

# MiniAmp™ and MiniAmp™ Plus Thermal Cycler

## INSTALLATION, USE, AND MAINTENANCE

for use with Invitrogen™ and Applied Biosystems™ PCR reagents

**Catalog Numbers** A27834, A27835

**Publication Number** MAN0017492

**Revision** B.0



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



# Contents

■ <b>CHAPTER 1</b>	Product information .....	7
	Product description .....	7
	Instrument overview .....	7
■ <b>CHAPTER 2</b>	Start, sign on, and configure the instrument .....	8
	Required materials not provided .....	8
	Set up the MiniAmp™ or MiniAmp™ Plus Thermal Cycler .....	8
	Touchscreen controls .....	10
	Home screen controls .....	10
	Enter text .....	11
	Enter numbers .....	11
■ <b>CHAPTER 3</b>	Connect the instrument for remote monitoring ( <i>Optional</i> ) .....	12
	Set up the wired connection .....	12
	Set up the wireless connection .....	14
	Create a user profile on the PCR instrument .....	15
	Create a Connect account .....	15
	Link the PCR instrument to Connect .....	15
	Connect by PC .....	16
■ <b>CHAPTER 4</b>	Methods .....	17
	Create/Edit Method .....	17
	Create a new Method .....	17
	Create a custom method .....	18
	Edit a Method .....	19
	Manage protocols and Advanced options .....	21
	Manage Methods and Folders .....	25
	Open and run Method .....	28
	Load samples into the instrument .....	28
	Perform a run .....	29
	Monitoring a run .....	31

View and export the run report .....	34
Remove the samples from the instrument .....	34
<b>■ CHAPTER 5 Maintenance .....</b>	<b>35</b>
Clean the instrument .....	35
Preparation .....	35
Clean the touchscreen .....	35
Clean the sample wells .....	35
Decontaminate the sample wells .....	36
Clean the heated cover .....	36
Decontaminate the heated cover .....	36
Replace the fuses .....	37
Required materials .....	37
Procedure .....	37
Upgrade the system firmware .....	37
Determine firmware version on instrument .....	37
Download new firmware .....	38
To upgrade the instrument with the new firmware: .....	38
Self Verification test .....	39
Procedure .....	39
<b>■ APPENDIX A Troubleshooting .....</b>	<b>40</b>
Troubleshooting .....	40
Return an instrument for service .....	41
<b>■ APPENDIX B Set up mobile connectivity on a mobile device .....</b>	<b>43</b>
Set up mobile connectivity on a mobile device .....	43
<b>■ APPENDIX C Recommended instrument settings .....</b>	<b>44</b>
Recommended instrument settings .....	44
Instrument settings .....	45
Restore Factory Settings (Administrator profile only) .....	48
About Instrument .....	48
Run history .....	49
Maintenance and services .....	50
USB shortcuts .....	50
Manage users (Administrator profile only) .....	52

■ <b>APPENDIX D</b>	Ordering information .....	53
	Instrument part numbers .....	53
	Consumables .....	53
■ <b>APPENDIX E</b>	Instrument specification and layout .....	55
	Site requirements .....	55
	Environmental requirements .....	55
	Temperature and humidity requirements .....	55
	Pollution .....	55
	Altitude .....	55
	Technical specifications .....	56
	System specifications .....	57
	Power and communication port symbols .....	57
	Location of power point and ports on the instrument .....	58
■ <b>APPENDIX F</b>	Predefined run methods .....	59
■ <b>APPENDIX G</b>	About the Thermal Cycler Fleet Control Software .....	77
	Connect the thermal cycler to the network .....	77
■ <b>APPENDIX H</b>	Safety .....	78
	Symbols on the instrument .....	78
	Safety alerts on this instrument .....	79
	Location of safety labels on the instrument .....	80
	China RoHS Compliance .....	81
	Safety information for instruments not manufactured by Thermo Fisher Scientific .....	82
	Instrument safety .....	82
	General .....	82
	Physical injury .....	82
	Electrical safety .....	82
	Cleaning and decontamination .....	83
	Safety and electromagnetic compatibility (EMC) standards .....	83
	Safety .....	83
	EMC .....	84
	Environmental design standards .....	84
	Chemical safety .....	85
	Biological hazard safety .....	86

- **APPENDIX I** Documentation and support ..... 87
  - Placeholder for related documentation ..... 87
  - Customer and technical support ..... 87
  - Limited product warranty ..... 87



# Product information

## Product description

The MiniAmp™ Thermal Cycler and the MiniAmp™ Plus Thermal Cycler are end-point thermal cyclers, 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.

## Instrument overview

The MiniAmp™ Thermal Cycler (Cat. No. A27834) and MiniAmp™ Plus Thermal Cycler (Cat. No. A37835) allows you to:

- Optimize your PCR with the help of the Veriflex™ block (MiniAmp™ Plus Thermal Cycler 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 MiniAmp™ Plus Thermal Cycler**

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

Detailed specifications for the MiniAmp™ Thermal Cycler and MiniAmp™ Plus Thermal Cycler are found in Appendix E, “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 MiniAmp™ or MiniAmp™ Plus Thermal Cycler

---

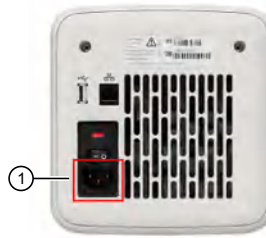
**IMPORTANT!** Save the packing materials and box in case you need to ship the instrument in for service.

