

ViiA™ 7 Real-Time PCR System



Note: For safety and biohazard guidelines, refer to the “Safety” appendix in the *Applied Biosystems ViiA™ 7 Real-Time PCR System User Guide* (PN 4442661). For every chemical, read the SDS and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

In this guide

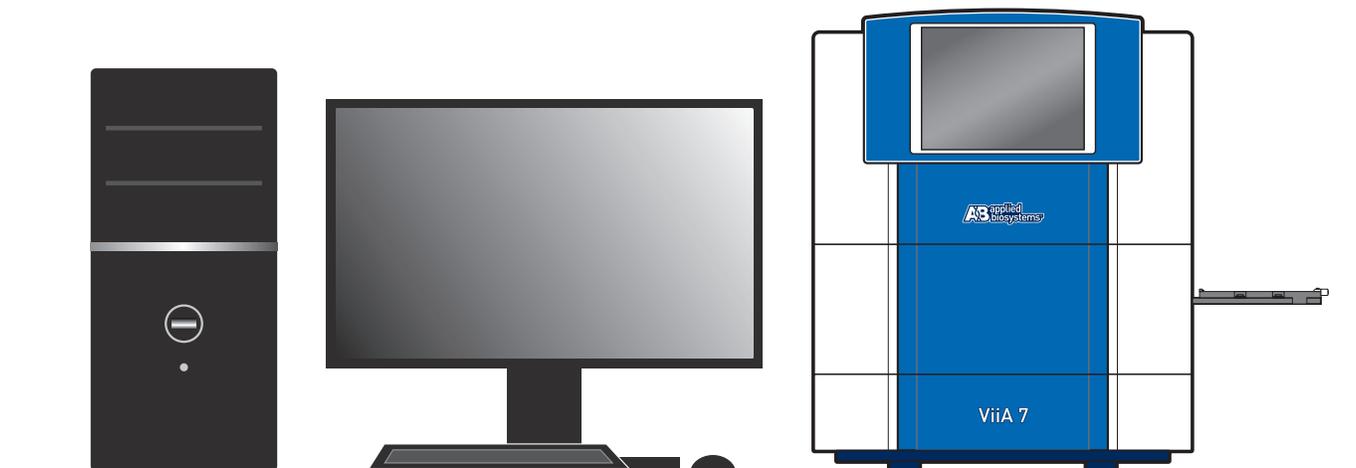
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For details on operating and maintaining your ViiA™ 7 System, refer to the *Applied Biosystems ViiA™ 7 Real-Time PCR System User Guide* (PN 4442661).

Description

The Applied Biosystems ViiA™ 7 Real-Time PCR System uses fluorescent-based polymerase chain reaction (PCR) reagents to provide:

- Quantitative research detection of target nucleic acid sequences (targets) using real-time analysis.
- Qualitative research detection of targets using post-PCR (endpoint) analysis.
- Qualitative analysis of the PCR product achieved by melt curve analysis that occurs post-PCR.



Calibrate the ViiA™ 7 System

Calibration types

- Regions of interest (ROI)
- Background
- Uniformity
- Dye (only for dyes used in your experiments)
- Normalization
- Instrument verification

Materials required

384-well sample block

<ul style="list-style-type: none"> • 384-Well Spectral Calibration Plate with FAM™ Dye (PN 4432271) • 384-Well Spectral Calibration Plate with VIC® Dye (PN 4432278) • 384-Well Spectral Calibration Plate with ROX™ Dye (PN 4432284) • 384-Well Spectral Calibration Plate with SYBR® Green Dye (PN 4432290) • 384-Well Spectral Calibration Plate with TAMRA™ Dye (PN 4432296) • 384-Well Spectral Calibration Plate with NED™ Dye (PN 4432302) • 384-Well Region of Interest (ROI) and Background Plates (PN 4432320) • 384-Well Normalization Plates with FAM™/ROX™ and VIC®/ROX™ Dyes (PN 4432308) • TaqMan RNase P 384-Well Instrument Verification Plate (PN 4455280) 	<ul style="list-style-type: none"> • ViiA™ 7 System 384-Well Plate Adapter (PN 4457087) • Centrifuge with plate adapter • Powder-free gloves • Safety goggles
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Array-card sample block

<ul style="list-style-type: none"> • Array Card Spectral Calibration Dye Kit (PN 4432314) • TaqMan® RNase P Array Card Instrument Verification Reagents Kit (PN 4432265) 	<ul style="list-style-type: none"> • ViiA™ 7 System Array Card Adapter (PN 4454166) • Centrifuge with centrifuge array-card carrier clips and buckets • Powder-free gloves • Safety goggles • 200-µL pipettor, with pipette tips • Array-card staker/sealer fixture
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96-well sample block

<ul style="list-style-type: none"> • 96-Well Spectral Calibration Plate with FAM™ Dye (PN 4432327) • 96-Well Spectral Calibration Plate with VIC® Dye (PN 4432334) • 96-Well Spectral Calibration Plate with ROX™ Dye (PN 4432340) • 96-Well Spectral Calibration Plate with SYBR® Green Dye (PN 4432346) • 96-Well Spectral Calibration Plate with TAMRA™ Dye (PN 4432352) • 96-Well Spectral Calibration Plate with NED™ Dye (PN 4432358) • 96-Well Region of Interest (ROI) and Background Plates (PN 4432364) • 96-Well Normalization Plates with FAM™/ROX™ and VIC®/ROX™ Dyes (PN 4432370) • TaqMan® RNase P 96-Well Instrument Verification Plate (PN 4432382) 	<ul style="list-style-type: none"> • ViiA™ 7 System 96-Well Plate Adapter (PN 4459845) • Centrifuge with plate adapter • Powder-free gloves • Safety goggles
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Fast 96-well sample block

