VeritiPro™ Thermal Cycler

INSTALLATION, USE, AND MAINTENANCE

For 96-well and 384-well VeritiPro™ Thermal Cyclers

for use with Invitrogen™ and Applied Biosystems™ PCR reagents

For Research Use Only. Not for use in diagnostic procedures.

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Product information

Product description

The VeritiPro™ Thermal Cycler is an end-point thermal cycler, specifically designed for the amplification of nucleic acids using the Polymerase Chain Reaction (PCR) process. The user interface includes a touchscreen with a graphical display that shows the time, status, and temperature for each run. A touchscreen keypad allows you to enter information into fields on the display screen. It is also compatible with the Applied Biosystems™ Thermal Cycler Fleet Control Software.

There are two different models of the thermal cycler, one with a 96-well VeriFlex™ block (Cat. No. A48141), and the other with a 384-well block (Cat. No. A48140).

Instrument overview

The VeritiPro™ Thermal Cycler allows you to:

- Optimize your PCR with the help of the VeriFlex™ block (96-well block only)
- Program the instrument from the touchscreen interface
- Access the system remotely through a mobile application
- Simulate other PCR instruments with Thermal Simulation modes

Figure 1   VeritiPro™ Thermal Cycler

This user guide provides information on how to maximize the capabilities of this system.

For detailed specifications of the VeritiPro™ Thermal Cycler, see Appendix C, "Instrument specification and layout".

2 Start, sign on, and configure the instrument

Required materials not provided

- Can of compressed air (For use in cleaning wells of sample block).
- *(Optional)* Electrical protective devices.

> **Note:** The use of one or more of the following electrical protective devices is recommended.
> - Power line regulator (100–240 V)
> - Surge protector/line conditioner (10-kVA)
> - Uninterruptible power supply (1.5-kVA)

Set up the VeritiPro™ Thermal Cycler

> **IMPORTANT!** Save the packing materials and box in case you need to ship the instrument in for service.

1. Open the shipping crate to unpack the instrument. You should receive one box containing the thermal cycler and the accessories.

2. Remove the packing material, then inspect the instrument for shipping damage.

3. Use compressed air to clear out each well of the sample block to remove particles that may have collected inside during shipping.

4. Move the instrument to an installation site that meets the spatial and weight requirements for the thermal cycler (see "Specifications" on page 62).

5. Connect the instrument to a power outlet.

    a. Connect the power cord to the instrument.
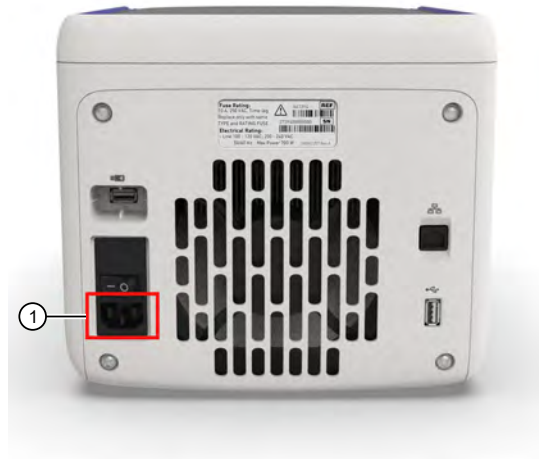
    ① Power cord port

    b. Install any desired electrical protective devices.

    c. Connect the power cord to a wall plug.

6. Connect the instrument to a network.

    a. Connect the ethernet cable to the ethernet port on the instrument.

    b. Connect the ethernet cable to the ethernet port wall plug.

    In the absence of the ethernet cable or the ethernet port, connect a High-Power USB Wi-Fi Module (Cat. No. A26774) to the instrument using the USB port on the instrument.

    ① Ethernet port
    ② USB port for wi-fi module

7. Press the power switch, then wait for the instrument to start up. Proceed with the installation after the touchscreen displays the Home screen, indicating that the instrument is active.
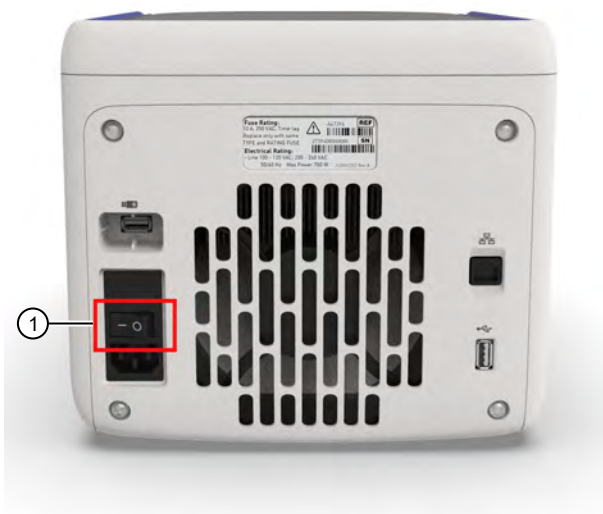
① Power switch

When you power on the instrument, the instrument will take under a minute to start up.

The Home screen will display following successful installation.
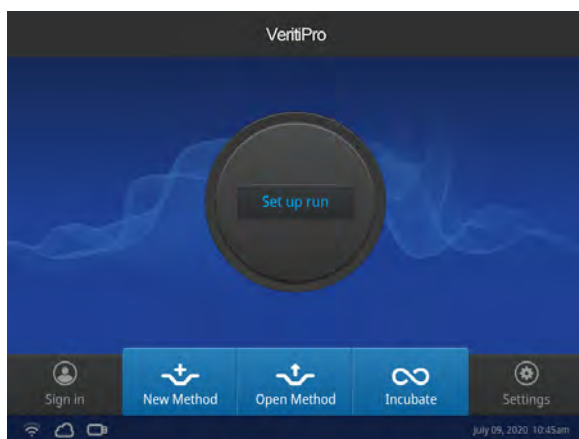
Touchscreen controls

Table 1   General touchscreen controls

Button	Function
←	Returns to the previous screen
⌂	Go to Home screen
👤	Go to Sign in screen
⚙	Go to Settings screen
❯ ❮	Advance and return through stages
✕	Close the current modal window.

Home screen controls

Table 2   Home screen controls and indicators

Button	Function
45.2°C ① 01:02:23 ② Running ③	Go to Set up run screen View instrument status **1.** Current block temperature **2.** Time remaining **3.** Status of the block (pre-heating, running, etc.)
(person icon)	Go to Sign in screen
(gear icon)	Go to Settings screen
(Wi-Fi icon)	Indicates whether the Wi-Fi is on or off.
(USB icon)	Indicates whether a USB device is inserted into the instrument.
(network icon)	Indicates whether the instrument is connected to the network.

Enter text

When you press a field that requires the input of text, the text editor, as seen in the following figure, opens.
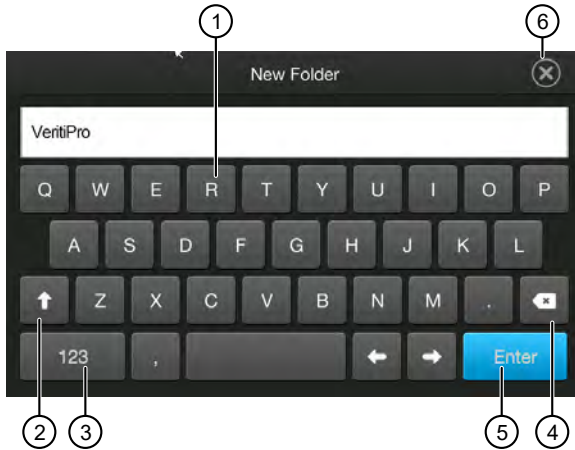
① Enter a letter
② Change letter case
③ Enter punctuation or other symbols
④ Delete
⑤ Close and save
⑥ Close without saving

Enter numbers

When you press a field that requires a numerical input, the numeric editor, as seen in the following figure, opens.
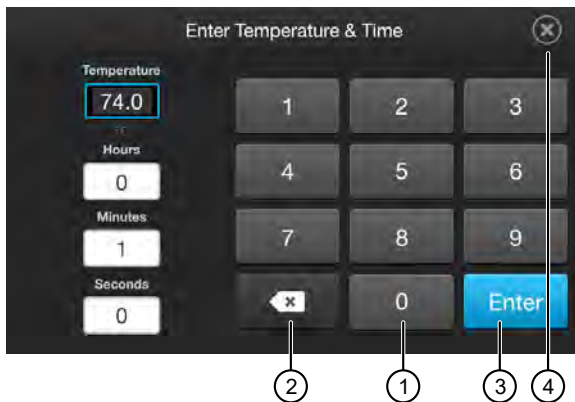
① Enter a number
② Delete or enter decimal, colon or infinity
③ Close and save
④ Close without saving

Connect the instrument for remote monitoring (*Optional*)

Set up the wired connection

See Chapter 2, "Start, sign on, and configure the instrument" for details on connecting the instrument to the network. To set up the wired connection:

1. On the **Home** screen, select ⚙ **(Settings)**.
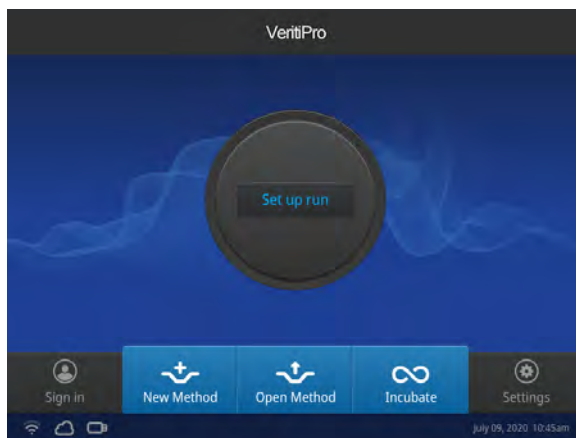
2. In the **Settings** screen, select **Instrument Settings**.
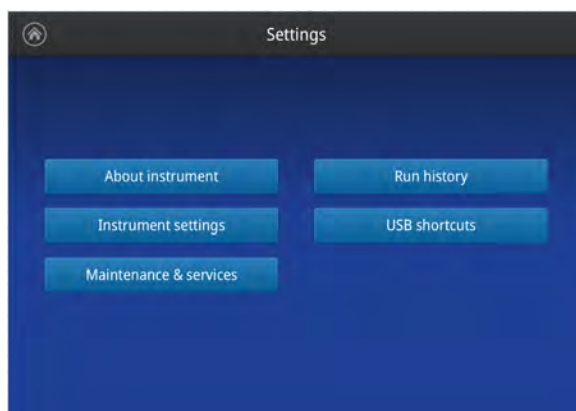
3. In the **Instrument Settings** screen, select **Network configuration**.