---

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 “Technical specifications” on page 56).

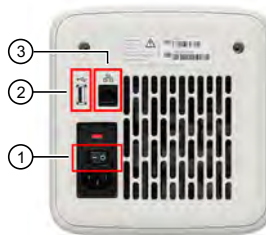


5. Connect the instrument to a power outlet.
  - a. Connect the power cord to the instrument.



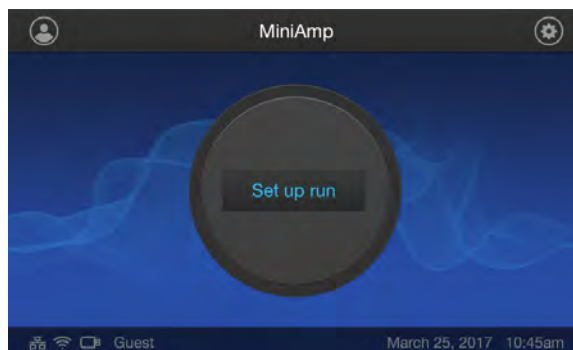
① Power cord port

- b. Install any desired electrical protective devices.
  - c. Connect the power cord to a wall plug.
6. Press the power button, 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. When you power on the instrument, the instrument will take under a minute to start up.










- ① Power switch
- ② USB port
- ③ Ethernet port

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
	Scroll up and down through a list of items.
	Advance and return through stages
	Close the current modal window.

## Home screen controls

**Table 2 Home screen controls and indicators**

Button	Function
	Go to Set up run screen View instrument status <ol style="list-style-type: none"> <li>1. Current block temperature</li> <li>2. Time remaining</li> <li>3. Status of the block (pre-heating, running, etc.)</li> </ol>
	Go to Sign in screen
	Go to Settings screen
	Indicates whether the Wi-Fi is on or off.
	Indicates whether a USB device is inserted into the instrument.
	Indicates whether the instrument is connected to the network.

## Enter text

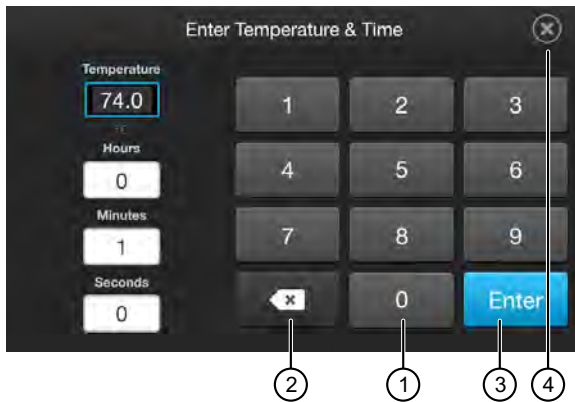
When you press a field that requires the input of text, the text editor, as seen in the following figure, opens.



- 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

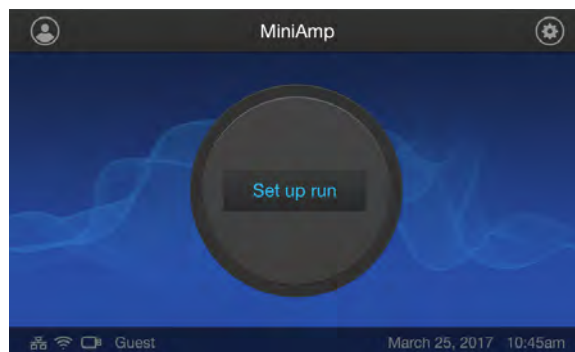
# 3

## Connect the instrument for remote monitoring (*Optional*)

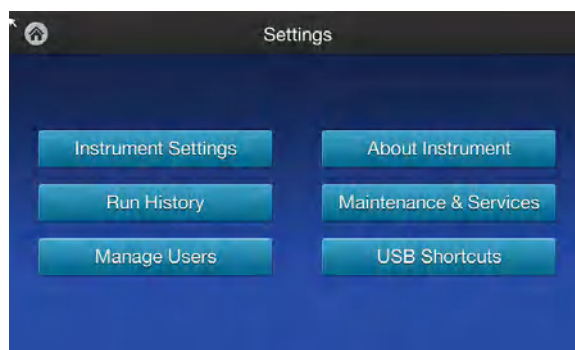
### Set up the wired connection

See “Set up the MiniAmp™ or MiniAmp™ Plus Thermal Cycler” on page 8. Set up the system for instructions on connecting the instrument to the network. To set up the wired connection:

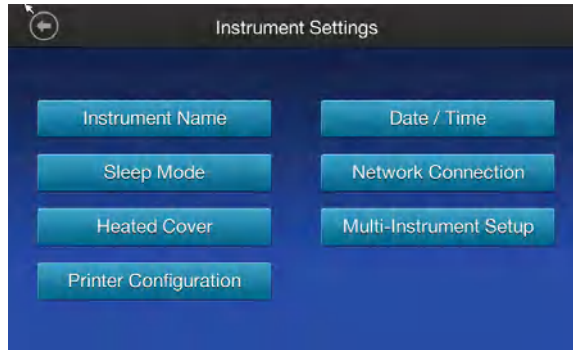
1. On the **Home** screen, press  (**Settings**).