- | | |
|--|---|
| <ul style="list-style-type: none"> Fast 96-Well Spectral Calibration Plate with FAM™ Dye (PN 4432389) Fast 96-Well Spectral Calibration Plate with VIC® Dye (PN 4432396) Fast 96-Well Spectral Calibration Plate with ROX™ Dye (PN 4432402) Fast 96-Well Spectral Calibration Plate with SYBR® Green Dye (PN 4432408) Fast 96-Well Spectral Calibration Plate with TAMRA™ Dye (PN 4432414) Fast 96-Well Spectral Calibration Plate with NED™ Dye (PN 4432420) Fast 96-Well Region of Interest (ROI) and Background Plates (PN 4432426) Fast 96-Well Normalization Plates with FAM™/ROX™ and VIC®/ROX™ Dyes (PN 4432432) TaqMan® RNase P Fast 96-Well Instrument Verification Plate (PN 4351979) | <ul style="list-style-type: none"> ViiA™ 7 System Fast 96-Well Plate Adapter (PN 4459846) Centrifuge with plate adapter Powder-free gloves Safety goggles |
|--|---|

Calibrate the instrument

1 Prepare the plate or array card

To prepare the calibration plate:

- Remove the plate from the freezer, then allow it to thaw to room temperature (approximately 5 minutes).

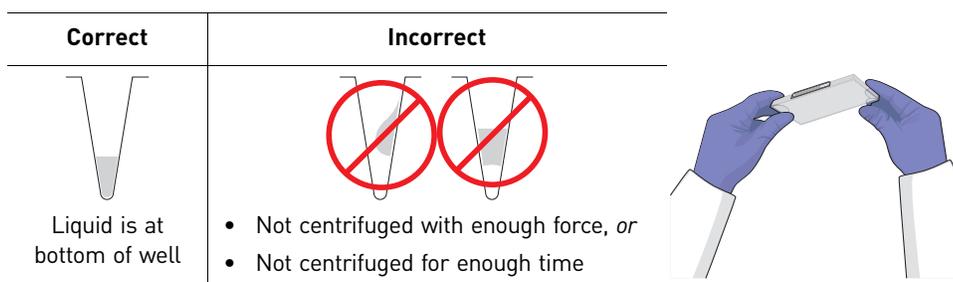
IMPORTANT! Do not remove a plate from its packaging until you are ready to run it.

- Remove the plate from its packaging.

IMPORTANT! Do not discard the packaging. The plate can be used up to three times if it is stored in its original packaging sleeve.

- Vortex the plate for 5 seconds, then centrifuge it for 2 minutes.
- Verify that the liquid is at the bottom of each well of the plate. If not, centrifuge the plate again at a higher rpm and for a longer time.

IMPORTANT! Do not allow the bottom of the plate to become dirty. Fluids and other contaminants that adhere to the bottom of the plate can contaminate the sample block(s) and cause an abnormally high background signal.



To prepare the array card:

- Remove the calibration mix from the freezer, then allow it to thaw to room temperature in the dark (approximately 5 minutes).

IMPORTANT! Keep the calibration mix out of the light. The fluorescent dye in the mix is photosensitive. Prolonged exposure to light can diminish the fluorescence of the dye.

- Fill the array card with calibration mix. For a normalization calibration, fill two cards with separate normalization solutions.

2 Start the calibration

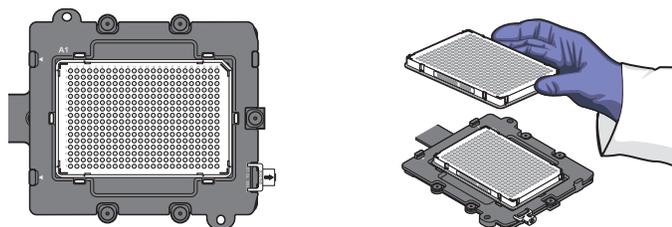
- a. Select the instrument to calibrate:
 1. In the ViiA™ 7 Software, select **Instrument ▶ Instrument Console**. The console displays instruments on the network.
 2. Select an instrument icon, then click **Add to My Instruments**.

Note: You must add the instrument to your instrument list before you can manage the instrument.
- b. Start the calibration:
 1. Select the instrument, then click **Manage Instrument**.
 2. In the Instrument Manager, select the calibration, click **Start Calibration**, then perform the calibration as instructed.

3 Load the plate or array card

Load the calibration plate or array card into the instrument tray. Confirm that the instrument has the correct plate adapter. Ensure that the plate or array card is properly aligned in the holder:

- Load plates with the A1 position aligned with the A1 position of the tray.
- Load plates and array cards with the bar code facing the front of the instrument.



IMPORTANT! Plates should be loaded and unloaded by trained operators who have been warned of the moving parts hazard.

4 Start the run

- a. In the Setup tab, select **Please check the box when the calibration plate has been loaded**, then click **Next**.
- b. In the Run tab, click **START RUN** to start the calibration.

IMPORTANT! Do not attempt to open the access door during the run. The door is locked while the ViiA™ 7 System is in operation.

5 Review the results and complete the calibration

- a. After the run, view the results in the Analysis tab to verify that the calibration run passed. If the run failed, troubleshoot the failed calibration as described in the *Applied Biosystems ViiA™ 7 Real-Time PCR System User Guide*.
- b. After you inspect results, click **Next**, then remove the plate or array card when the ViiA™ 7 System ejects the plate adapter.



WARNING! PHYSICAL INJURY HAZARD. During instrument operation, the plate can be heated to 100 °C. Before removing the plate, wait until it reaches room temperature.

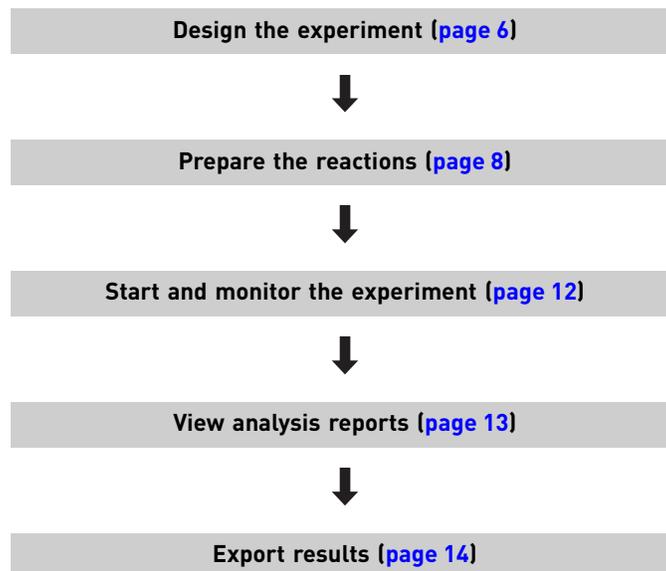
- c. Click **Finish** to complete the calibration.
- d. Discard the array card; discard the plate, unless it can be reused. If you store the plate for reuse, return it to the packaging sleeve, then return the packaged plate to the freezer.