4. In the **Network Connection** screen, select a field in the **Wired** panel.
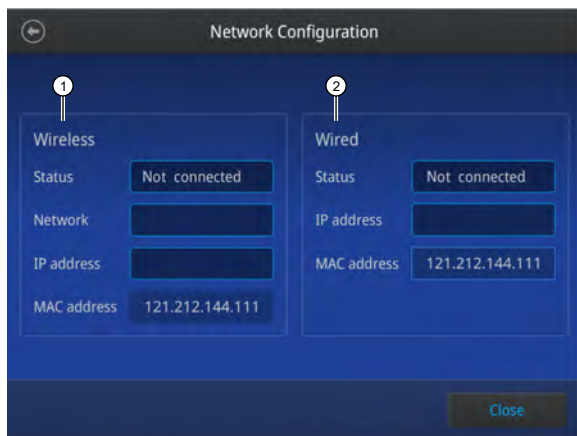
① Wireless panel
② Wired panel

5. Select a method to enter an IP address.

   a. Select **DHCP** to obtain an IP address automatically. A check mark appears when DHCP is selected.

b. Select **Static IP** to enter an IP address manually, then enter the appropriate IP addresses
for the instrument, the Subnet Mask, and, optionally, the Default Gateway, the Primary DNS
Server, and the Secondary DNS Server using the numeric editor. Addresses are in the form of
X.X.X.X, where each X is a 3- digit number, from 001 to 255.
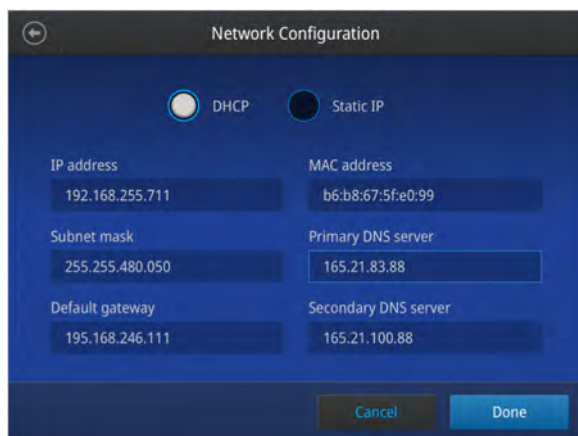
Note: If your instrument is not on a network, you do not need to set the IP address. Ask your
system administrator if the IP address is assigned statically or dynamically. For static addresses,
you need to know the IP address for the instrument, the subnet mask, and the default gateway.

6. Select **Done** to save the changes and go back to the **Instrument Settings** screen or select **Cancel**
to exit the screen without saving the changes.

Set up the wireless connection

See Chapter 2, "Start, sign on, and configure the instrument" for details on connecting the High-Power USB Wi-Fi Module to the instrument.

1. See "Set up the wired connection" on page 14 Steps 1 through 3 to find the **Network configuration** screen.

2. In the **Network configuration** screen, select a field in the **Wireless** panel.
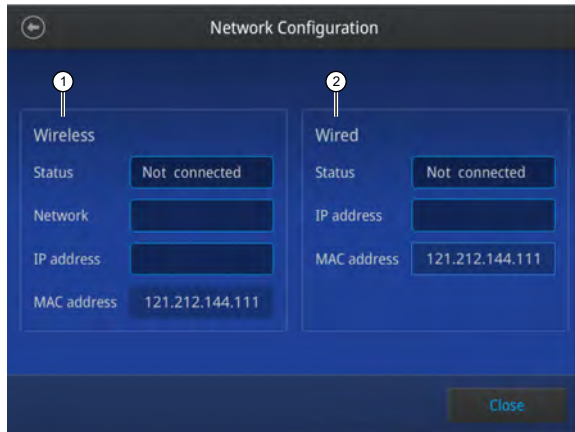
① Wireless panel
② Wired panel

Note: During initial setup, if you selected the Wired option in the **Network Connection** screen, you will be required to enter the IP address if you selected the Static IP wired option. If you selected the Dynamic IP wired option, the IP address is automatically populated.

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3. Once a wireless connection has been detected, a list of the available networks is displayed. Select the network name of your choice or select **Join others**.

Note: If you choose **Join others**, the **Configure and Join Network** screen opens.

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4. In the **Configure and Join Network** screen, select the **Network Name** field, then enter the name and security type of the network.

5. Select the security type from the **Security type** drop-down menu.

Note: Contact your IT Systems Administrator for information on security type.

Select from the following options:

- Open
- WEP
- WPA Personal
- WPA2 Personal

- WPA Enterprise
- WPA2 Enterprise

Note: The above options are available only if **Join Other Network** was selected in Step 3. You cannot change the security type if you selected an existing network.

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6. Select **Join** to continue or **Cancel** to exit from the **Find and Join a Network** screen.

7. Depending on the security type you have selected, enter the appropriate passwords and select **Join**.

8. If all the entered information is correct, the **Network Connection Complete** screen will appear. Select **OK** to continue.

Note: If incorrect information was entered the **Network Connection Failed** screen will open. Select **OK** to continue to the **Security type** screen.

Create a user profile on the PCR instrument

1. Select ▲ **(Sign In)** > Get started > Create profile.

2. Fill in the required text fields and enter a four digit PIN to create your user profile.

Note: The first profile created is automatically given an Administrator profile (indicated by an asterisk after the **Username**).

Create a Connect account

1. Go to **thermofisher.com/connect** from your web browser.

2. Click **Sign up now** and follow the prompts to create an account.

Link the PCR instrument to Connect

1. Select 👤 **(Sign In)** ▸ **Connect**, then select the cloud region of the instrument.

2. Select the method for linking the instrument to Connect .
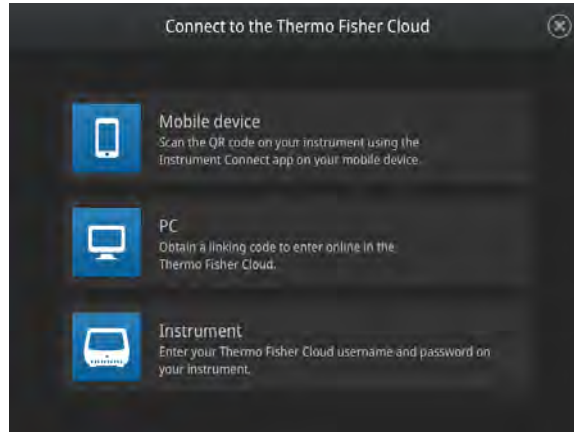
Connect by mobile device

Select 👤 **(Sign In)** ▸ **Get started** ▸ **Connect** ▸ **Mobile device** from the instrument to generate a QR code.

1. Download the "Instrument Connect Mobile Application" on your mobile device.

    a. For iPad™ or iPhone™ devices, download the application from the iTunes™ music store by searching for Instrument Connect by Thermo Fisher Scientific.

    b. For Android devices, download the application from Google™ Play by searching for Instrument Connect by Thermo Fisher Scientific.

2. Launch the Instrument Connect Mobile Application and log in using your Connect login and password.

3. Capture the QR code on the instrument screen.

Connect by PC

Select (Sign In) ▸ **Get started** ▸ **Connect** ▸ **PC** from the instrument to generate a linking code.

1. Log in to your Connect account using a web browser from a computer.

2. Select **(InstrumentConnect)** from the left navigation strip.

3. Select **(Add an Instrument)** from the top navigation strip.

4. Select **VeritiPro** from the drop down menu, then click **Next**.

5. Enter the linking code generated by the instrument in the text box, then click **Send**.
   Upon successful authentication, the instrument is linked to Connect.

Connect by instrument

1. Enter your Connect **Username** and **Password** from the instrument.

2. Click **Link account**.

   _____

   Note: If you do not have a PIN, you will be prompted to create one.

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   Upon successful authentication, the instrument is linked to Connect.

Manage user profiles

All users can manage their profiles to edit personal folder names, change PINs, and link to the cloud by selecting their 👤 **(Profile)** to enter their **My Profile** page.

Users with Administrator profiles (as indicated by an asterisk after their user name) also have the ability to manage all user accounts by selecting **All accounts** after entering their **My Profile** page. Administrator have the ability to perform the following functions.

- Create new user profiles.
- Grant Administrator privileges to user profiles.
- Manage all user folders.
- Delete PINs (this function effectively resets a PIN, so the user with a deleted PIN will need to create a new PIN the next time they log in).
- Delete user accounts.

Methods

Create/Edit Method

- Select any field on the graphical method profile to edit the parameter (temperature, time, heated cover, number of cycles, and volume).
- Select **Actions** (see "Actions") to manage the steps, stages, and advanced options.
- Select **Cancel** to exit without making changes.
- Select **Save as**/**Save** to save new/updated method.
- Select **Start Run** to run method.

Create a new Method

1. In the **Home** screen, select **Set Up Run**.
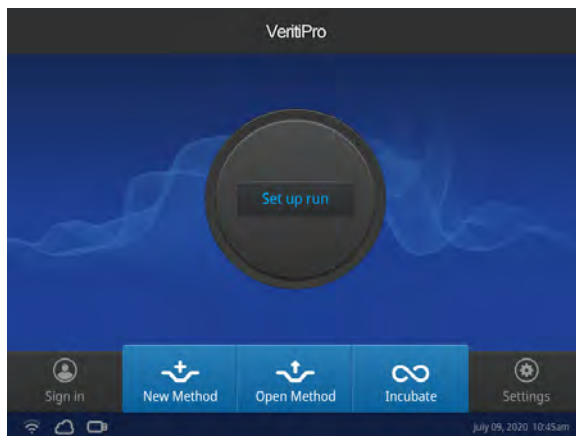
2. In the **Setup Run** screen, select 🗐 **(Open Template)**.

3. Select a folder 📁, then select an appropriate template from the **Method Name** list.

4. Select **Actions** (see "Actions") or any field on the graphical temperature profile to start editing the parameters.

5. Select **Save as**, see "Save a Method" .

6. *(Optional)* Select **Cancel** to exit without making changes, or **Start Run** to run method.

Edit a method

1. In the **Home** screen, select **Set Up Run**.
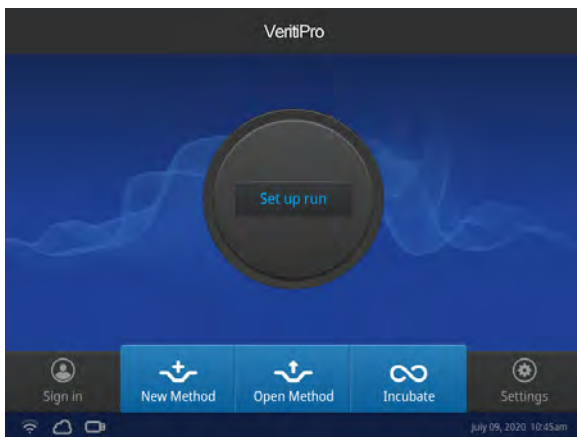
2. In the **Setup Run** screen, select ⤵ **(Open Method)**.
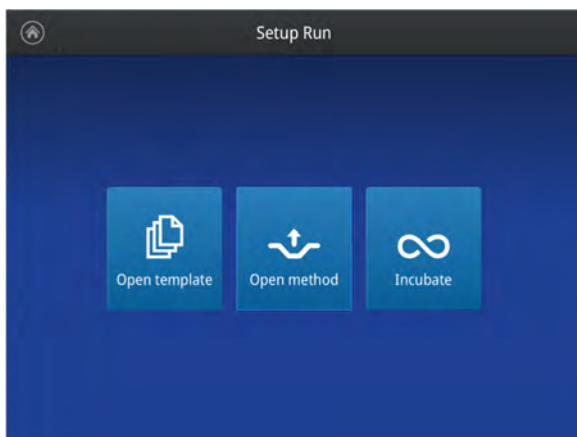
3. Select a folder 📂, then select an appropriate template from the **Method Name** list.

Note: At least one method must have previously been set up in order for the list to be populated.
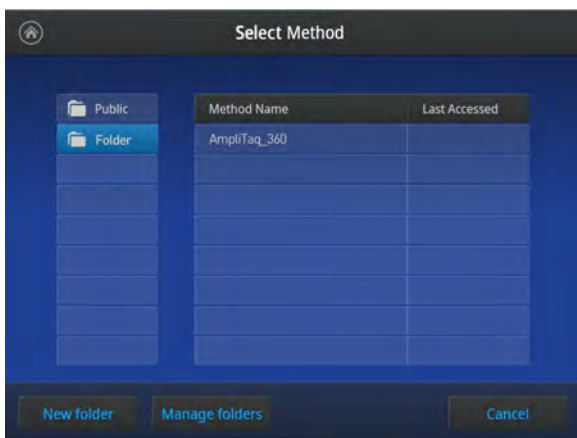
4. Select **Actions** (see "Actions" on page 26) or any field on the graphical temperature profile to start editing the parameters.

5. Select **Save**, see "Save a Method" on page 25.

6. *(Optional)* Select **Cancel** to exit without making changes, or **Start Run** to run method.