2. In the **Settings** screen, press **Instrument Settings**.



3. In the **Instrument Settings** screen, press **Network Connection**.

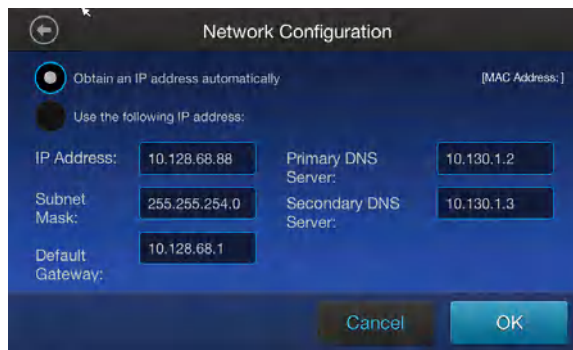


4. In the **Network Connection** screen, press **Wired**.



5. Select which method to obtain an IP address.

Obtain IP address	Description
Automatically	Press <b>Obtain an IP address automatically</b> (using DHCP). A check mark appears when DHCP is selected.
Manually	Press <b>Use the following IP Address</b> , 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. Press **OK** to save the changes and go back to the **Network Connection** screen or press **Cancel** to exit the screen without saving the changes.

## Set up the wireless connection

See “Set up the MiniAmp™ or MiniAmp™ Plus Thermal Cycler” on page 8 on connecting the USB-enabled Wi-Fi Card into the instrument.

1. Refer to “Set up the wired connection” on page 12 Steps 1 through 3 to arrive at the Network Connection screen.
2. In the **Network Connection** screen, press  (**Wireless**).



---

**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.

---

3. Once a wireless connection has been detected, a list of the available networks will be displayed in the **Choose Network** screen. Press the network name of your choice or press **Join Other Network**.

---

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

---

4. In the **Configure and Join Network** screen, press the **Network Name** field, then enter the name and security type of the network.
5. From the **Security type** drop-down menu, press to select the security type and enter the relevant information on the screen.

---

**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.

---


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

---

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

---

## Create a user profile on the PCR instrument


1. Press  (**Sign In**) > Get started > Create profile.
2. Fill in the required text fields and follow the prompts to create your user profile.

## Create a Connect account

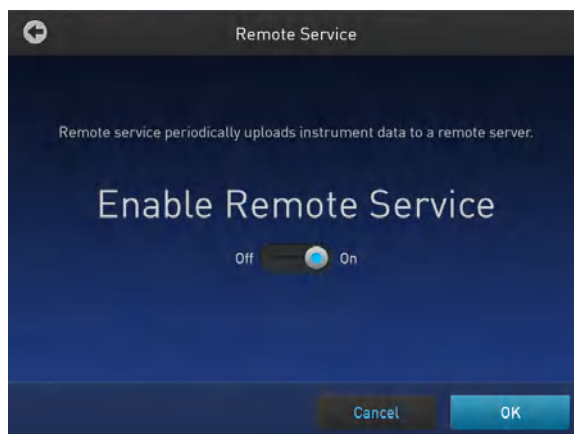
1. Go to [thermofisher.com/connect](https://thermofisher.com/connect) from your web browser.
2. Click **Sign up now** and follow the prompts to create an account.

## Link the PCR instrument to Connect

The procedure to link the Administrator profile to Connect only needs to be performed the first time the PCR instrument is added to Connect.

1. Press  (**Sign In**) > **Sign In**, then select the Administrator profile.
2. Log in. (The default password for the Administrator profile is "password<last four digits of instrument serial number>").  
You will then be redirected back to the home screen.

3. Press **⚙️ (Settings) > Instrument Settings > Remote Service.**
4. Set **Remote Service** to "On", then press **OK.**



5. Press **👤 (My Profile)** on the home screen.
6. Select **Cloud**, then enter the Connect login and password associated with the Administrator profile.
7. Press **Link Account.**  
Upon successful authentication, the Administrator profile is linked to Connect.

---

**Note:** If an instrument is already linked to Connect, you will have the option to unlink the instrument if desired.

---

## Connect by PC

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 **MiniAmp** 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.