Perform an experiment

Materials required

- For all sample blocks:
 - DI water/ DEPC water
 - Microcentrifuge tubes
 - Pipettors and pipette tips
 - Vortex mixer
 - Safety goggles
 - Powder-free gloves
 - Sample stock
 - Standard stock
 - Reaction mix components
- For 384-well, 96-well, or Fast 96-well sample blocks:
 - Centrifuge with plate adapter
 - Plate or (96-well and Fast 96-well blocks only) tube strip, or single tube
 - Optical adhesive film
- For array card sample blocks:
 - Centrifuge with centrifuge array-card carrier clips and buckets
 - Array-card staker/sealer fixture
 - Array card

Workflow



Design the experiment

- 1** Define experiment name and type (Experiment Properties screen)
- Define the following properties:
- Experiment name
 - User name of the experiment owner
 - *(Optional)* Barcode for the plate or array card
 - *(Optional)* Comments
 - Block type: **384-well, Array Card, 96-well (0.2mL), or Fast 96-well (0.1mL)**
 - Experiment type: **Standard Curve, Relative Standard Curve, Comparative C_T ($\Delta\Delta C_T$), Melt Curve, Genotyping, or Presence/Absence**

- 2** Select the reagents (Experiment Properties screen)
- Select reagents to use in the experiment:

Experiment type	Reagent options
Standard Curve	TaqMan[®] Reagents, SYBR[®] Green Reagents, or Other
Relative Standard Curve	TaqMan[®] Reagents, SYBR[®] Green Reagents, or Other
Comparative C _T	TaqMan[®] Reagents, SYBR[®] Green Reagents, or Other
Melt Curve	SYBR[®] Green Reagents or Other
Genotyping	TaqMan[®] Reagents or Other
Presence/Absence	TaqMan[®] Reagents or Other

Note: If you select SYBR[®] Green as the reagent, then you have the option of including a melt curve for that experiment.

- 3** Define the instrument run properties (Experiment Properties screen)
- Ramp speed: **Standard or Fast**
 - (Genotyping and Presence/Absence) Collect data during **Pre-PCR Read, Amplification, or Post-PCR Read**
 - (Experiments using SYBR[®] Green) Select whether or not to include a melt curve.
 - (Melt Curve) Select whether or not to include PCR.

- 4** Define targets, samples, biological replicates, and dye (Define screen)
- (All experiments except Genotyping) Define Targets.
 - (Genotyping) Define SNPs.
 - (All experiments) Define Samples.
 - *(Optional)* (Standard Curve, Relative Standard Curve, and Comparative C_T) Define Biological Replicate Groups.
 - (All experiments except Presence/Absence) Select the Passive Reference dye.
 - (Relative Standard Curve and Comparative C_T) Select the Reference Sample and the Endogenous Control.

- 5** Assign targets and samples (Assign screen)
- (All experiments except Genotyping) Assign targets, tasks, and samples to wells. Tasks include Unknown, Standard, Positive, and Negative controls, depending on experiment type.
 - (Genotyping) Assign SNP assays, tasks, and samples to wells.
 - (Standard Curve and Relative Standard Curve) Define and set up standards: Click **Define and Set Up Standards**, select a target, define the standard curve, then select and arrange wells for the standards.
 - *(Optional)* (Standard Curve, Relative Standard Curve, and Comparative C_T) Assign Biological Replicate Groups to wells.

6 Define the run method
(Run Method screen)

Define run method parameters:

- a. Reaction volume:
 - 384-well plate: **1 - 30 μL**
 - Array card: **1 μL**
 - 96-well plate: **1 - 200 μL**
 - Fast 96-well plate: **1 - 100 μL**
- b. Edit the thermal profile as needed:
 - Add and delete steps or stages.
 - Edit the time, temperature, or ramp rate for a step.
 - Click  to enable or click  to disable data collection.
Note: For real-time data collection during amplification, change the default analysis settings (Start Cycle and End Cycle) in Preferences.
- c. For cycling stages:
 - Edit the number of cycles.
 - Enable or disable AutoDelta. For an AutoDelta step, enter the Starting Cycle.
- d. For a melt curve stage, select the ramp increment:
 - **Step and Hold:** Click the Step and Hold field, select the minutes or seconds, then use the up or down arrow keys or click the up or down buttons in the field until you reach the desired time.
 - **Continuous** (default): Click **1.5 $^{\circ}\text{C}/\text{s}$** (the ramp rate), select the value in the field, then enter the desired ramp rate.

7 Save the file

After you design an experiment, you can also save the experiment as a template, then create experiments from the template using QuickStart.

Prepare the reactions

IMPORTANT! Wear powder-free gloves when you handle the plate or array card.

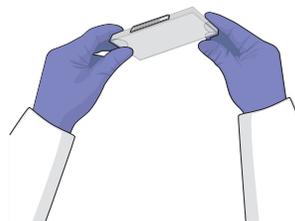
Prepare the plate

Guidelines for preparing the plate:

- Include excess volume in your calculations to provide for loss during reagent transfers.
- Use TE buffer or water to dilute the standards and samples.
- Prepare the reagents according to the manufacturer's instructions.
- Keep the dilutions and assay mix protected from light, in the freezer, until you are ready to use it. Excessive exposure to light may affect the fluorescent probes or dyes.
- To prepare the reactions:
 - Mix the master mix thoroughly by swirling the bottle.
 - Resuspend the assay mix by vortexing, then centrifuge the tube briefly.
 - Thaw any frozen samples, resuspend them by vortexing, then centrifuge the tubes briefly.
- Verify that the liquid is at the bottom of each well of the plate. If not, centrifuge the plate again at a greater rpm and for a longer time.