Save a Method

1. Once edits to a run method are complete, select **Save As/Save** to save the method.
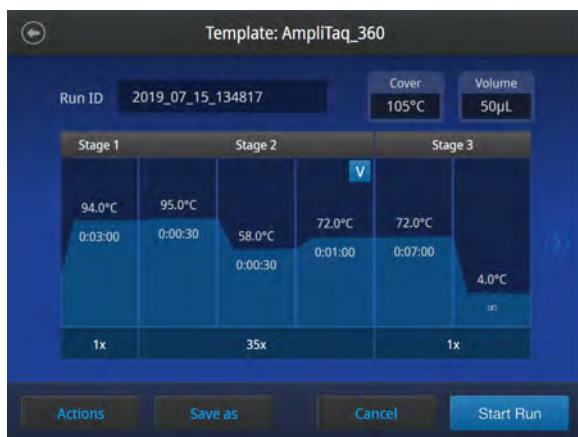
2. In the **Save As/Save** screen, enter a name for the edited run method.

Characters allowed	Characters not allowed
<100 characters	>100 characters
Letters, numbers, spaces, underscores, and dashes	% * ? | ; : , ! @ # $. ( ) < > / \ " ' ` ~ { } [ ] = + & ^ (tab)

3. Select 📁, then select the destination folder where you want to save the run method, then select **Save**.

Actions

Select **Actions** to edit the parameters of a method. Options can be used to:

- Add or remove stages and steps
- Perform temperature optimization (manage VeriFlex™ block zones, 96-well block only)
- Change ramp rates
- Increase or decrease time and temperature (manage AutoDelta)
- Run in simulation mode
- Add comments
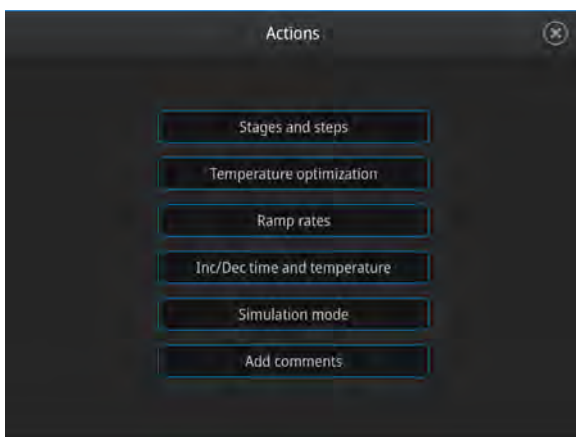
Manage stages and steps

1. Select **Stages and steps** to open the **Manage steps** screen.
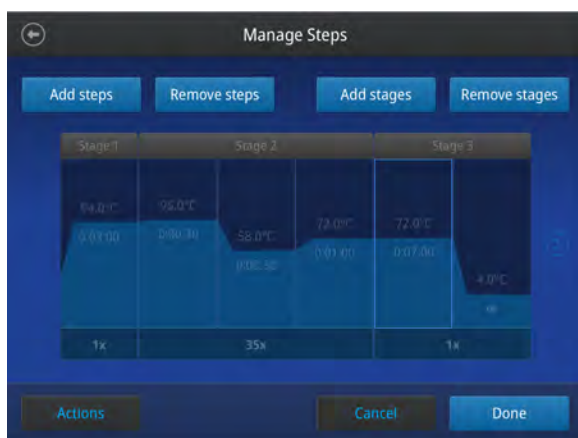
2. Select an option to manage stages and steps.

Press	Description
Add/Remove Steps, then ⊟ or ⊞	To add/delete a step
Add/Remove Stages, then ⊟ or ⊞	To add/delete a stage

3. Select **Done** when finished, or **Cancel** to exit the screen without making changes.

4. Select **Save** (see "Save a Method") to finish, or **Actions** to make additional changes.

Temperature optimization (96-well block only)

1. Select **Temperature optimization** to edit the VeriFlex™ block parameters.

2. Select ✎ to choose the step to modify.
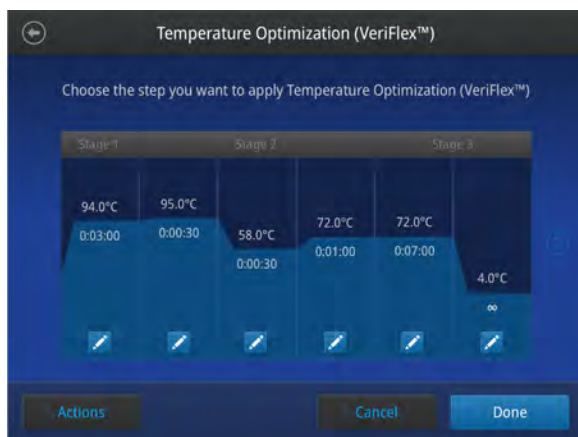
3. Select **Min/Max** to set a temperature gradient across the block, then enter values in the highlighted text fields.

   Note: The maximum difference between the minimum and maximum temperature across the block is 30℃.
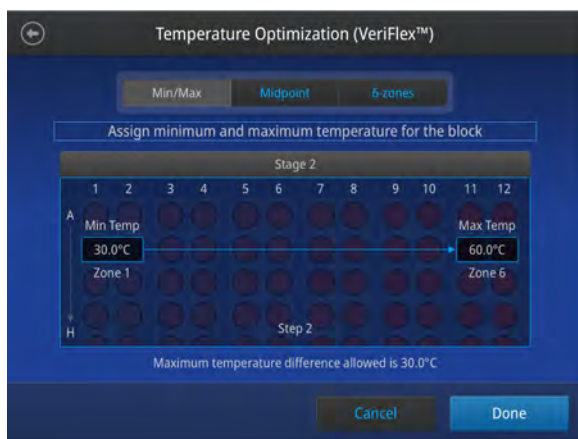
4. Select **Midpoint** to set a midpoint temperature and temperature difference between zones, then enter values in the highlighted text fields.

Note: The maximum temperature increment or decrement cannot exceed 5℃.

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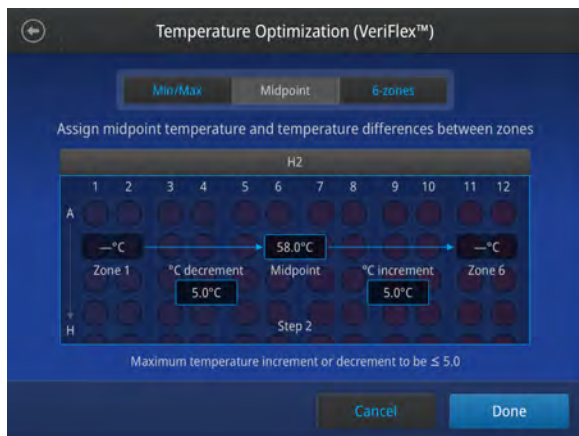
5. Select **6-zones** to set the temperature for each zone of the block, then enter values in the highlighted text fields.

6. Select **Done** when finished, or **Cancel** to exit the screen without making changes.

7. Select **Save** (see "Save a Method") to finish, or **Actions** to make additional changes.

Ramp rates

1. Select **Ramp Rates** to edit the ramp rate of the individual steps.

2. Select a ramp rate to open that ramp rate editor, then edit the ramp rate.

3. Select **Done** when finished, or **Cancel** to exit the screen without making changes.

   Note: If a simulation mode is set, then the ramp rate will be locked and unavailable for editing.

4. Select **Save** (see "Save a Method" on page 25) to finish, or **Actions** to make additional changes.

AutoDelta

1. Select **Inc/Dec time and temperature** to apply AutoDelta settings to a step.

2. Select 🖉 to choose a step.
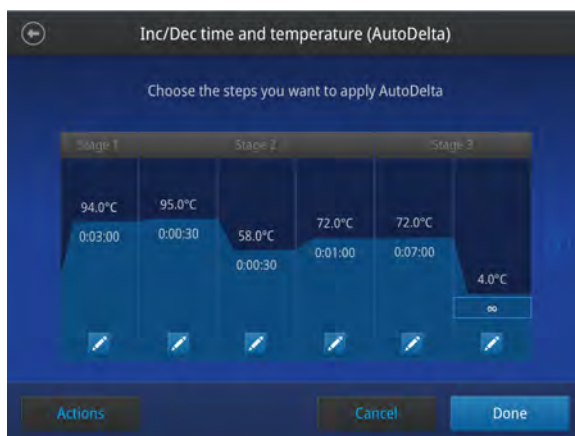
3. Enter the information for setting up AutoDelta.
   a. Use the '**-**' and '**+**' toggle to set the Delta values temperature and time to be either decreased or increased.

b. Enter the cycle for the start of AutoDelta in the **Start AutoDelta from cycle** field.

c. Enter the values for Delta temperature and/or time in the appropriate text fields.

4. Select **Done** when finished, or **Cancel** to exit the screen without making changes.

5. Select **Save** (see "Save a Method") to finish, or **Actions** to make additional changes.

Remove AutoDelta

If AutoDelta has been applied to a step, a button will appear to allow removal.

Select **Remove** to disable AutoDelta.

Note: Temperature and time values will be cleared when AutoDelta is disabled.

Simulation mode

1. Select **Simulation Mode** to set the simulation mode.

Table 3 Simulation modes available on the VeritiPro™ Thermal Cycler

VeritiPro™ 96-well Thermal Cycler	VeritiPro™ 384-well Thermal Cycler
• No Simulation (default) • Applied Biosystems™ Veriti™ Thermal Cycler • Bio-Rad™ T100™ (Algo mode) • Bio-Rad™ MyCycler™ • BIOER™ XP Cycler (Tube mode) • Eppendorf™ Mastercycler™ • MJ Research™ PTC-200 • Takara™ Dice PCR Thermal Cycler • Applied Biosystems™ 2720 Thermal Cycler (Sample mode) • GeneAmp™ PCR System 9700 • Bio-Rad™ C1000 Touch™ • Biometra TAdvanced • Eppendorf™ X50a Intermediate • GeneAmp™ PCR System 9600	• No Simulation (default) • Applied Biosystems™ Veriti™ Thermal Cycler • GeneAmp™ PCR System 9700

Note: Simulation Mode makes this instrument perform like another instrument. This is done by simulating the ramp rate of another instrument. Not all of the listed simulation modes are available on all configurations of this instrument.

2. In the **Simulation Mode** screen, select the instrument you would like to simulate.
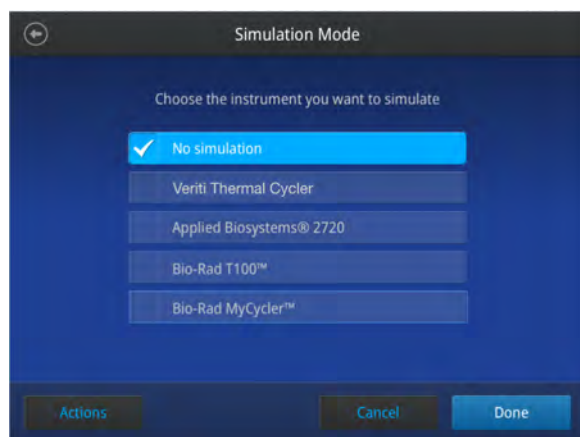
> **Note:** Select **No Simulation** to run the instrument in the default mode.