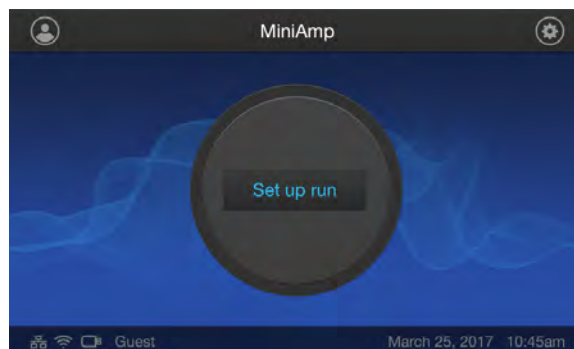
# 4


# Methods

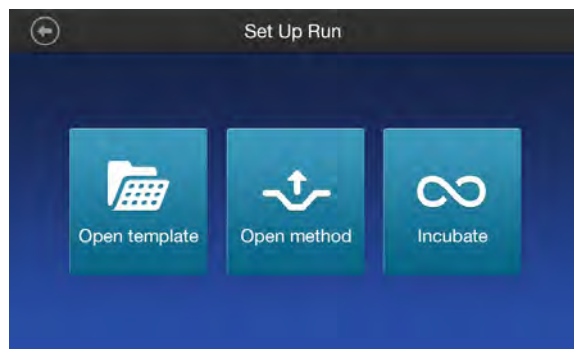
## Create/Edit Method

### Create a new Method

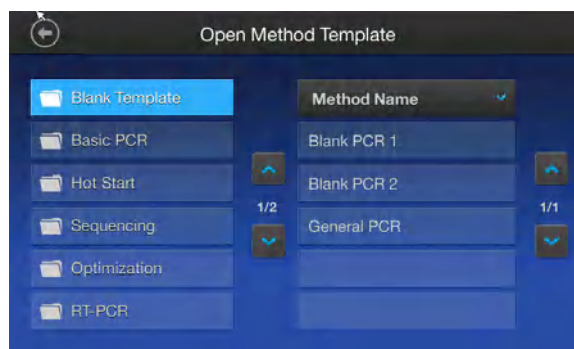
1. In the **Home** screen, press **Set Up Run**.



2. In the **Setup Run** screen, press  (**Open Template**).



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



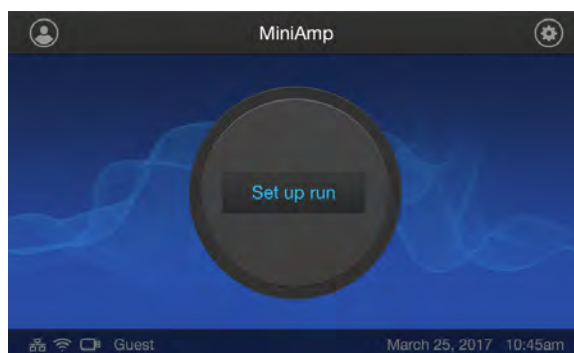
4. Press **Edit**. See “Edit a Method” on page 19 for instructions on editing a method.




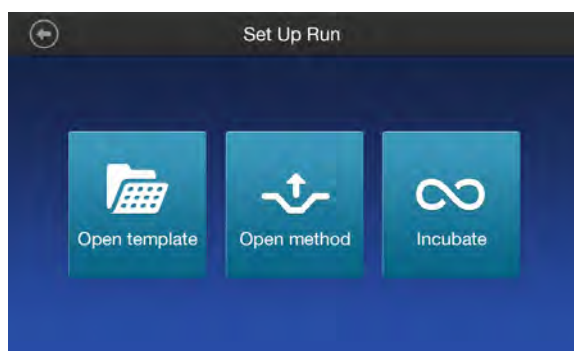
5. (Optional) Press **Next** ▶ **Start Run**.

## Create a custom method

1. In the **Home** screen, press **Set Up Run**.



2. In the **Setup Run** screen, press  (**Open Method**).

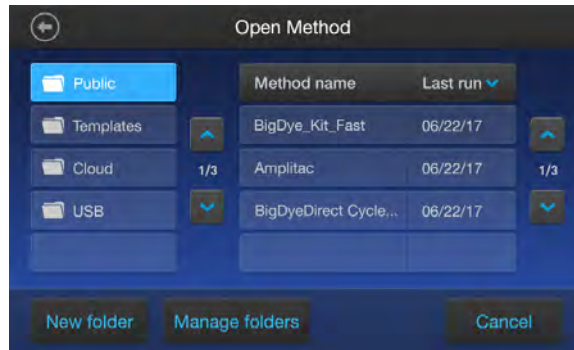


3. Select a folder , then select an appropriate template from the **Method Name** list.

---

**Note:** At least one method must have previously been set up in order for the list to be populated.

---



4. Press **Edit**. See “Edit a Method” on page 19 for instructions on editing a method.



5. (Optional) Press **Next** ▶ **Start Run**.

## Edit a Method

1. Press **Edit** or anywhere on the graphical temperature profile to start editing the parameters.



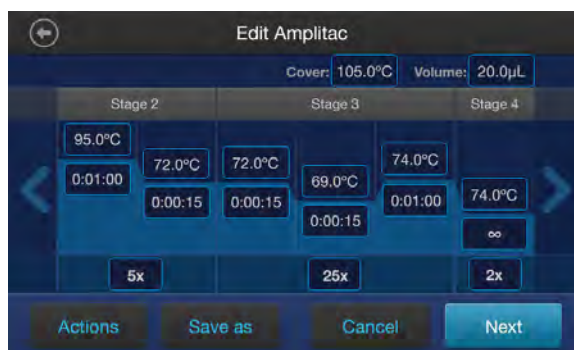
2. Edit any of the parameters that are surrounded by black fields indicating that they are editable (temperature, time, heated cover, number of cycles, and volume).



3. Press **Save**, see “Save a Method” on page 20.
4. (Optional) Press **Actions** to manage the steps, stages, and advanced options (see “Manage protocols” on page 21)
5. (Optional) Press **Next** to go to **Start Run**.


## Save a Method

1. Once you have edited a run method, press **Save As** to save the method.



2. In the **Save As** 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. Press , then select the destination folder where you want to save the run method, then press **Save**.