IMPORTANT! Do not allow the bottom of the plate to become dirty. Fluids and other contaminants that adhere to the bottom of the plate can contaminate the sample block(s) and cause an abnormally high background signal.

Correct	Incorrect
 <p data-bbox="196 1104 349 1161">Liquid is at bottom of well</p>	 <ul data-bbox="386 1104 803 1161" style="list-style-type: none">• Not centrifuged with enough force, <i>or</i>• Not centrifuged for enough time



- (Genotyping) Prepare the reactions for each SNP separately
- Place the reaction plate or array card at 4 °C in the dark until you are ready to load it into the instrument.

Seal the plate

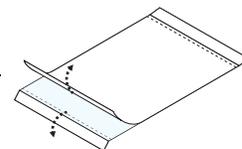
1 Load the plate

Load the plate with the prepared reactions.

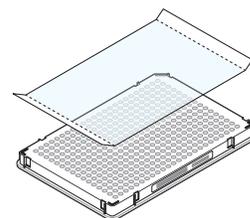
2 Apply optical adhesive film

- a. Remove a single optical adhesive film from the box and bend both end-tabs upward. Hold the film backing side up.
- b. In one swift movement, peel back the white protective backing from the center sealing surface. Do not touch the center sealing surface.

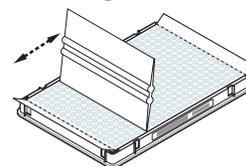
IMPORTANT! Improper peeling of the optical adhesive film may result in haziness, but it will not affect results. Haziness disappears when the film comes into contact with the heated cover in the instrument.



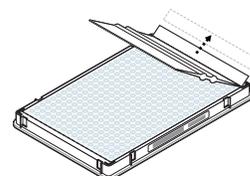
- c. Holding the film by the end-tabs, lower the film onto the reaction plate (adhesive side facing the reaction plate). Be sure that the film completely covers all wells of the reaction plate.



- d. While applying firm pressure, move the applicator slowly across the film, horizontally and vertically, to ensure good contact between the film and the entire surface of the reaction plate.



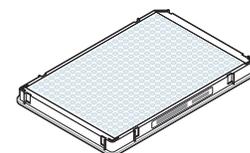
- e. While using the applicator to hold the edge of the film in place, grasp one end of the end-tab and pull up and away sharply. Repeat this step for the other end-tab.



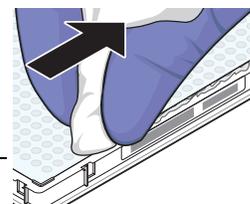
- f. To ensure a tight, evaporation-free seal, repeat [step d](#): While applying firm pressure, run the edge of the applicator along all four sides of the outside border of the film.

Note: Optical adhesive films do not adhere on contact. The films require the application of pressure to ensure a tight, evaporation-free seal.

- g. Inspect the reaction plate to be sure that all wells are sealed. You should see an imprint of all wells on the surface of the film. Check for the perforated tab to be completely torn off to avoid plates sticking to the instrument after a run.



IMPORTANT! Remove all excess adhesive from the perimeter of the optical adhesive cover. When the film is applied, the glue from the optical adhesive cover can adhere to the edges of the plate. If the excess glue is not removed, the plate may adhere to the gripper of the Twister® II Robot or to the sample block of the ViiA™ 7 System.



Note: Go to [“Start and monitor the experiment”](#) on page 12.

Prepare the array card

IMPORTANT! Wear powder-free gloves when you handle the plate or array card.

Note: Visit www2.appliedbiosystems.com/lib/multimedia/taqman_tlda/tlda_1.cfm to view an online video of loading, centrifuging, and sealing an array card.

1 Remove the array card Remove the Applied Biosystems Array Card from the box and place it on a clean, dry surface.

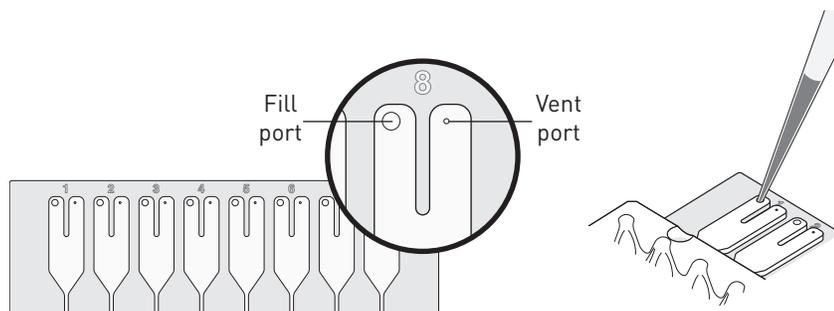
2 Load chemicals and solutions into the array card port

For each chemical and solution transferred:

- Place the array card on a lab bench, with the foil side down.
- Load 100 μ L of fluid into a pipette.
- Hold the pipette at an angle (~45 degrees) and place the tip into the fill port.

Note: The fill port is the larger of the two holes on the left arm of each fill reservoir.

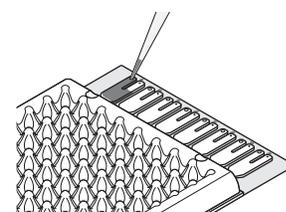
IMPORTANT! Do not allow the tip to contact and possibly damage the coated foil beneath the fill port.



3 Pipette fluid into the fill reservoir

Dispense the fluid so that it sweeps in and around the fill reservoir toward the vent port. Pipette fluid into the fill reservoir, but do not go past the first stop of pipettor plunger when pipetting the reagents into the array card, or you may blow the solution out of the port.

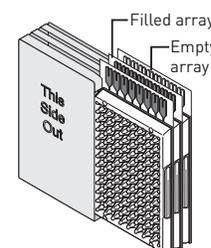
IMPORTANT! Do not allow the tip to contact and possibly damage the coated foil beneath the fill port.



4 Centrifuge the array card

- Place the filled array card into a centrifuge array-card carrier clip and place empty array cards in the remaining slots. Make sure that the labels on the buckets and clips face the same way.

