays	This button is inactive in the **Labware AS** tab.
Labware list	Enables the user to select an item of labware. Labware is grouped into categories (e.g., **Deep Well**, **Micro Plate**). Use the arrows to scroll through the list of labware. Detailed information about the selected item of labware (e.g., supplier, example cat. no.) and an image is then displayed in the dialog panel.
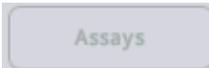
3.8 **Rack Browser** menu

This menu allows the user to view rack files that are currently saved on the QIAsymphony SP/AS instruments. There are 4 tabs: **Sample Racks**, **Eluate Racks**, **Assay Racks** and **Normalization Racks**. For more information about the **Rack Browser** menu and for information about the **Sample Racks** and **Eluate Racks** tabs, see Section 3.15 of *Operating the QIAsymphony SP*.

3.8.1 **Assay Racks** tab

This tab displays information about which racks can be used as assay racks.

Command bar

Today	Displays the rack files that were modified today.
This week	Displays the rack files that have been modified since 00:00 of Monday of the current week, including the rack files that were modified today. This option is preselected by default.
Last week	Displays the rack files that were modified between 00:00 of Monday last week and 00:00 of Monday of the current week.
Other	Displays the rack files that were modified before 00:00 of Monday last week.
Find ID	Enables the user to manually enter and then search for IDs using the **Keyboard** screen.

Dialog panel

Schematic plate	The selected rack is displayed as a schematic diagram. Positions in the rack are color coded. Select a position by pressing on it, or by using the arrow buttons, to display information about that position.
	For more information about schematic diagrams of plates, see Section 3.5 of *Operating the QIAsymphony SP*.

Rack Details tab	Displays details about the selected rack (e.g., rack ID, rack type, date last modified).
Sample Details tab	Displays details about the sample that is currently selected in the rack. Details include sample ID, sample type, sample state and volume.
Select rack file list	Lists rack IDs, in descending order by last modification date. Only rack IDs that fit to the current time filter (i.e., today, this week, last week, other) are displayed. When a rack ID from this list is selected, details about this rack are displayed in the corresponding tabs.

3.8.2   **Normalization Racks** tab

This tab displays information about racks used for normalization.
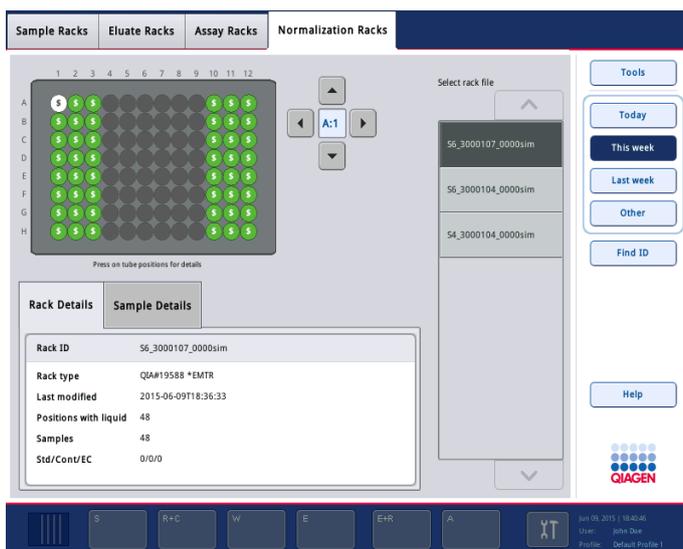
Command bar

Displays the rack files that were modified today.

Displays the rack files that have been modified since 00:00 of Monday of the current week, including the rack files that were modified today. This option is preselected by default.

Displays the rack files that were modified between 00:00 of Monday last week and 00:00 of Monday of the current week.

Other	Displays the rack files that were modified before 00:00 of Monday last week.
Find ID	Enables the user to manually enter and then search for IDs using the **Keyboard** screen.

Dialog panel

Schematic plate	The selected rack is displayed as a schematic diagram. Positions in the rack are color coded. Select a position by pressing on it, or by using the arrow buttons, to display information about that position. For more information about schematic diagrams of plates, see Section 3.5 of *Operating the QIAsymphony SP*.
Rack Details tab	Displays details about the selected rack (e.g., rack ID, rack type, date last modified).
Sample Details tab	Displays details about the sample that is currently selected in the rack. Details include sample ID, sample type, sample state and volume.
Select rack file list	Lists rack IDs, in descending order by last modification date. Only rack IDs that fit to the current time filter (i.e., today, this week, last week, other) are displayed. When a rack ID from this list is selected, details about this rack are displayed in the corresponding tabs.

Appendix

Processing order of an integrated run

If the functions **Modify Run** and **Create AS Batch** are used after an integrated run has been queued, the order in which SP and AS batches are processed by the system may be different from the order in which batches would be processed if AS batches were created before queuing the integrated run.

Note: After creation of the AS batch it is important to check in the **Assay Setup/Loading Information** screen to confirm if the loaded full process controls will be dispensed to the correct position on the assay rack. To do this, press the **Sample** button and check the individual positions for correct **Type** (EC+ or EC–).