## Manage protocols and Advanced options

### Manage protocols

1. Press **Actions** to manage the steps, stages, and advanced options.



2. Select an option under **Manage protocols**.

Press	Description
<b>Add/Remove Steps</b> , then $\ominus$ or $\oplus$	To add/delete a step
<b>Add/Remove Stages</b> , then $\ominus$ or $\oplus$	To add/delete a stage

3. Press **Done** to finish managing the steps.

### Advanced options

The **Edit Method** screen serves as a preview of the run method you have selected.

Press **Actions**, then select one of the **Advanced Options** to edit the VeriFlex™ block, AutoDelta, Ramp Rates, and Simulation Mode parameters.

### VeriFlex™ block

1. Press **VeriFlex™** to edit the VeriFlex™ block parameter.
2. Press the  icon to choose the steps to apply VeriFlex™ temperature control.




3. In the **Edit VeriFlex™** screen, adjust the temperature range across the block for the selected steps.



4. (Optional) Press **Remove VeriFlex™** to remove an existing VeriFlex™ block setting.
5. Press **Done** when finished or **Cancel** to exit the screen.

## AutoDelta

1. Press **AutoDelta** to apply the AutoDelta setting to a step.
2. Press the  icon to choose the steps you want to apply AutoDelta.



3. In the **Edit AutoDelta** screen, enter the information for setting up AutoDelta.
4. Enter the **Starting Cycle**.
5. Enter the DELTA temperature and/or time.  
Press the '-' and '+' toggle button to set the DELTA values to be either negative or positive, respectively.
6. (Optional) Press **Remove AutoDelta** to remove the AutoDelta setting.

- Press **Done** when finished or **Cancel** to exit the screen.



- Press **Done** to return to the **Edit Method** screen.

## Ramp rates

- Press **Ramp Rates** to edit the ramp rate of the individual steps.



- Press a ramp rate to open that ramp rate editor, then edit the ramp rate.
- Press **Done** to save the selection or **Cancel** to exit the screen.

---

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

---



## Simulation mode

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

**Table 3 Simulation modes available on the MiniAmp™ and MiniAmp™ Plus Thermal Cycler**

MiniAmp™ Thermal Cycler	MiniAmp™ Plus Thermal Cycler
<ul style="list-style-type: none"> <li>• No Simulation (default)</li> <li>• Applied Biosystems™ 2720 Thermal Cycler</li> <li>• Bio-Rad™ T100™</li> <li>• Bio-Rad™ MyCycler™</li> <li>• Takara™ Dice PCR Thermal Cycler</li> <li>• BIOER™ XP Cycler</li> </ul>	<ul style="list-style-type: none"> <li>• No Simulation (default)</li> <li>• Applied Biosystems™ 2720 Thermal Cycler</li> <li>• Bio-Rad™ T100™</li> <li>• Bio-Rad™ MyCycler™</li> <li>• MJ Research™ PTC-200</li> <li>• Takara™ Dice PCR Thermal Cycler</li> <li>• BIOER™ XP Cycler</li> </ul>

**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:** Press **No Simulation** to run the instrument in the default mode.

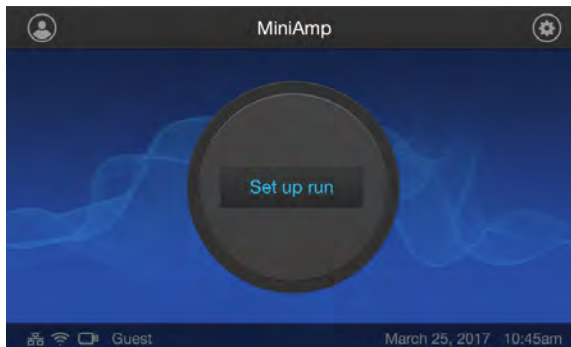
3. Press **Done** to save the selection or **Cancel** to exit the screen.



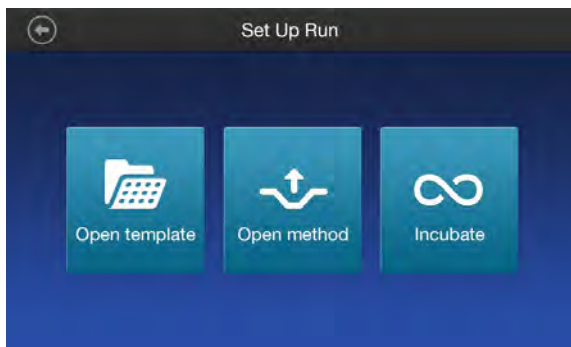
## Manage Methods and Folders

### Create a New Folder

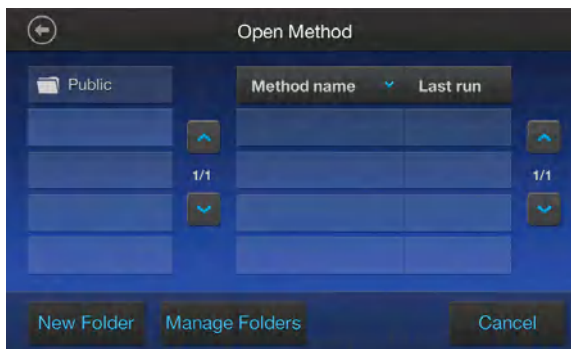
1. In the instrument **Home** screen, press **Set Up Run**.