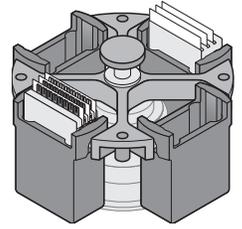
IMPORTANT! Balance the loads in opposite buckets in the centrifuge.



4 Centrifuge the array card *(continued)*

- b. Place the filled carrier clips into the centrifuge buckets. Make sure that the array-card fill reservoirs and bucket and clip labels face outward when loaded into the centrifuge.

You must run the centrifuge with all four buckets in place and each of the two carriers filled with array cards. Place empty array cards into unfilled slots.

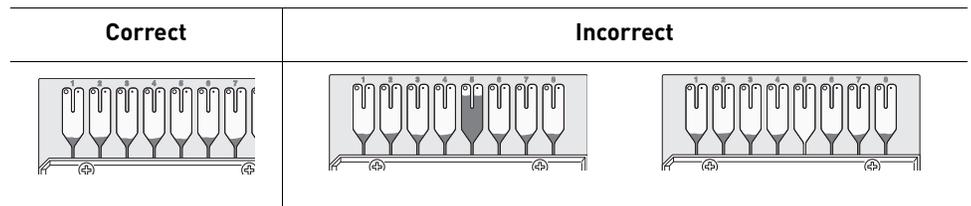


IMPORTANT! Balance the loads in opposite buckets in the centrifuge.

- c. Close the centrifuge cover, then centrifuge the array card for 1 minute at 1200 rpm. When the run is finished, stop the centrifuge, then centrifuge the array card again for 1 minute at 1200 rpm.

IMPORTANT! Do not try to save time by doing one spin for 2 minutes. Centrifuging twice is important for a good fill into the array card.

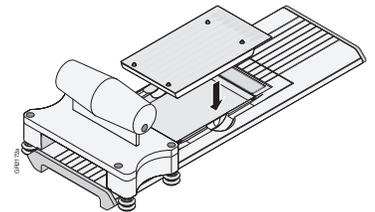
- d. Open the centrifuge and check that the fluid levels in the reservoirs of the array card have decreased by the same amount. Also, check for bubbles in all wells.



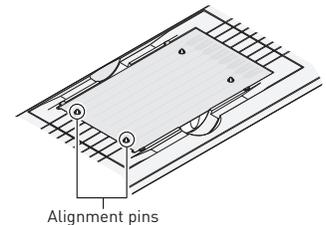
If necessary, centrifuge the array card for an additional minute to fill unfilled wells. Do not exceed three 1-minute runs or centrifuge the array card for longer than 1 minute at a time.

5 Seal the array card

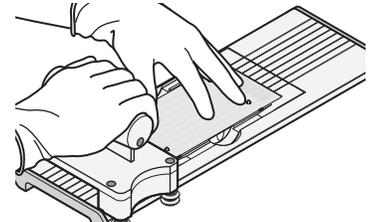
- a. With the carriage (roller assembly) of the staker/sealer fixture in the Start position, place a filled array card into the fixture with the foil side up so that the fill reservoirs are the farthest away from the carriage.



- b. Press down on all four corners of the array card to ensure that it is fully seated within the fixture.

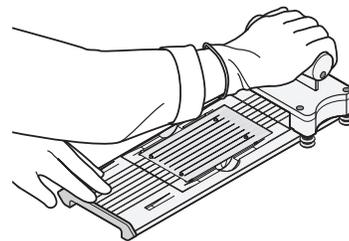


- c. Use the two alignment pins in the fixture to position the array card correctly.

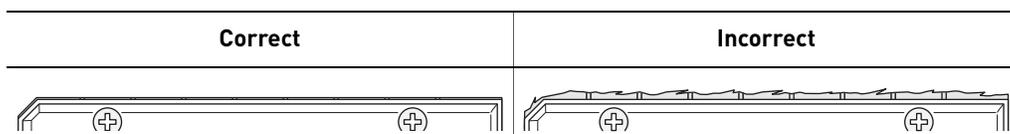
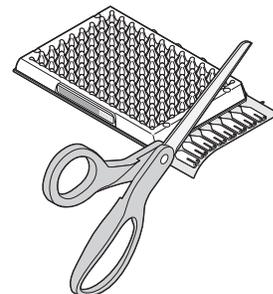


5 Seal the array card
(continued)

d. Seal the array card by running the carriage slowly over it, in one direction only.



e. Remove the sealed array card from the fixture and trim the fill reservoirs from the array card assembly using scissors. Trim the foil array card so that the edge is even with the plastic carrier. Completely remove the fill reservoirs from the array card so that the edge is free of residual plastic. The plastic from the fill reservoirs that extends beyond the edge of the card can prevent the card from seating properly on the sample block and affect amplification.

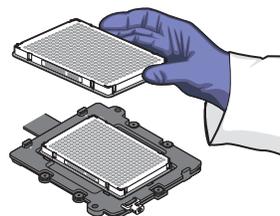
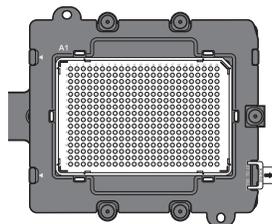


IMPORTANT! Keep the filled array card out of the light. The fluorescent dye in the array card is photosensitive. Prolonged exposure to light can diminish the fluorescence of the dye.

Start and monitor the experiment

1 Load the plate or array card

- a. Touch  on the instrument touchscreen to eject the plate adapter.
- b. Place the plate or array card on the plate adapter. Ensure that the plate or array card is properly aligned in the holder:
 - Load plates and array cards with the A1 position aligned with the A1 position of the tray.
 - Load plates and array cards with the barcode facing the front of the instrument.



IMPORTANT! Plates should be loaded and unloaded by trained operators that have been warned of the moving parts hazard.

- c. Touch  to load the plate.

2 Start and monitor the experiment

- a. Start the experiment. From the ViiA™ 7 Software:
 1. Click  **Run** in the Experiment menu.
 2. Click **START RUN** and select the instrument from the drop-down menu.