3. Select **Done** when finished, or **Cancel** to exit the screen without making changes.

Manage Methods and Folders

Create a New Folder

1. In the instrument **Home** screen, select **Set Up Run**.
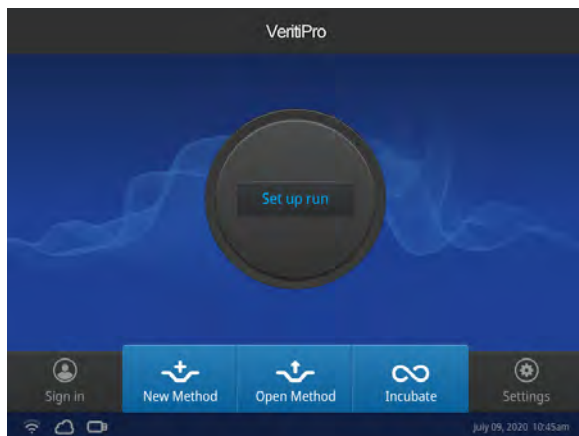
2. In the **Setup Run** screen, select ⌄ (**Open Method**).
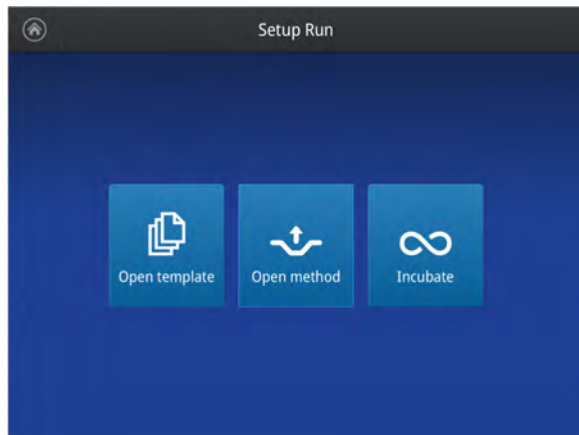
3. In the **Open Method** screen, select **New Folder**.

4. Type a name for the new folder, then select **Enter**.
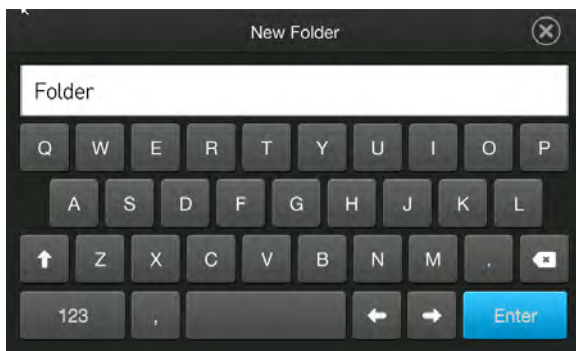
Manage Folders

If the instrument is linked to Connect, it will automatically display a **Cloud** folder.

IMPORTANT! Back up your method files to a USB drive frequently, or before sending in your instrument for service.

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1. In the instrument **Home** screen, select **Set Up Run** ▸ ⟲ **(Open Method)** or ⟲ **(Open Method)** directly from the bottom of the screen.
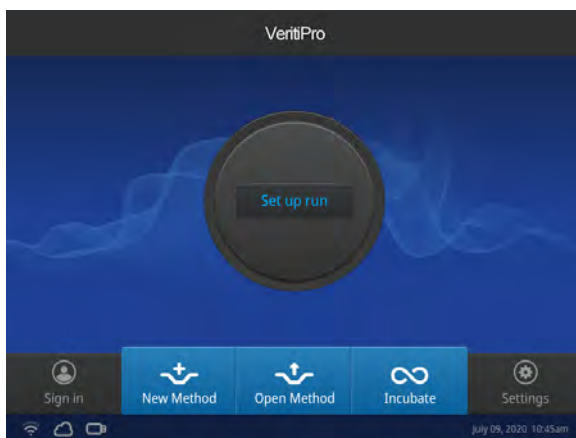
2. In the **Open Method** screen, select **Manage Folders**.
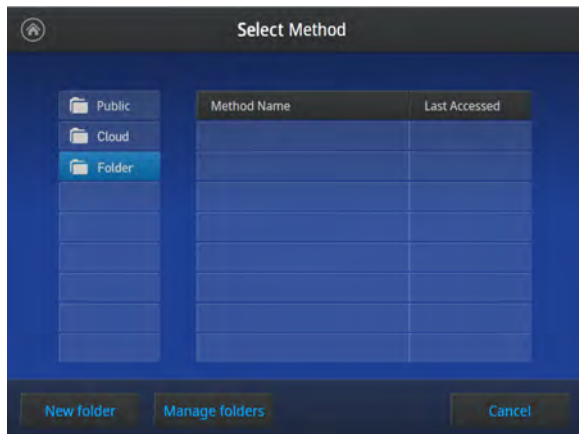
3. In the **Manage Folders** screen, select folders from the left column and methods from the right column, then select one of the following options.

Select	Description
Copy	To copy a run method from one existing folder to another
Rename	To rename a particular method/ folder name
Delete	To delete a particular method/ folder

Copy a method

1. Select the **Method** to be duplicated.

2. Select **Copy**, then paste the method to an existing folder or a new folder.

   - Select the destination folder for the duplicated method, then select **Paste method**.
   - Select **New Folder** and create a new folder for the duplicated method, then select **Paste method**.
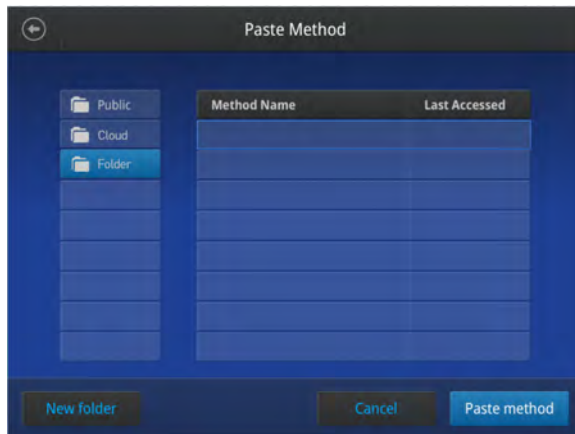
3. Select **Done** when finished.

Open and run Method

Load samples into the instrument

Note: Refer to the PCR Starter Kit user guides (see Appendix H, "Documentation and support") for instructions on filling, sealing, and loading MicroAmp™ reaction plates, tube strips, and tubes.

Place the sample tray or plate onto the sample block(s)

The steps for placing the sample tray on the sample block(s) are the same for:

- A sample tray/retainer
- A sample tray without a retainer
- A 96-well or 384-well plate.

1. (*96-well block only*) Lift the sample tray from the splash-free 96-well base and place it in the sample block(s).

2. Place the MicroAmp™ Tray or Plate onto the sample block(s) so that well A1 is at the upper left corner of the tray, as shown in the following figure:
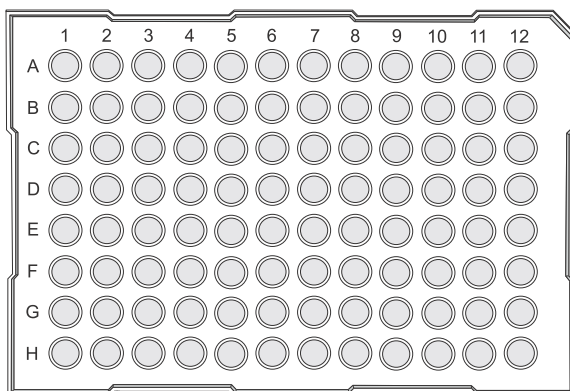
3. Close the heated cover.

Perform a run

Prepare your samples and load the sample block(s) as described in "Load samples into the instrument" on page 36.

1. Close the cover.

2. Start the run from the **Home** screen in one of the following ways. Select:

- ⬚ **(Open Template)**, see "Create a new Method" on page 22
- ⬚ **(Open Method)**, see "Edit a method" on page 24
- ∞ **(Incubate)**

3. Select **Next**, to display the **Run Parameters** screen.
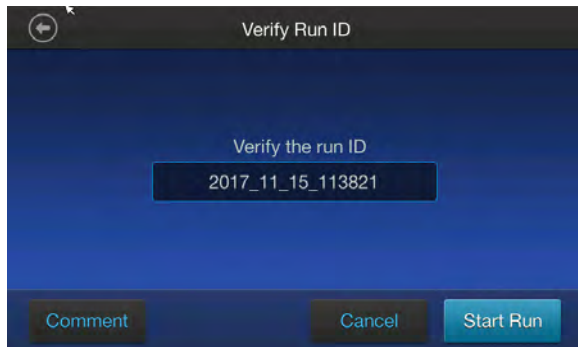
4. *(Optional)* In the **Run Parameters** screen, select the field under **Verify the run ID**, then enter the applicable information in the **Enter the Run ID** screen.

   Note: The default Run ID is YYYYMMDDHHMM, where "YYYYMMDD" is the date and "HHMM" is the current time.

5. *(Optional)* Select **Comment** to enter any comments about the run.

6. Select **Start Run**.

   The cover is heated to the required temperature, then the run begins.

   While the run is in progress, the **Home** screen is displayed. When the run is complete, the **Status Dial** on the **Home** screen displays **Done** and **Remove Samples**.

7. Remove the samples and select **Done** after the run has finished.

Perform a run on multiple instruments

1. Select ⊛ **(Settings)** > **Instrument Settings** > **Multi-Instrument Setup**.

2. In the **Multi-Instrument Setup** screen, use the **Off/On** toggles to make the instrument visible and to find other instruments.

Option	Description
Make visible	Use the **Off/On** toggle to make the instrument on which you are running an experiment visible to other instruments on the network
Find other instruments	Use the **Off/On** toggle to find other instruments on the network.

3. Select ◐ ▸ ◐ ▸ ⌂ to return to the **Home** screen.

4. Select **Set Up Run** and select ▤ **(Open Template))** or ⌄ **(Open Method)** and proceed to the **Start Run** screen. See "Perform a run"

5. In the **Start Run** screen, select **Scan devices**.

   Note: The **Scan devices** button appears in the **Start Run** screen when you enable the multi-instrument run.
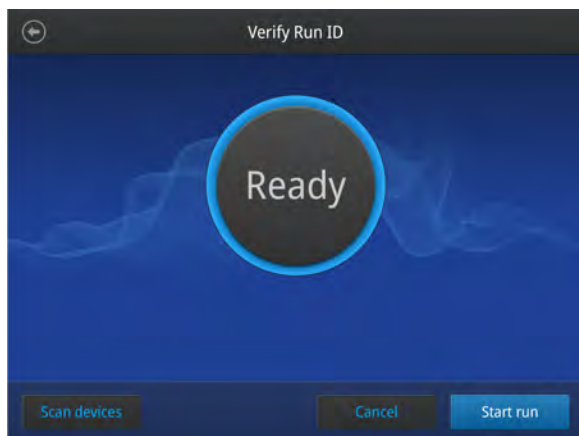
Note: The instrument starts scanning for all available VeritiPro™ Thermal Cycler instruments on the same network which have the "Make Visible" setting enabled. All available instruments are displayed in a table in the **Multi-Instrument Run** screen.
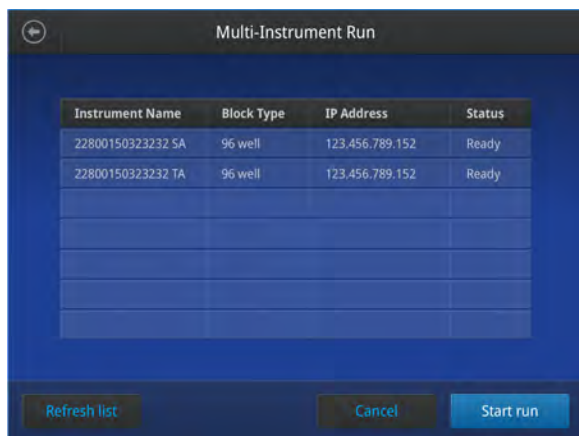
6. Select one or more instruments from the table to enable the **Start Run** button.
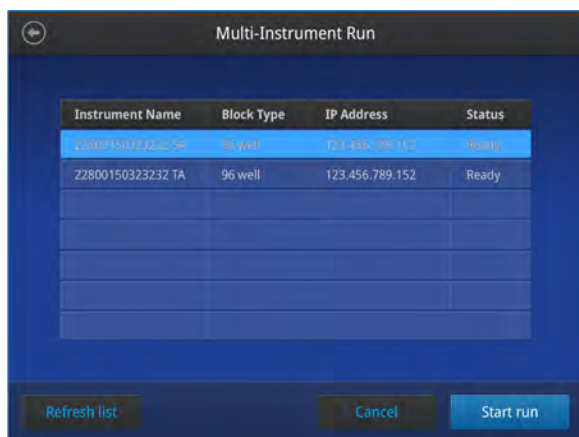
7. Select **Start Run**.