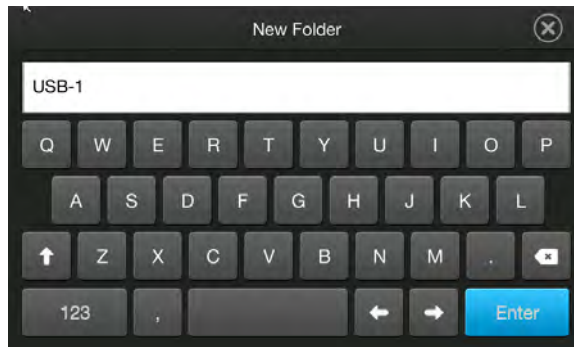
2. In the **Setup Run** screen, press **Open Method**.



3. In the **Open Method** screen, press **New Folder**.



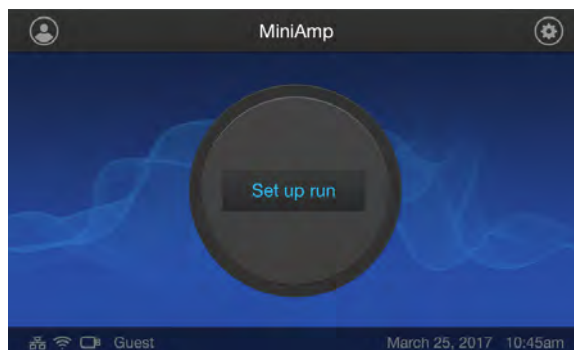
4. Enter a name for the new folder being created and press **Enter**.



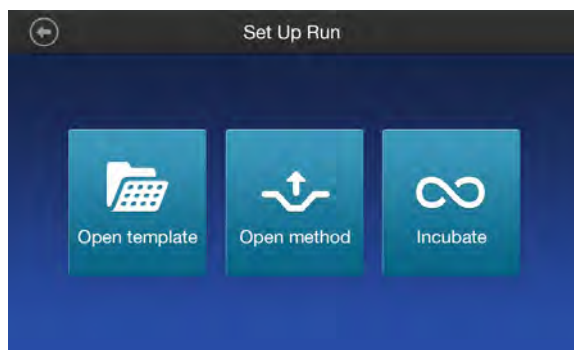
## Manage Folders

If the instrument has been connected to Connect, it will automatically display **Cloud** as one of the folder options.

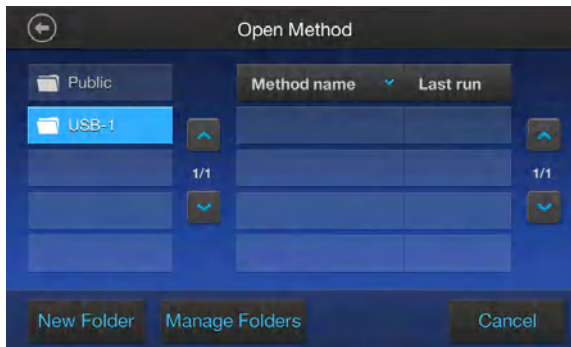
1. In the instrument **Home** screen, press **Set Up Run**.



2. In the **Setup Run** screen, press **Open Method**.

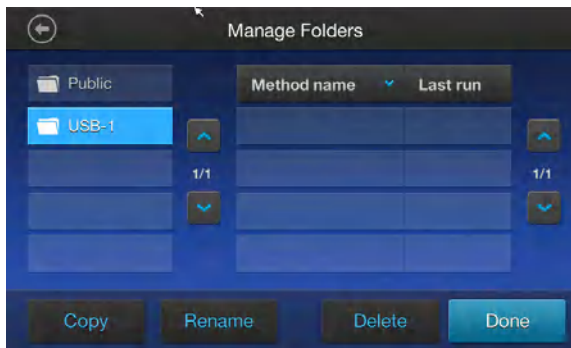


- In the **Open Method** screen, press **Manage Folders**.

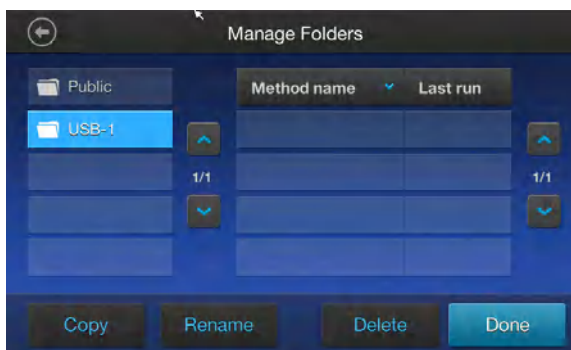


- In the **Manage Folders** screen:

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



- To Copy a method, select the **Method**, then press **Copy**.




---

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

---

**Note:** Methods can be copied to an existing folder or a new folder.

---

6. In the **Copy Method** screen, select the folder you would like to copy the method to, or press **New Folder**.
7. Press **Paste Method**.



8. Press **Done** to save the changes and return to the **Open Method** screen.

## Open and run Method

### Load samples into the instrument

---

**Note:** Refer to *PCR Starter Kit For MiniAmp™ and MiniAmp™ Plus PCR systems* (Pub. No. 100070431) for instructions on filling, sealing, and loading MicroAmp™ reaction plates, tube strips, and tubes.