IMPORTANT! Do not attempt to open the access door during the run. The door is locked while the ViiA™ 7 System is in operation.

- b. *(Optional)* Monitor the experiment.

3 Unload the plate or array card



WARNING! PHYSICAL INJURY HAZARD. During instrument operation, the plate can be heated to 100 °C. Before removing the plate, wait until it reaches room temperature.

Touch , remove the plate or array card from the plate adapter, then touch  to retract the plate adapter.

If the ViiA™ 7 System does not eject the plate, remove the plate as follows:

- a. Power off and unplug the ViiA™ 7 System.
- b. Wait for 15 minutes, then power on the ViiA™ 7 System and eject the plate.
- c. If the plate does not eject, power off the ViiA™ 7 System, then open the instrument door.
- d. While wearing powder-free gloves, reach into the ViiA™ 7 System and remove the plate from the heated cover, then close the instrument door.
- e. Perform a background calibration to confirm that the sample block has not been contaminated.

View analysis reports

Plot	Applicable experiment type	Purpose
Amplification	All experiment types (if the experiment includes amplification)	<ul style="list-style-type: none"> • To set baseline and threshold • To compare the data on a per well basis
Multicomponent	All experiment types (if the experiment includes amplification)	To review data for anomalies
Raw Data	All experiment types	To review data for anomalies
QC Summary	All experiment types	To view flags triggered by experiment data
Well Table	All experiment types	To identify well problems
Gene Expression	Comparative C _T and Genotyping	To view the genotypes identified in the experiment
QC Plot	Comparative C _T , Relative Standard Curve	To view the Endogenous Control Profile for an experiment
Presence/Absence	Presence/Absence	To confirm the presence or absence of a target gene
Standard Curve	Standard Curve, Relative Standard Curve	To confirm that the r ² value is acceptable
Derivative Melt Curve	Melt Curve and any other type, when the experiment includes a melt curve	To review melt curve data

Export results

- 1** Select the data to export
 - a. From the experiment file, click **Export**.
 - b. Select the type and format of the file to which data will be exported:
 - ViiA™ 7
 - 7900
 - RDML
 - c. Select to export all data in one file or in separate files for each data type.
 - d. Select the contents of the file. Include any of the following information in your export file:
 - Sample setup data
 - Raw data
 - Amplification data
 - Multicomponent data
 - Results
 - e. Depending on the file type, enter or select export file properties (name, type, and location).

 - 2** Start the export
 - a. *(Optional)* Save export settings. Select the **Save Export Set As** check box and name the settings file. You can select the settings file later when you perform a similar experiment.
 - b. Click **Start Export**.
-

Maintain the ViiA™ 7 System

Maintenance schedule

Frequency	Task
Weekly	Check the computer disk space. If necessary, archive or back up your experiment files.
	Power off the computer that controls the instrument, wait 30 seconds, then power on the computer.
	Clean the surface of the instrument with a lint-free cloth. IMPORTANT! Do not use organic solvents to clean the ViiA™ 7 System.
	Perform a ViiA™ 7 System self test.
Monthly	Check the lamp status. If necessary, replace the tungsten halogen lamp.
	Perform a background calibration.†
	Run disk cleanup and disk defragmentation.
Semi-annually (6 Months)	Check the lamp status. If necessary, replace the tungsten halogen lamp.
	Perform a regions of interest (ROI) calibration.
	Perform a background calibration.
	Perform a uniformity calibration.
	Perform a dye calibration.
	Perform a normalization calibration.
Perform an RNase P instrument verification run.	
As needed	Decontaminate the instrument.
	Replace the tungsten halogen lamp.
	Replace the fuses.

† You can perform a background calibration to check for contamination. If any parts of the optics are replaced or moved, you must run an ROI calibration, a background calibration, a uniformity calibration, a dye calibration, a normalization calibration, and an RNase P instrument verification run.

Accessories required for instrument maintenance

384-well sample block

- Applied Biosystems ViiA™ 7 System 384-Well/Array Card Heated Cover (PN 4453555)
- Applied Biosystems ViiA™ 7 System 384-Well Plate Adapter (PN 4457087)
- Applied Biosystems ViiA™ 7 System 384-Well Sample Block (PN 4453553)

Array card sample block

- Applied Biosystems ViiA™ 7 System 384-Well/Array Card Heated Cover (PN 4453555)
- Applied Biosystems ViiA™ 7 System Array Card Adapter (PN 4454166)
- Applied Biosystems ViiA™ 7 System Array Card Sample Block (PN 4453554)

96-well sample block

- Applied Biosystems ViiA™ 7 System 96-Well Heated Cover (PN 4453560)
- Applied Biosystems ViiA™ 7 System 96-Well Plate Adapter (PN 4459845)
- Applied Biosystems ViiA™ 7 System 96-Well Sample Block (PN 4453556)

Fast 96-well sample block

- Applied Biosystems ViiA™ 7 System Fast 96-Well Heated Cover (PN 4459838)
- Applied Biosystems ViiA™ 7 System Fast 96-Well Plate Adapter (PN 4459846)
- Applied Biosystems ViiA™ 7 System Fast 96-Well Sample Block (PN 4453559)

Decontaminate the sample block

Clean the sample block to eliminate fluorescent contaminants from the ViiA™ 7 System sample block. Contamination is generally evident in failed background calibrations where one or more wells consistently exhibit abnormally high signals.



CAUTION! PHYSICAL INJURY HAZARD. Do not remove the ViiA™ 7 System cover. There are no instrument components that you can safely service yourself. If you suspect a problem, contact an Applied Biosystems Service Representative.



CAUTION! PHYSICAL INJURY HAZARD. During instrument operation, the sample block can be heated to 100 °C. Before performing the following procedure, be sure to wait until the sample block reaches room temperature.



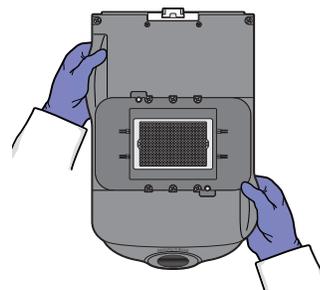
CAUTION! Before using a cleaning or decontamination method other than those recommended by the Applied Biosystems, verify with Applied Biosystems that the proposed method will not damage the equipment.