The following 2 examples show how the order in which batches are processed can differ.

Example 1 — AS batches created before queuing integrated run

Two integrated batches are defined before the integrated run is queued:

- Integrated batch 1: SP batch 1 and SP batch 3 are used to create AS batch 1.
- Integrated batch 2: SP batch 2 and SP batch 4 are used to create AS batch 2.

The order in which the SP and AS batches will be processed is as follows:

	SP batch 1	SP batch 2	SP batch 3	SP batch 4	AS batch 1	AS batch 2
Integrated batch 1	1	–	2	–	3	–
Integrated batch 2	–	4	–	5	–	6

SP batches for integrated batch 1 will be processed first, followed by the AS batch for this integrated batch.

Then, SP batches for integrated batch 2 will be processed, followed by the AS batch for this integrated batch.

Example 2 — AS batches created after queuing integrated run

Two integrated batches are defined after the integrated run is queued:

● Integrated batch 1: SP batch 1, 2, 3 and 4 are used to create AS batch 1.

● Close **Integrated Setup** by pressing **OK**.

● Press **Modify Run**.

● Select SP Batches 1, 2, 3 and 4 and press **Remove AS** batches.

● Integrated batch 2: SP batch 1 and SP batch 3 are used to create AS batch 1.

● Integrated batch 3: SP batch 2 and SP batch 4 are used to create AS batch 2.

The order in which the SP and AS batches will be processed is as follows:

	SP batch 1	SP batch 2	SP batch 3	SP batch 4	AS batch 2	AS batch 3
Integrated batch 1	1	–	3	–	4	–
Integrated batch 2	–	2	–	5	–	6

In this case, SP batches 1, 2, and 3 will be processed sequentially. When SP batch 1 and SP batch 3 have been processed, AS batch 1 will be processed. Then SP batch 4 will be processed, and finally AS batch 2 will be processed.

Note: If this processing order is not desirable for your integrated run (i.e., you do not want to delay processing of AS batches), we recommend that you manually unload samples from the "Sample" drawer before starting the integrated run, reload the samples, and then redefine the batches for your integrated run, taking care to create AS batches before queuing the run.

Manually changing the processing order

After queuing an integrated run, it is possible to manually change the order in which SP batches are processed.

If a tube carrier is unloaded, empty positions on the eluate rack are created. Then, if the tube carrier is reloaded, these free positions are replaced with the new samples and now have a different processing position. In the example shown below, the batch in columns 4–6 had processing order 2, but after reloading, the batch now has processing order 5.
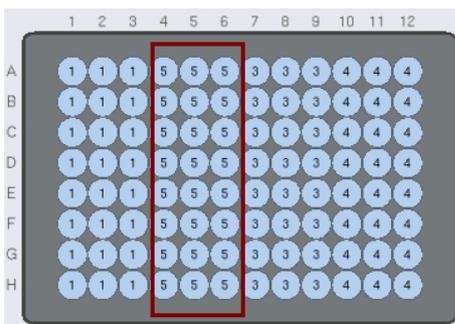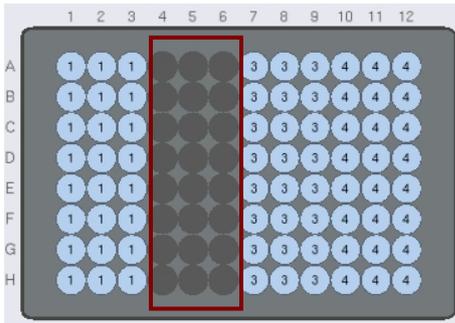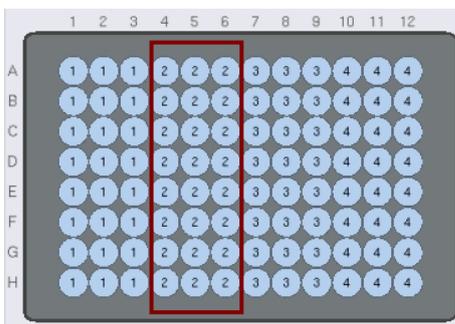
Be aware that, if the original SP batch only covered 2 columns and not 3 columns (e.g., if the original SP batch contained 9 samples), the maximum number of samples that can be reloaded equals the number of positions in the 2 free columns (i.e., 16). If an attempt is made to reload more than 16 samples, the following error message will appear:
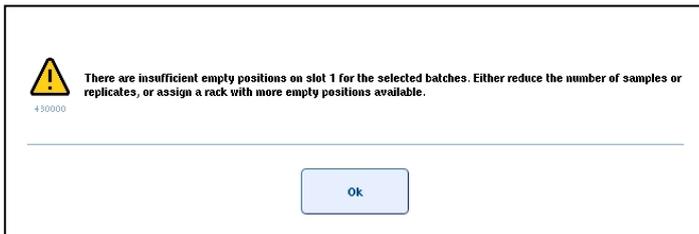
Note: In this case, to reload 17–24 samples, it is recommended to manually unload all tube carriers from the "Sample" drawer, then reload all samples, and redefine the integrated run.

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