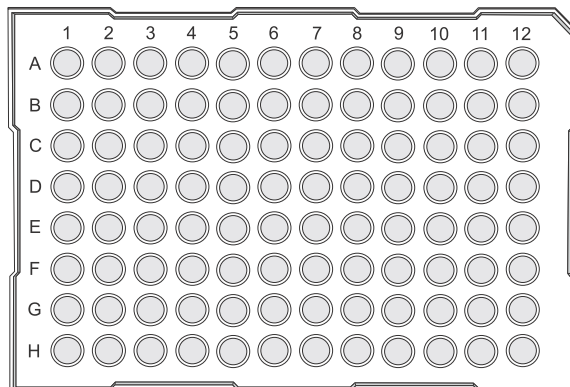
---

### 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 plate.




1. 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:

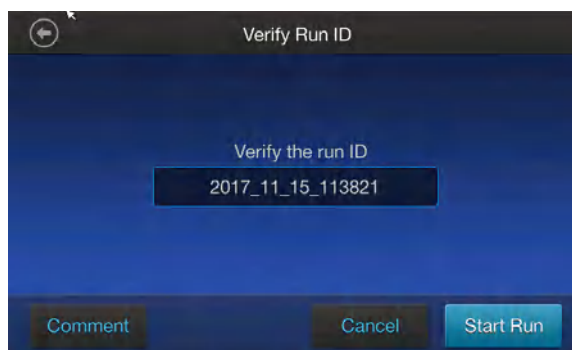


3. Close the heated cover.

## Perform a run

Prepare your samples and load the sample block(s) as described in “Load samples into the instrument” on page 28.

1. Close the cover.
2. Start the run from the **Home** screen in one of the following ways. Press:
  -  **(Open Template)**, see “Create a new Method” on page 17
  -  **(Open Method)**, see “Create a custom method” on page 18
  -  **(Incubate)**
3. Press **Next**, to display the **Run Parameters** screen.



4. (Optional) In the **Run Parameters** screen, press 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) Press **Comment** to enter any comments about the run.
6. Press **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 press **Done** after the run has finished.

## Perform a run on multiple instruments

1. Press **⚙️ (Settings) > Instrument Settings > Multi-Instrument Setup**.
2. In the **Multi-Instrument Setup** screen, press the **Off/On** toggle buttons to make the instrument visible and to find other instruments.

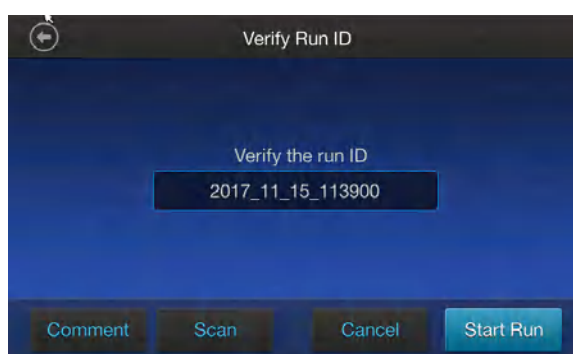
Option	Description
Make visible	Press the <b>Off/On</b> toggle button to make the instrument on which you are running an experiment visible to other instruments on the network
Find other instruments	Press the <b>Off/On</b> toggle buttons to find other instruments on the network.

3. Press **⬅️ ▶️ ⬅️ ▶️ 🏠** to return to the **Home** screen.
4. Press **Set Up Run** and select **📄 (Open Template)** or **🔗 (Open Method)** and proceed to the **Start Run** screen. See “Perform a run” on page 29
5. In the **Start Run** screen, press **Scan**.

---

**Note:** The **Scan** button appears in the **Start Run** screen when you enable the multi-instrument run.

---



**Note:** The instrument starts scanning for all available MiniAmp™ and MiniAmp™ Plus 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. Press **Start Run**.

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

8. Remove the samples and press **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, press  (**Settings**) ▶ **Run History** ▶ **Run ID** to view the run history file.
3. (Optional) Press **Print** to print.

---

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

---

4. Press **Export** to save the report on a USB memory device.

## 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.



## 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. 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” on page 35.
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” on page 35.
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 10A, 250VAC, size: 5 x 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

### 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. Press  (**Settings**) > **About Instrument**.
2. View current firmware version.

## Download new firmware

1. Go to [thermofisher.com](http://thermofisher.com) from your web browser.
2. Click **Product Support > Technical Resources > Product Support Software, Patches & Updates**.
3. Select MiniAmp™ and MiniAmp™ Plus 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.

## To upgrade the instrument with the new firmware:

---

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

---

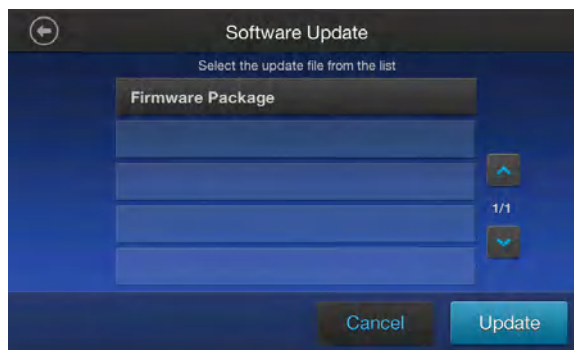
1. Insert the USB memory device with the new firmware in the USB port of your instrument.