Materials required

- Bleach, 10% solution
- Chemwipe
- Cotton or nylon swabs
- Lint-free cloths
- Ethanol, 95% solution
- Safety glasses
- Pipette (100- μ L) with pipette tips
- Powder-free gloves
- Screwdriver
- Deionized water

How to handle the sample block

To prevent damaging or contaminating the sample block, handle the assembly as shown. Also, when the assembly has been removed from the ViiA™ 7 System, place the sample block on a clean, dry surface or in its shipping container.



Clean the sample block

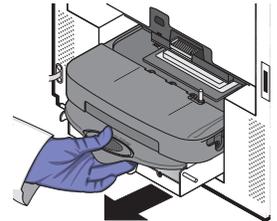


WARNING! PHYSICAL INJURY HAZARD. During instrument operation, the sample block and heated cover can be heated to 100 °C. Before removing the sample block, be sure to wait until it reaches room temperature.

IMPORTANT! Wear powder-free gloves when you perform this procedure.

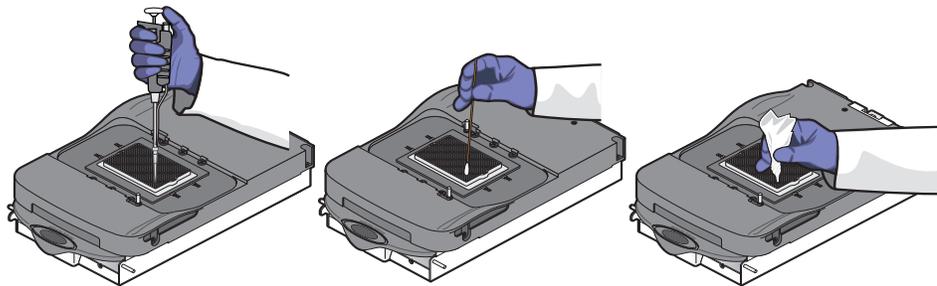
1 Remove the sample block

- a. Power off, then unplug the instrument and allow it to cool for 15 minutes.
- b. Open the access door.
- c. Firmly grasp the handle of the sample block, press the handle down, pull the sample block from the instrument, then place it on a clean, dry surface.



2 Clean the contaminated wells

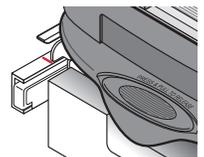
- a. Pipette a small volume of deionized water into each contaminated well.
- b. Pipette the water up and down several times to rinse the well, then pipette the water to a waste beaker.
- c. Using a cotton swab, scrub inside of each contaminated well.
- d. Using a lint-free cloth, absorb the excess deionized water.



3 Install the sample block

- a. Load the sample block into the ViiA™ 7 System.

IMPORTANT! After installing the sample block, confirm that the white indicator on the left side of the sample block is positioned behind the red line on the instrument rail. If the indicator is on the red line, push the sample block into the ViiA™ 7 System until it is seated correctly.



- b. Close the access door.

IMPORTANT! Confirm that the instrument door is completely closed. The ViiA™ 7 Software displays an error message if the access door is not completely closed and latched, or if the sample block and heated cover are not seated correctly.

- c. Plug in, then power on the ViiA™ 7 System.

4 Verify success

Perform a background calibration.

If the contamination remains, remove the sample block ([step 1](#)) and clean the contaminated wells ([step 2](#)), then clean the contaminated wells again using 95% ethanol solution:

- a. Pipette a small volume of 95% ethanol solution into each contaminated well.
- b. In each contaminated well, pipette the solution up and down several times to rinse the well.
- c. Pipette the ethanol solution to a waste beaker.

IMPORTANT! Always use deionized water to rinse wells after cleaning with bleach or ethanol solution.

- d. Clean the wells again ([step 2](#)), to rinse the wells of the sample block.
- e. Perform a background calibration, to verify that you have eliminated the contamination.

If the contamination remains, remove the sample block and clean the contaminated wells ([step 2](#)), then clean the contaminated wells again using 10% bleach solution:

- a. Pipette a small volume of 10% bleach solution into each contaminated well.
- b. In each contaminated well, pipette the solution up and down several times to rinse the well.
- c. Pipette the bleach solution to a waste beaker.

IMPORTANT! Always use deionized water to rinse wells after cleaning with bleach or ethanol solution.

- d. Clean the wells again ([step 2](#)) to rinse the wells of the sample block.
- e. Perform a background calibration, to verify that you have eliminated the contamination.

If the contamination remains, contact Applied Biosystems Technical Support.

Change instrument parts

Replace the sample block to change the consumable format of the instrument; if you replace the sample block, replace the heated cover and plate adapter to match the new consumable format.



WARNING! PHYSICAL INJURY HAZARD. The ViiA™ 7 System and lamp are hot! The lamp can become very hot while in use. Allow the lamp to cool for 15 minutes and put on protective, powder-free gloves before handling it.



CAUTION! PHYSICAL INJURY HAZARD. Wear disposable, powder-free gloves when handling the lamp to prevent burns and to prolong the life of the replacement lamp.

Materials required

- Safety glasses
- Powder-free gloves
- Flathead screwdriver (for fuse replacement)
- Replacement parts:
 - Sample block
 - Heated cover
 - Plate adapter

A note on calibration order

When you are instructed to perform calibrations in the following sections, perform them in this order:

1. ROI calibration
2. Background calibration
3. Uniformity calibration
4. Dye calibration
5. Normalization calibration

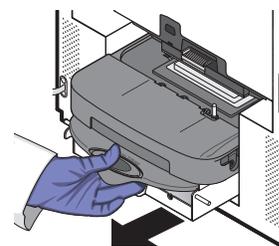
Change the sample block

IMPORTANT! If you are installing a sample block of a different format, you must also change the heated cover and plate adapter to match the new consumable format.

1

Remove the sample block

- a. Power off, then unplug the instrument and allow it to cool for 15 minutes.
- b. Open the access door.
- c. Firmly grasp the handle of the sample block, press the handle down, pull the sample block from the instrument, then place it on a clean, dry surface.