> **Note:** This machine cannot monitor runs taking place on other machines.

8. Remove the samples and select **Done** after the run has finished.

Monitoring a run

Monitoring a Run

- View the current run information on the **Home** screen dial according to the following.

① Current block temperature
② Time remaining since the run started
③ Run status

- Monitor the run progress in the **Run Monitoring** screen by pressing the **Home** screen dial.

> **Note:** The **Run Monitoring** screen shows the run method profile and additional information that does not appear in the Dial on the **Home** screen.

① Start time displays the time a run started.

② Time remaining displays the time remaining for a run.

③ End time displays the approximate time at which the run will end.

④ Details provides more details about the run.

- – Run ID
- – Run User
- – Simulation Mode
- – Start time
- – Estimated End time
- – Sample Temperature
- – Cover Temperature
- – Reaction Volume

⑤ Edit

- – Helps edit run parameters like temperature, time, and cycles.
- – Helps skip the current holding step. However, if the run is currently ramping, the Skip button will not function.

⑥ Pause to pause the run.

⑦ Stop run to stop the run.

Stop a run

1. Press the dial in the center of the screen.

2. Press **Stop Run ▸ OK**.

3. Remove the samples and press **Done** after the run has finished.

View and export the run report

1. Insert a USB memory device into the port on the front of the instrument.

2. In the **Home** screen, select ⊛ **(Settings)** ▸ **Run History**.

3. Select a run report to view.

4. (*Administrator profile only*) Select **Manage** ▸ **Select all** to select all run reports. This option is not compatible with the print function.

5. Select **Export** to save the report on a USB memory device.

6. *(Optional)* Select **Print** to print a single run report.

Note: You may be prompted to enter the IP address of the printer if it has not already been set.

Remove the samples from the instrument

⚠️ **CAUTION!** During instrument operation, the temperature of the heated cover can be as high as 110°C, and the temperature of the sample block(s) can be as high as 100°C. Before performing the procedure, keep hands away until the heated cover and sample block(s) reach room temperature.

⚠️ **CAUTION!** Sample caps may pop off if the cover is opened when the sample block(s) temperature is above 27°C.

Grasp the sample tray/retainer assembly or reaction plate firmly with both hands (or by using MicroAmp™ Multi Removal Tool, Cat. No. 4313950) and gently rock it back and forth until the tubes (or plate) are free.

5   Maintenance

Clean the instrument

⚠️ **WARNING!** Always wear protective glasses and gloves when servicing the instrument. Also, make sure you disconnect the instrument from AC line power before you begin any service procedure.

Preparation

Before cleaning the instrument:

1. Power off the instrument by disconnecting the power.

2. Allow the instrument to cool until the heated cover and sample block(s) reach room temperature.

Clean the touchscreen

Clean the touchscreen with any commercially available LCD cleaning product. Be careful not to scratch the screen.

Clean the sample wells

If you use any cleaning or decontamination method, except those recommended in the manual, you risk damaging the equipment. Clean the sample wells once a month or as needed.

⚠️ **WARNING!** During instrument operation, the temperature of the heated cover can be as high as 110°C, and the temperature of the sample block(s) can be as high as 100°C. Before performing the procedure, keep hands away until the heated cover and sample block(s) reach room temperature.

Clean the sample wells using a cotton swab dampened with isopropanol. **Do not** flush sample wells using a wash bottle or allow liquid to overflow from the wells.

1. Follow the steps in "Preparation" .

2. Open the heated cover.

3. Remove the sample tray from the sample block(s) and set it aside.

4. Use a cotton swab soaked in isopropanol to clean the sample wells thoroughly. Make certain that the isopropanol has evaporated completely before reloading a sample tray.

Decontaminate the sample wells

If the sample wells become contaminated with any biological agents, clean the wells thoroughly with a cotton swab soaked in 1:10 v/v dilution of 5.25% sodium hypochlorite (Clorox® bleach).

IMPORTANT! **Use bleach solution in moderation.** 10% bleach solution is recommended for removing contamination from the sample block(s), but excessive use of the solution can corrode the sample block(s) material. To prevent damage to the sample block(s):

- Avoid applying excessive amounts of bleach solution. If possible, instead of using a squeeze bottle or soaked cloth, use an atomizer to deliver the solution to the wells of the block(s).
- After treating with bleach solution, rinse the sample block(s) thoroughly using deionized water.

Note: Removing residual bleach from the surfaces of the instrument using water minimizes the long-term effects of bleach treatments.

If the sample block(s) become contaminated with radioactivity, use a commercially available decontaminant to remove the contamination. If the block(s) cannot be decontaminated, the instrument cannot be returned for service.

Clean the heated cover

Clean the heated cover once a month or as needed.

To clean the heated cover:

1. Follow the steps in "Preparation" .

2. Open the heated cover.

3. Soak a cotton swab or piece of clean cloth with isopropanol and gently wipe the heated platen.

⚠️ **WARNING! CHEMICAL HAZARD. Isopropanol** is a flammable liquid and vapor. Exposure may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. Exposure may cause central nervous system effects such as drowsiness, dizziness, and headache. Read the MSDS, and follow the handling instructions.

4. Remove any remaining isopropanol from the cover.

Note: If the platen becomes contaminated with amplified DNA, then raise the heated cover to the cleaning position, wipe the platen with a cloth or cotton swab soaked in bleach, then rinse with water.

Clean the heated platen once a month or as needed.

Decontaminate the heated cover

If the heated cover become contaminated with amplified DNA, raise the heated cover to the cleaning position and wipe the cover with a cloth or cotton swab soaked in 1:10 v/v dilution of 5.25% sodium hypochlorite (Clorox® bleach), then wipe the cover with a damp cloth.

Replace the fuses

Required materials

- Two UL Listed fuse, rated 10 A, Time-Lag T, 250 VAC, size: 5 × 20 mm
- Fine flat-tip screwdriver

Procedure

⚠️ **DANGER! ELECTRICAL SHOCK HAZARD.** Severe electrical shock, which could cause physical injury or death, can result from working on an instrument when the high voltage power supply is operating. To avoid electrical shock, disconnect the power supply to the instrument, unplug the power cord, and wait at least 1 minute before working on the instrument.

1. Power off the instrument by disconnecting the power.

2. Insert a small flat-tip screwdriver into the slot in the upper portion of the power entry module, and open the door.

3. Pull out the fuse compartment to inspect the two fuses in the fuse compartment:

4. Pull out the blown fuse(s) from the fuse compartment and replace with new Two UL Listed fuse, rated 10A, 250VAC, size: 5 x 20 mm.

5. Place the fuse compartment back into the power entry module (there is only one orientation) and close the door.

6. Press the door until it locks in place.

7. Connect the instrument power cord.

Upgrade the system firmware

Update software directly through Connect or using an USB drive with updated software downloaded from **thermofisher.com/connect**.
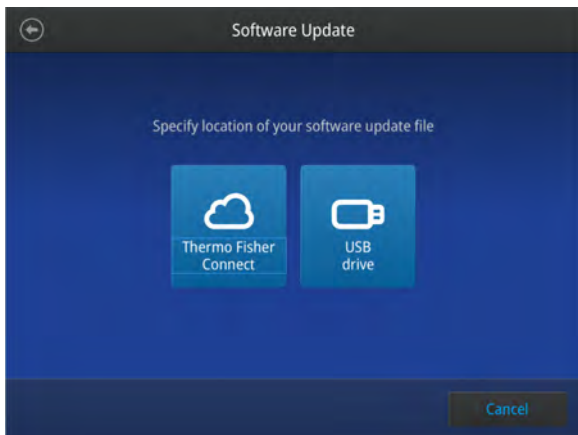
Determine firmware version on instrument

When a new firmware version is released, you may be required to load the new firmware on the instrument.

You will need a USB memory device and, if your instrument requires login, the login details to upgrade the firmware.

1. Select ⚙ **(Settings)** > **About Instrument**.

2. View current firmware version.

Upgrade the instrument firmware (Cloud)

IMPORTANT! You cannot upgrade the firmware while a run is in progress.

---

1. Select ⚙ **(Settings)** ▸ **Maintenance & Services** ▸ **Software Update** ▸ **ThermoFisher Connect**.

2. Select **Yes** to start the upgrade.

IMPORTANT! To prevent instrument malfunction and required service, do not power off the instrument during the upgrade.

When the upgrade process is complete, the instrument will automatically restart.

Download new firmware

1. Go to **thermofisher.com** from your web browser.

2. Click **Product Support** ▸ **Technical Resources** ▸ **Product Support** ▸ **Software, Patches & Updates**.

3. Select VeritiPro™ Thermal Cycler in the list, then click **Updates & Patches**.

4. Find the appropriate file. If the version number is:

   - The same as the current version on the instrument, you do not need to upgrade the firmware.

   - Different from the current version on the instrument, download the new firmware.

5. Insert a USB memory device into the USB port on the computer.

6. Click the link in the Software column, then select the USB memory device as the location for the saved file.

   Note: The file must be downloaded to the root directory of the USB memory device and not into a folder.

7. Remove the USB memory device from the computer when the download is complete.

Upgrade the instrument firmware (USB drive)

IMPORTANT! You cannot upgrade the firmware while a run is in progress.

1. Insert the USB memory device with the new firmware in the USB port of your instrument.

   Note: For instruments with the USB shortcuts feature enabled, you will be directed to the **USB shortcuts** screen. Select **Update Software** to proceed to the **Software Update** screen.

2. Select ⚙ (Settings) ▸ **Maintenance & Services** ▸ **Software Update** ▸ **USB drive**.
   The Software Update screen opens:
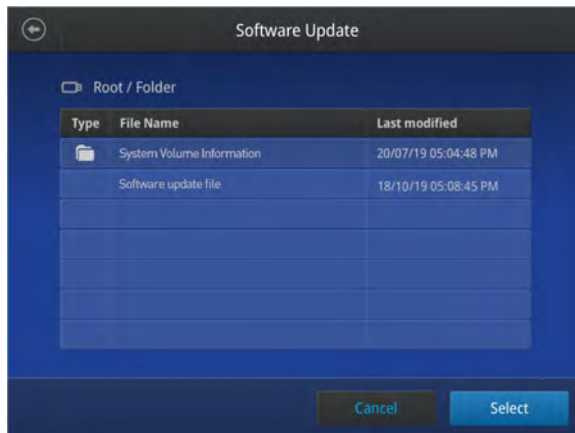
3. Choose the row with the new firmware file from the USB memory device, then **Select**.

4. Select **Yes** to start the upgrade.

> **IMPORTANT!** To prevent instrument malfunction and required service, do not power off the instrument during the upgrade.

When the upgrade process is complete, the instrument will automatically restart.

Self Verification test

Use the **Self Verification Test** feature to check the instrument hardware. The check includes testing the block, heated cover, and other components.

Select **Last Test** to view the results of the last **Self Verification Test**.