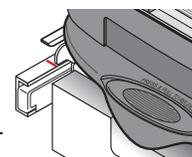


2

Install the new sample block

- a. Load the new sample block into the ViiA™ 7 System.

IMPORTANT! After installing the sample block, confirm that the white indicator on the left side of the sample block is positioned behind the red line on the instrument rail. If the indicator is on the red line, push the sample block into the ViiA™ 7 System until it is seated correctly.



- 2** Install the new sample block *(continued)*
- b. If you are installing a sample block of a different consumable format, replace the heated cover and plate adapter if necessary.
 - c. Close the access door.

IMPORTANT! Confirm that the instrument door is completely closed. The ViiA™ 7 Software displays an error message if the access door is not completely closed and latched, or if the sample block and heated cover are not seated correctly.

- d. Plug in and power on the instrument.

- 3** Verify success
- a. In the ViiA™ 7 Software, select **Instrument ▶ Instrument Console**.
 - b. In the Instrument Console, select your instrument from the list of ViiA™ 7 Systems, then review the Block Type field in the Instrument Properties pane.

The installation is successful if the instrument powers on and if the Block Type field displays the correct type of sample block.

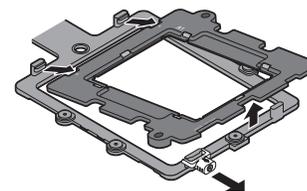
- 4** Perform calibrations Perform calibrations in the order shown in “A note on calibration order” on page 19.

Change the plate adapter

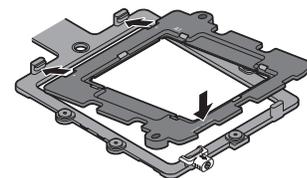
IMPORTANT! If you are installing a plate adapter of a different format, you must also change the heated cover and sample block to match the new consumable format.

- 1** Open the instrument drawer In the instrument touchscreen Main Menu, touch .

- 2** Detach the plate adapter When the tray arm opens, detach the plate adapter by pulling the side plunger out with one hand and lifting the plate adapter with the other hand.



- 3** Install the new adapter
- a. Attach the new adapter to the tray arm. Place the adapter in the tray-arm slot by pivoting the adapter from the left at an angle, swinging the right end downward, and pressing the adapter with your thumb until it clicks into position.
 - b. In the Main Menu, touch .



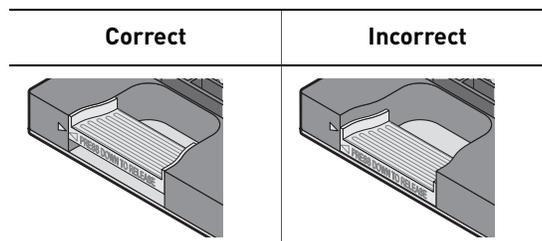
Change the heated cover

IMPORTANT! If you are installing a heated cover of a different format, you must also change the sample block and plate adapter to match the new consumable format.

- 1 **Remove the heated cover**
 - a. Power off, then unplug the instrument and allow it to cool for 15 minutes.
 - b. Open the access door.
 - c. Unlock the heated cover by pinching the handle together.
 - d. Pull the heated cover assembly from the instrument and place it on a clean, dry surface.

- 2 **Replace the heated cover**
 - a. Install the new heated cover into the instrument.

IMPORTANT! When the heated cover is seated correctly, the arrows on the front handle align as shown below. If the arrows do not align, push the heated cover further into the ViiA™ 7 System until the handle locks into place.



- b. Close the access door.
- c. Plug in and power on the instrument.

- 3 **Verify success**
 - a. In the ViiA™ 7 Software, select **Instrument ▶ Instrument Console**.
 - b. In the Instrument Console, select your instrument from the list of ViiA™ 7 Systems, then review the Block Type field in the Instrument Properties pane.

The installation is successful if the instrument powers on and if the Block Type field displays the correct type of sample block.

- 4 **Perform calibrations** Perform calibrations in the order shown in [“A note on calibration order” on page 19](#).

Perform an instrument self test

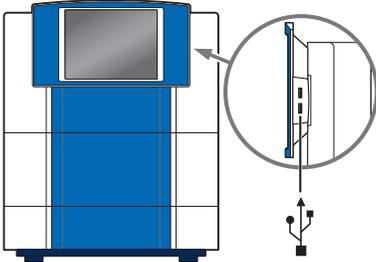
Use the touchscreen to perform a self test of the ViiA™ 7 System. After the self test is complete, the instrument generates a detailed summary of the results. You can save the summary to a USB drive and email them to Applied Biosystems Technical Support.

-
- 1** Start the instrument Touch the ViiA™ 7 System touchscreen to awaken it, then press .

 - 2** Run the test
 - a. In the Main Menu, touch  **Tools**, then touch **Run Self Test**.
 - b. In the Self Test screen, touch **Start Self Test**, then wait for the test to complete.

 - 3** (Optional) Save results to a USB drive
 - a. Plug a USB drive into the USB port on the right side of the touchscreen.
 - b. Touch **Save to USB**.

IMPORTANT! Do not remove the USB drive from the ViiA™ 7 System until you are instructed to do so.

 - c. When the ViiA™ 7 System finishes writing the results to the USB drive, touch **OK**, then remove the USB drive.
- 
-
- 4** Return to the Main Menu Touch .
-

Power off the ViiA™ 7 System

The Applied Biosystems ViiA™ 7 Real-Time PCR System operates in low-power mode when not in use; however, the ViiA™ 7 System can be powered off completely so that the components draw no power.

-
- 1** Power off the ViiA™ 7 System
 - a. If the ViiA™ 7 System touchscreen is not blank, touch  to place the ViiA™ 7 System into stand-by mode.
 - b. Toggle the power button on the rear of the ViiA™ 7 System.

 - 2** Power off the ViiA™ 7 System computer
 - a. In the desktop, select **Start ▶ Shut Down**.
 - b. In the Shut Down Windows dialog box, select **Shut Down**, then click **OK**.
 - c. (If necessary) Power off the monitor.
-

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