Carry out the **Self Verification Test** periodically or whenever there is an intermittent instrument error. Contact your service representative in case of block failure.
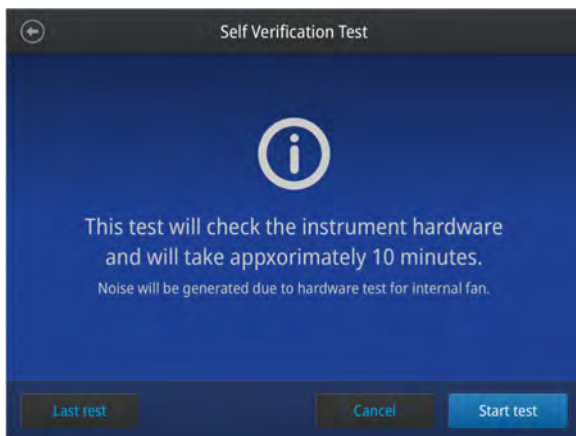
Procedure

1. In the **Home** screen, select **Settings** ▸ **Maintenance & Services** ▸ **Self Verification Test**

2. In the **Self Verification Test** screen, select **Start Test** to begin testing or **Cancel** to exit the screen.

> **Note:** The test takes about 10 minutes. Once the test is completed the test results will be displayed in the form of a report.

3. Select **Export** to save the test report to a USB drive or **Close** to exit the screen.

Restore factory settings (*Administrator profile only*)

Select **Restore factory settings** to remove all the data and customized settings and revert to factory settings. All data and settings will be erased once factory settings are restored. At the end of the restoration process, the message, "Your instrument has been restored." is displayed and the instrument automatically reboots after 30 seconds.
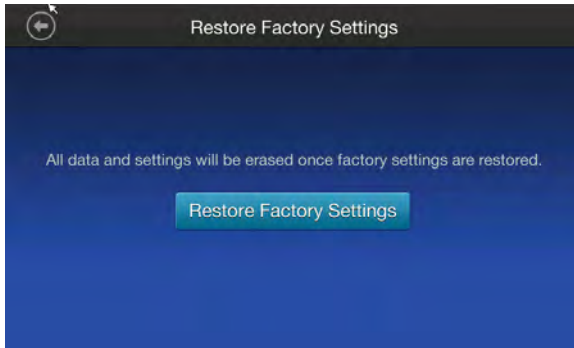
Troubleshooting

Troubleshooting

Use the following table to help troubleshoot problems with your Thermal Cycler.

Observation	Possible cause	Recommended action
Instrument reports error(s).	Hardware malfunction.	Run the self verification test (see page 48).
Reduction in instrument performance due to incorrect temperature readings.	Temperature sensor out of calibration.	Run a cycle performance test using the external multi-channel temperature verification kit (TVK).
		Call the field service representative to perform a temperature verification test.
		Perform a temperature verification test using the external multi-channel temperature verification kit (TVK).
Printing fails.	Printer incorrectly configured on instrument.	Make sure the printer IP address on the instrument matches the IP address from the system administrator.
	Printer not connected to network.	Connect Ethernet cable to printer.
	Instrument not connected to network.	Connect Ethernet cable to instrument.
		Confirm network is functioning.
	Ethernet cable bad.	Try a different Ethernet cable.
		Confirm network is functioning.
When running on multiple instruments, can't see instruments in Select Instruments screen	Instrument(s) not connected to network.	Connect Ethernet cables to the instruments.
		Connect Ethernet cable to the network switch.
	Switch powered off.	Switch power on.
	Ethernet cable bad.	Try a different Ethernet cable.
	IP address conflict.	Change the IP addresses on the instruments.
	Allow Remote Runs setting in **Instrument Name** screen set to No.	In **Instrument Name** screen, change Allow Remote Runs to Yes.
No screen display	Blown fuse.	Check fuses.
Screen display missing characters or is illegible.	LCD screen failure.	Request service.
No response when you power on the instrument.	Not connected to power source.	Switch power on.
		Connect power cord.

Observation	Possible cause	Recommended action
Sample tubes melt during run.	Incompatible consumables used.	Use recommended consumables.
	Heated cover or sample block(s) too hot.	Run the Heated Cover Verification Test.
Heating cover is stuck.	Cam, platen, or cover assembly malfunctioning	Request service.
Sample tubes are crushed or deformed after run.	Incompatible consumables used, or proper trays/retainer accessories not used.	Use recommended consumables.
Power failure during a run	Power failure during a run	If a power failure occurs during a run, the instrument attempts to continue the run when the power returns. The run begins at the first step of the stage where the power failed. If the time between the initial power failure and the time the power returns is more than 12 hours, the run is not continued. A message stating *This run was interrupted by power failure on [date/time] and recovered on [date/time]* is displayed upon such an occurance.
	User did not press **Done** after completing a run before turning the power off on the instrument.	Always press **Done** after completing a PCR run on the instrument.

Return an instrument for service

Before returning an instrument for service, back up the run methods and instrument settings, as described in "Manage Folders" on page 33 and "Recommended instrument settings" on page 53. This practice ensures that you can restore the run methods and other settings in the event that the service center replaces a component that restores the default factory settings, or sends you a replacement instrument.

To return an instrument for service:

1. Contact your local customer care center or technical support group to obtain a copy of the Certificate of Instrument Decontamination, a service notification, a service call number, and, if required, packaging.

2. Decontaminate the instrument.

   IMPORTANT! If the sample block(s) become contaminated with radioactivity, use a commercially available decontaminant to remove the contamination. If the block(s) cannot be decontaminated, the instrument cannot be returned for service.

3. Complete and sign a copy of the Certificate of Instrument Decontamination.

4. Attach a copy of the Certificate of Instrument Decontamination to the outside of the box, place another copy inside the box, and email a copy to the customer care center.

5. Pack the instrument in the provided packaging, without any accessories or power cords. Include a hard copy of the Certificate of Instrument Decontamination in the box.

   Note: DO NOT pack the instrument in packaging not designed for thermal cycler shipment as damage may incur. Repairs for instruments without the Certificate of Instrument Decontamination will be delayed.

6. Affix the provided shipping label to the box, then ship to the designated facility.
   The repair process requires 1 to 3 weeks, depending on regional location.

Recommended instrument settings

About Instrument

Select **Settings ▸ About Instrument** to find out more information about the instrument (e.g., firmware version and instrument statistics).

- Select **EULA** to view the End User License Agreement. The EULA can be downloaded to a USB drive.

- Select **Check updates** to find out if updates are available for the instrument .

Recommended instrument settings

Select ⚙ **(Settings)** and access the **Settings** screen to configure the instrument.
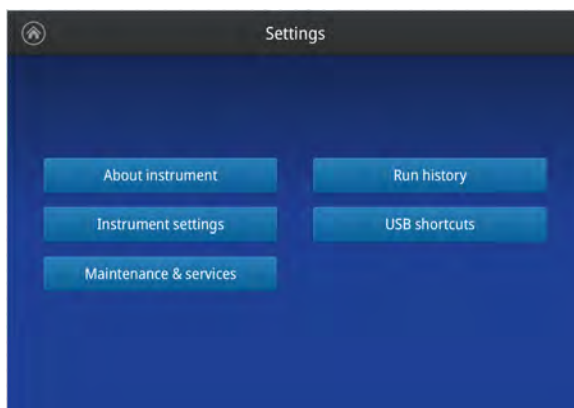
Instrument settings

Select **Instrument Settings** to set the following instrument parameters.
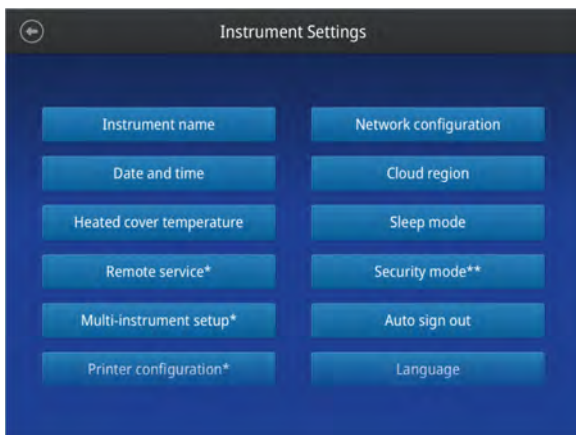
- **Instrument name**

  Select the **Instrument name** field to activate the text editor. Enter up to 25 alphanumeric characters to identify the instrument.

  Note: The instrument name cannot have spaces. Separate consecutive characters with a hyphen or underscore; for example, *My_Instrument*.
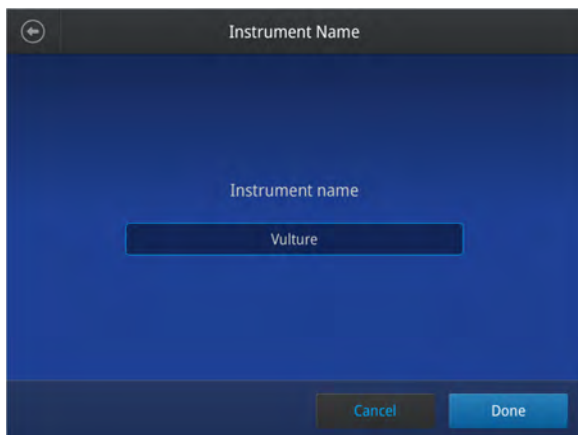
- **Date and time**
  - Select the **Time Zone** field to set the time zone.
  - Select the **Date/Format** field to choose the date format and set the date.
  - Select the **Time/Format** field to activate the numeric editor to set the time.
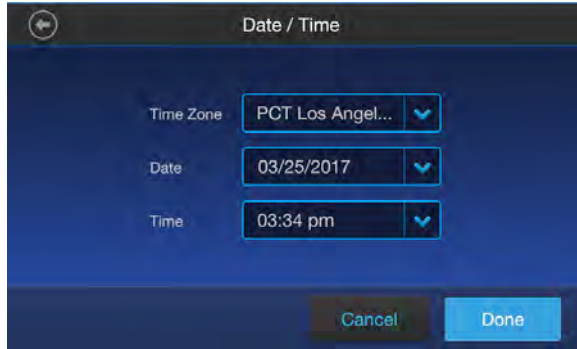
- **Heated cover temperature**

  Use the **Off** and **On** toggle to disable or enable activation of the heated cover in idle mode. In the 'On' mode, press the **Edit Temperature** field to activate the numeric editor to set the cover temperature.

  Note: The heated cover temperature must be between 30°C and 110°C.

- **Remote service**

  Use the **Off** and **On** toggle to disable or enable periodic upload of instrument data to **Connect**.

- **Multi-instrument setup**

  Use the **Off** and **On** toggles to make the instrument hidden or visible to other instruments on the network, and to ignore or find other instruments on the network.
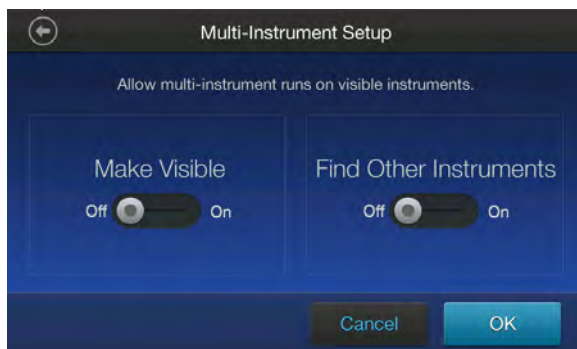
- **Printer configuration**

  Select the **Remote Printer IP Address** field to activate the numeric editor, then enter the IP address of the printer to be connected to the instrument.
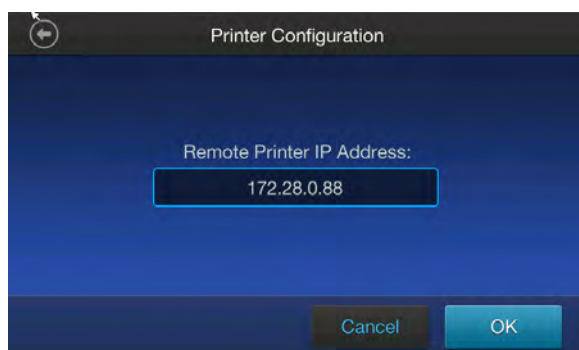
- **Network configuration**

  Select the type of network connection that will be used to connect the instrument to the Internet. For details on using the Wireless and Ethernet options, see "Set up the wired connection" on page 14 and "Set up the wireless connection" on page 17.
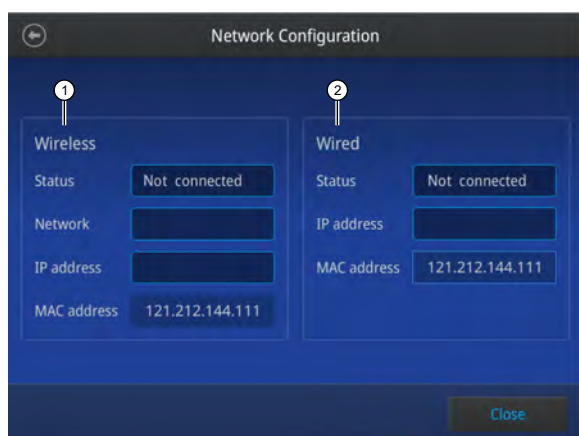
① Wireless panel
② Wired panel

- **Cloud region (*Administrator profile only*)**

  Select the appropriate field to set the cloud region for the instrument.

- **Sleep mode**

  Use the **Off** and **On** toggle to disable or enable sleep mode. In the 'On' mode, select the **Edit Time** field to activate the numeric editor to set the time after which the instrument will go from idle mode to standby mode.
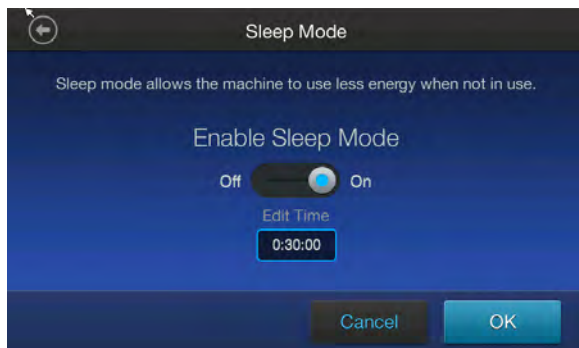
- **Security mode (*Administrator profile only*)**

  Use the toggle to set user accessibility for the instrument.

  – Select **Guest accessible** to enable guest access for most instrument functions.

  – Select **Login required** to restrict use to those with user accounts.

- **Auto sign out (*Administrator profile only*)**

  Use the toggle to enable/disable automatic sign out of a user when no activity is detected on the instrument for a selected period of time.

- **Brightness settings**

  Use the slider to adjust screen brightness.

- **Language**

  – Select **Settings ▸ Instrument settings ▸ Language ▸ English** to enable English language user interface.

  – Select **Settings ▸ Instrument settings ▸ Language ▸ 简体中文** to enable Chinese language user interface.

Maintenance and services

Select **Maintenance & Services** to set the following instrument parameters.
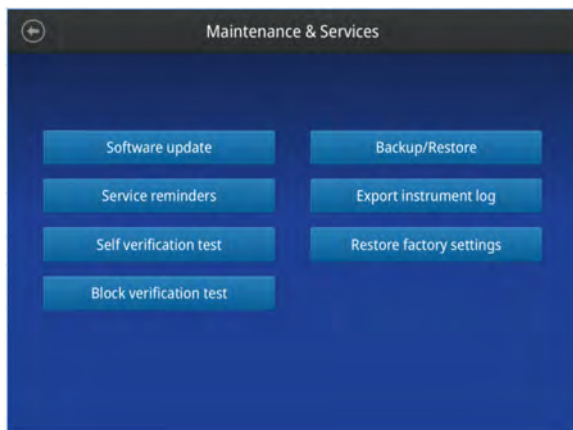
- Select **Software Update** to update the System firmware. See "Upgrade the system firmware" on page 46 for instructions on updating the firmware.
- Select **Service reminders** to enable reminders for service after a selected interval of time. Set the time interval by selecting the **Service reminded provided every** field to set the time interval.
- Select **Self Verification Test** to conduct a check on the instrument hardware. The check includes testing the block, heated cover, and other components. See Chapter 5, "Maintenance" for instructions on conducting the self-verification test.
- Select **Block Verification Test** to perform a block verification test. Ensure that you have the Temperature Verification Kit (TVK) (Cat. No. 4377669) before performing this test.
    - Select **Verify Block Temperature** to carry out the block temperature test. Select the test type, connect the TVK, and insert the TVK probe into a specific zone depending on the test type.
    - Select **Verify Cycle Performance** to check the cycle performance of the instrument.
- Select **Backup/Restore** (*Administrator profile only*) is useful in event of a hardware failure or while setting up multiple instrument runs. See page 19 for details on logging in using the administrator profile.
    - Select **Backup Instrument** to back up the instrument settings, user accounts, and methods on the instrument to a USB memory device.
    - Select **Restore a Backup** to view instrument files that are backed up on a USB memory device.
- Select **Export Instrument Log** to export the instrument logs to a USB memory device. Insert the USB memory device into the USB port before using this feature.
- Select **Restore factory settings** is used to reset the instrument to the original factory settings See "Restore factory settings (Administrator profile only)" on page 49. See page 19 for details on logging in using the administrator profile.

Run history

Select **Run History** to display the entire list of runs performed by the instrument.

- Select a particular Run ID to view the details of that run.
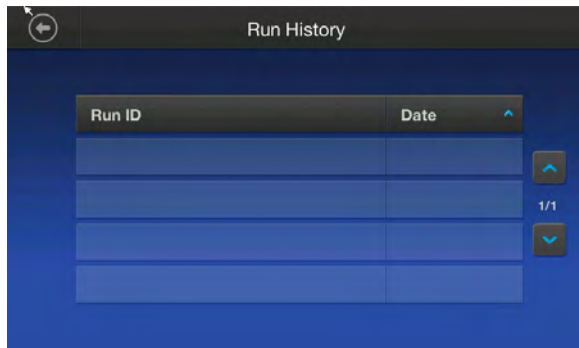
- Select **Export** to save the run details to a USB memory device, or **Print** to print the run details.
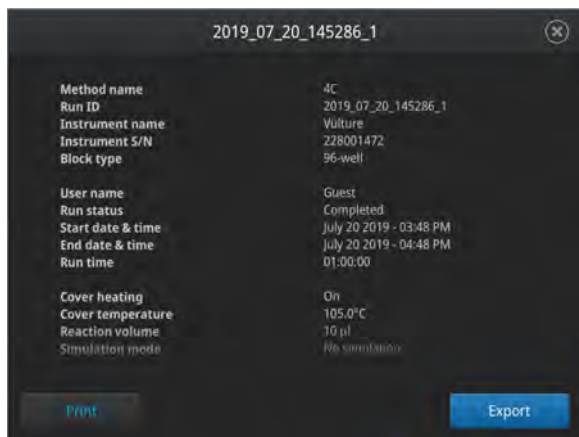
Note: If you are signed in with the Administrator profile, you can use the **Manage** function to perform the following functions.

- Delete a run report
- Select all run reports
- Export a run report

USB shortcuts

Press **USB Shortcuts** to manage the shortcuts available when a USB memory device is inserted into the instrument.

- Select the shortcuts to be displayed when a USB memory device is inserted.
- Select **Show Shortcuts** to display the selected shortcuts when a USB memory device is inserted.

Note: **Backup/Restore** is only available when signed in as administrator.

When a USB memory device is plugged into the USB port, a pop-up dialog box with the pre-selected options is displayed.
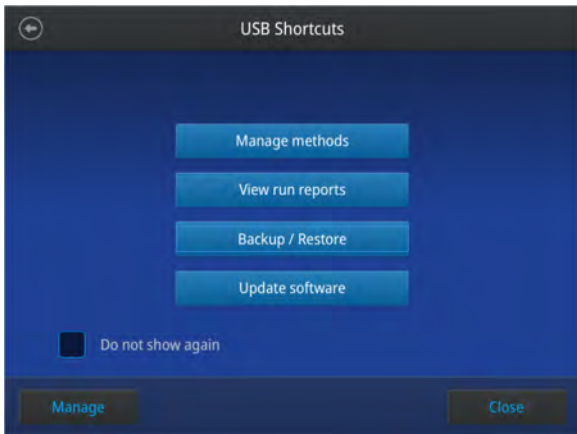
C Instrument specification and layout

Site requirements

The instrument is for indoor use. Ensure that the installation site:

- Meets the spatial and weight requirements (see "Specifications")
- Meets environmental requirements (see "Environmental requirements")
- Is within 1 m (3 ft.) of an AC power source receptacle
- Is away from water

Environmental requirements

Temperature and humidity requirements

Ensure that the installation site is maintained under the following conditions:

Table 4   Temperature and humidity requirements

Condition	Acceptable range
Temperature (acceptable range)	15–30°C (59 to 86°F)
Humidity (acceptable range)	15–80% Relative Humidity, non-condensing

Avoid placing the instrument adjacent to heaters, cooling ducts, or in direct sunlight. Fluctuations between day and night temperatures can cause system instability. Place away from any equipment that vibrates, such as a refrigerator or centrifuge.

Pollution

The instrument has a Pollution Degree rating of 2. It may be installed in an environment that has non-conductive pollutants only, such as dust particles or wood chips. Typical environments with a Pollution Degree II rating are laboratories and sales and commercial areas.

Altitude

The safety of instrument use was tested for altitudes up to 6000 ft.

Specifications

Technical specifications

Feature	Specification	
	96-well block	**384-well block**
Maximum block ramp rate [1]	6.0°C/sec	5.0°C/sec
Maximum sample ramp rate	4.4°C/sec	3.5°C/sec
Temperature accuracy	±0.25°C (35–99.9°C)	±0.25°C (35–99.9°C)
Temperature range for protocol run	0.0–100.0°C	0.0–100.0°C
Temperature non-uniformity [2]	≤0.50	≤0.50
VeriFlex™ block	• 6 VeriFlex™ Zones • Supported: 25°C (5°C zone-to-zone) • Allowable [3]: 30°C (10°C zone-to-zone)	—
PCR volume range	• Supported: 10–100 µL • Allowable: 1–100 µL	• Supported: 5–20 µL • Allowable: 1–30 µL
Instrument memory	USB, 16GB on-board	USB, 16GB on-board
Display interface	8 inch color TFT LCD	8 inch color TFT LCD
Power **IMPORTANT!** If the supplied power fluctuates ±10% beyond the rated voltage, a power line regulator may be required. High or low voltages can adversely affect the electronic components of this instrument.	100–120 V ±10%, 50/60 Hz; 200–240 V ±10%, 50/60 Hz	100–120 V ±10%, 50/60 Hz; 200–240 V ±10%, 50/60 Hz
Installation category	Overvoltage Cat II (Portable equipment)	Overvoltage Cat II (Portable equipment)
Power consumption	Maximum consumption: 700 W	Maximum consumption: 700 W
	Average during thermal cycling: 260 W	Average during thermal cycling: 260 W
	During sleep/ standby: 25 W	During sleep/ standby: 25 W

[1]   Reaction volume of 1 µL.

[2]   30 seconds after clock starts.

[3]   Temperature accuracy ±0.50 and Temperature non-uniformity ≤0.75.

Physical dimensions

Parameter	Instrument footprint	Recommended clearance	Total
Height	21.7 cm (8.54 in)	24 cm (9.44 in)[1]	46 cm (18.11 in)
Width	24.5 cm (9.65 in)	0 cm (0 in)	24.5 cm (9.65 in)
Depth	46.5 cm (18.31 in)	23.5 cm (9.25 in)[2]	70 cm (27.56 in)
Weight (96-well block model)	12 kg (26.5 lb)		
Weight (384-well block model)	13 kg (28.7 lb)		

[1] With the heated cover open.

[2] Allow enough ventilation space at the rear of the instrument to ensure adequate airflow and cooling.

Power and communication port symbols

Port	Description
∼	AC power cable port
⛩	10/100 Fast Ethernet port for connecting to a network
⇆	USB v2.0 port for connecting to an external network drive, jump drive, or other USB storage device
▣◀	USB v2.0 port for connecting to USB-enabled Wi-Fi Card

Location of power point and ports on the instrument

The following graphic displays the location of the power cord insertion point as well as the various ports provided in the instrument.
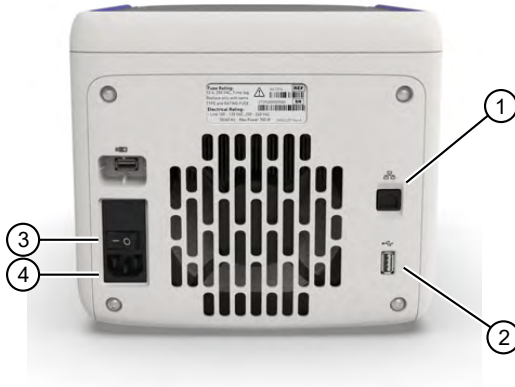
① Ethernet port
② USB port
③ Main power switch
④ Power cable port

Predefined Methods

Predefined run methods

The following default methods (distributed across ten categories) are pre-programmed on the instrument. A particular run method can appear in more than one category. These run methods are based on our recommended protocols and should be considered as starting points for the different applications. Your results may vary between instrument models, so some optimization may be needed.

The following table lists the categories and the run methods they include.

Table 5   Pre-defined categories and run methods

Category	Method name
Blank Template	• General PCR Run • Blank PCR 1 • Blank PCR 2
Basic PCR	• AmpliTaq™ 360 • AmpliTaq™ • Basic PCR Taq • DreamTaq™ DNA Polymerase 3-Step
Hot Start	• AmpliTaq Gold™ 360 • AmpliTaq Gold™ • AmpliTaq Gold™ Fast PCR Run • DreamTaq™ Hot Start DNA Master Mix • Phusion™ Hot Start II PCR Master Mix 2-Step • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ Direct PCR Universal Master Mix • Platinum™ Taq DNA Polymerase • Platinum™ Taq Master Mix • Platinum™ SuperFi II PCR Master Mix • Platinum™ SuperFi II PCR Master Mix 2-Step • Platinum™ SuperFi II PCR Master Mix 3-Step • Platinum™ II Taq Hot-Start PCR Master Mix 2-Step • Platinum™ II Taq Hot-Start PCR Master Mix 3-Step

Table 5 Pre-defined categories and run methods *(continued)*

Category	Method name
Sequencing	• BigDye™ Direct Cycle Sequence • BigDye™ Direct PCR Run • BigDye™ Kit Fast Run • BigDye™ Kit Standard Run • Collibri™ ES DNA Prep • Collibri™ PS DNA Prep • DreamTaq™ Hot Start DNA Master Mix • Phusion™ Hot Start II PCR Master Mix 2-Step • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ Direct PCR Universal Master Mix • Platinum™ SuperFi PCR Master Mix 2-Step • Platinum™ SuperFi PCR Master Mix 3-Step • Platinum™ SuperFi II PCR Master Mix • Platinum™ Taq Master Mix • Platinum™ II Taq Hot-Start PCR Master Mix 2-Step • Platinum™ II Taq Hot-Start PCR Master Mix 3-Step
Optimization	• Time Release Run • Touchdown PCR Run • DreamTaq™ Hot Start DNA Master Mix • Phusion™ Hot Start II PCR Master Mix 2-Step • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ Direct PCR Universal Master Mix • Platinum™ SuperFi PCR Master Mix 2-Step • Platinum™ SuperFi PCR Master Mix 3-Step • Platinum™ SuperFi II PCR Master Mix • Platinum™ Taq Master Mix • Platinum™ II Taq Hot-Start PCR Master Mix 2-Step • Platinum™ II Taq Hot-Start PCR Master Mix 3-Step
RT-PCR	SuperScript™ III 1-Step System SuperScript™ IV One-Step RT-PCR System

Table 5   Pre-defined categories and run methods *(continued)*

Category	Method name
High Fidelity	• AccuPrime™ PFX 2-Step • AccuPrime™ PFX 3-Step • AccuPrime™ Taq High Fidelity • Phusion™ Flash PCR Master Mix 2-Step • Phusion™ Flash PCR Master Mix 3-Step • Phusion™ High Fidelity DNA Polymerase 2-Step • Phusion™ High Fidelity DNA Polymerase 3-Step • Phusion™ Hot Start II PCR Master Mix 2-Step • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ Taq High Fidelity • Platinum™ SuperFi II PCR Master Mix • Platinum™ SuperFi II PCR Master Mix 2-Step • Platinum™ SuperFi II PCR Master Mix 3-Step
High Specificity	• AccuPrime™ PFX 2-Step • AccuPrime™ PFX 3-Step • AccuPrime™ Taq DNA Polymerase • AccuPrime™ Taq High Fidelity • DreamTaq™ Hot Start DNA Master Mix • Phusion™ Hot Start II PCR Master Mix 2-Step • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ Direct PCR Universal Master Mix • Platinum™ SuperFi PCR Master Mix 2-Step • Platinum™ SuperFi PCR Master Mix 3-Step • Platinum™ SuperFi II PCR Master Mix • Platinum™ Taq Master Mix • Platinum™ II Taq Hot-Start PCR Master Mix 2-Step • Platinum™ II Taq Hot-Start PCR Master Mix 3-Step
Next-Gen Sequencing	TargetSeq™ Exome Enrichment
Long PCR	• AccuPrime™ Taq High Fidelity • Phusion™ Hot Start II PCR Master Mix 3-Step • Platinum™ SuperFi PCR Master Mix • Platinum™ SuperFi II PCR Master Mix • Platinum™ Taq High Fidelity

These run methods cannot be edited or deleted, but if you save them with a different name or to a different folder, you can edit them.

The following tables describe the method details.

Note: For illustration purpose, the tables display maximum ramp rate.

AccuPrime™ PFX 2-Step Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AccuPrime™ PFX 3-Step Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	25	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AccuPrime™ Taq DNA Polymerase Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	25	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AccuPrime™ Taq High Fidelity Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	25	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	15	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		52.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AmpliTaq™ 360 Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	95.0	72.0			
	Hold Time	180	30	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		58.0	4.0			
	Hold Time		30	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AmpliTaq Gold™ 360 Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	300	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		30	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

AmpliTaq Gold™ Fast PCR Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	96.0	72.0			
	Hold Time	600	3	10			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		62.0	4.0			
	Hold Time		3	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		5				

[1] Values for VeritiPro™ Thermal Cycler.

AmpliTaq Gold™ Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	300	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

AmpliTaq™ Method

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Basic PCR Taq Method

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

BigDye™ Direct Cycle Sequence Method

Cycle/Step		Stage					Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4	5		
Cycles		1	1	1	25	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0	6.0		
	Temperature	37.0	80.0	96.0	96.0	4.0		
	Hold Time	900	120	60	10	Infinite		
Step 2	Ramp Rate	—	—	—	6.0	—		
	Temperature				50.0			
	Hold Time				5			
Step 3	Ramp Rate	—	—	—	6.0	—		
	Temperature				60.0			
	Hold Time				75			

[1] Values for VeritiPro™ Thermal Cycler.

BigDye™ Direct PCR Run Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	96.0	72.0			
	Hold Time	600	3	120			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		62.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

BigDye™ Kit Fast Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	25	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	96.0	96.0	4.0			
	Hold Time	60	10	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		50.0				
	Hold Time		5				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		75				

[1] Values for VeritiPro™ Thermal Cycler.

BigDye™ Kit Standard Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	25	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	96.0	96.0	4.0			
	Hold Time	60	10	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		50.0				
	Hold Time		5				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		240				

[1] Values for VeritiPro™ Thermal Cycler.

Collibri™ ES DNA Prep Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

Collibri™ PS DNA Prep Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

DreamTaq™ Hot Start PCR Master Mix Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	25–40	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	120	30	600			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		60				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

DreamTaq™ DNA Polymerase 3-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	95.0	95.0	72.0	4.0		
	Hold Time	120	30	600	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		30				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

General PCR Method

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ Flash PCR Master Mix 2-Step

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	30	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	10	1	60	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		15				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ Flash PCR Master Mix 3-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	30	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	10	1	60	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		65.0				
	Hold Time		5				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		15				

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ High Fidelity DNA Polymerase 2-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	30	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	600	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ High Fidelity DNA Polymerase 3-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	30	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	600	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		65.0				
	Hold Time		30				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ Hot Start II PCR Master Mix 2-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

[1] Values for VeritiPro™ Thermal Cycler.

Phusion™ Hot Start II PCR Master Mix 3-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		10				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ Direct PCR Universal Master Mix Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	40	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		20				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ SuperFi PCR Master Mix Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	95.0	95.0	68.0	4.0		
	Hold Time	120	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		10				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ SuperFi PCR Master Mix 2-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ SuperFi PCR Master Mix 3-Step

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		10				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ SuperFi II PCR Master Mix Method

Cycle/Step		Stage				Reaction volume (μL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	300	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		10				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ Taq DNA Polymerase Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	30	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	30	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ Taq High Fidelity Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ Taq Master Mix Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	30	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ II Taq Hot-Start PCR Master Mix 2-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	30	1	1	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	6.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	600	Infinite		
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

[1] Values for VeritiPro™ Thermal Cycler.

Platinum™ II Taq Hot-Start PCR Master Mix 3-Step

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	35	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	6.0	—	—		
	Temperature		60.0				
	Hold Time		15				
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		15				

[1] Values for VeritiPro™ Thermal Cycler.

SuperScript™ III 1-Step System Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		1	40	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	60.0	94.0	68.0			
	Hold Time	900	15	300			
Step 2	Ramp Rate	6.0	6.0	6.0	—		
	Temperature	94.0	55.0	4.0			
	Hold Time	120	30	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

SuperScript™ IV One-Step RT-PCR System Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	40	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	60.0	94.0	68.0			
	Hold Time	900	15	300			
Step 2	Ramp Rate	6.0	6.0	6.0	—		
	Temperature	94.0	55.0	4.0			
	Hold Time	120	30	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for VeritiPro™ Thermal Cycler.

Time Release Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Cycles		1	40	1	—	50	105.0
Step 1	Ramp Rate[1]	6.0	6.0	6.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	6.0	6.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	6.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for VeritiPro™ Thermal Cycler.

TargetSeq™ Exome Enrichment Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		72	–	–	–	50	105.0
Step 1	Ramp Rate[1]	6.0	–	–	–		
	Temperature	47.0					
	Hold Time	3600					

[1] Values for VeritiPro™ Thermal Cycler.

Touchdown PCR Method

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	**2**	**3**	**4**		
Cycles		20	10			50	105.0
Step 1	Ramp Rate[1]	6.0	6.0				
	Temperature	94.0	94.0				
	Hold Time	15	15				
Step 2	Ramp Rate	6.0	6.0	—	—		
	Temperature	65.0	55.0				
	Hold Time	30	30				
	AutoDelta Temperature	-0.5	—				
	AutoDelta Starting Cycle	1	—				

[1] Values for VeritiPro™ Thermal Cycler.

E | About the Thermal Cycler Fleet Control Software

The Applied Biosystems™ Thermal Cycler Fleet Control Software (Cat. No. A40070) is used to manage users, methods, run reports, and multiple PCR instruments through a single user interface. The software is compatible with all Applied Biosystems™ Thermal Cyclers. The Thermal Cycler Fleet Control Software can be purchased separately, and is not included with the VeritiPro™ Thermal Cycler. For more information visit **thermofisher.com**.

Connect the thermal cycler to the network

1. Connect the thermal cycler to your network using an Ethernet cable.

2. Go to **Settings Menu ▸ Admin Menu ▸ Set IP Address** to set up your thermal cycler network configuration.