---

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

---

2. Press **⚙ (Settings) > Maintenance & Services > Software Update**.  
The Software Update screen opens:



3. Select the new firmware file from the USB memory device, then press **Update**.

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

---

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

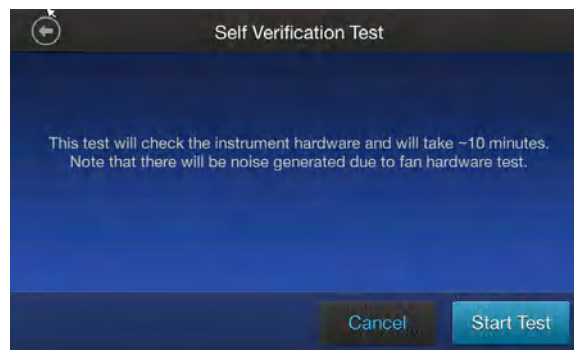
---

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.

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, press **Settings** ▶ **Maintenance & Services** ▶ **Self Verification Test**
2. In the **Self Verification Test** screen, press **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. Press **Export** to save the test report to a USB drive or **Close** to exit the screen.



# Troubleshooting

## Troubleshooting

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

Observation	Possible cause	Recommended action
Slow screen response or screen changes sporadically.	Screen is out of calibration.	Call service to redo touchscreen calibration.
Instrument reports error(s).	Hardware malfunction.	Run the self verification test "Procedure" on page 39.
Reduction in instrument performance due to incorrect temperature readings.	Temperature sensor out of calibration.	Run the Cycle Performance Test.
		Call the field service representative to perform the temperature verification test.
		Perform the 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.
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 <b>Instrument Name</b> screen set to No.	In <b>Instrument Name</b> 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.



Observation	Possible cause	Recommended action
No response when you power on the instrument.	Not connected to power source.	Switch power on.
		Connect power cord.
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.

## 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 26 and “Recommended instrument settings” on page 44. This practice ensures that if the service center sends you a replacement instrument, you can restore the run methods and other settings.

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. Fax the Certificate of Instrument Decontamination 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:** Repairs for instruments without the Certificate of Instrument Decontamination are delayed.

---

6. Affix the provided postage to the box, then ship the instrument to the designated facility.  
The repair process requires 2 to 3 weeks.



# Set up mobile connectivity on a mobile device

## Set up mobile connectivity on a mobile device

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

1. For iPad™ or iPhone™ devices, download the application from the Apple™ App Store by searching for Instrument Connect by Thermo Fisher Scientific.
2. For Android devices, download the application from Google™ Play by searching for Instrument Connect by Thermo Fisher Scientific.
3. Log in to the instrument connect mobile application using your Connect login and password (See page 12 for details).

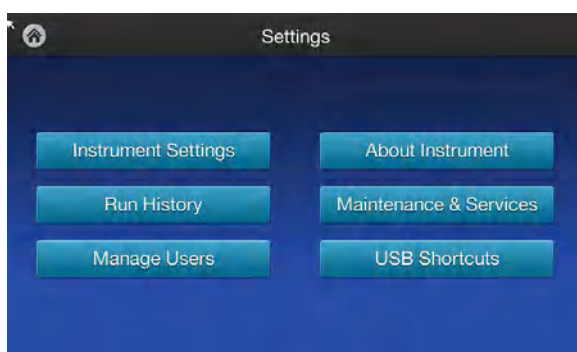




# Recommended instrument settings

## Recommended instrument settings

Press  (**Settings**) and access the **Settings** screen to configure the instrument.



---

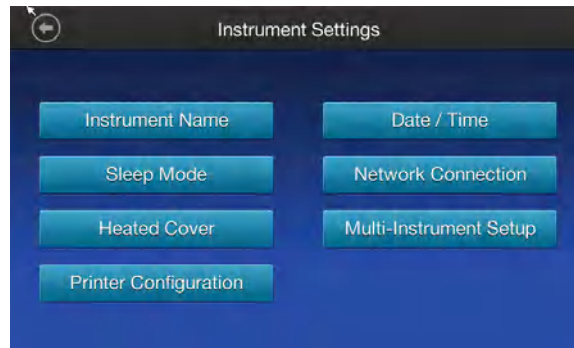
**Note:** **Manage Users** is only visible when signed in as an administrator.

---



## Instrument settings

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



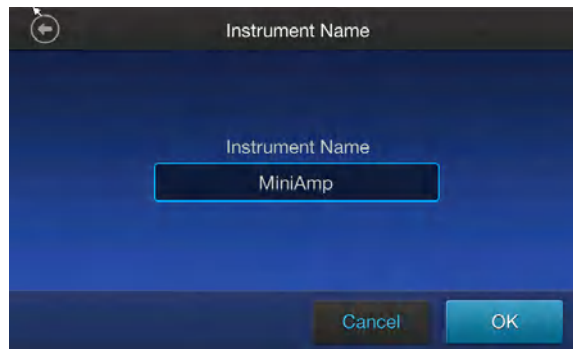
- **Instrument name**

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

---

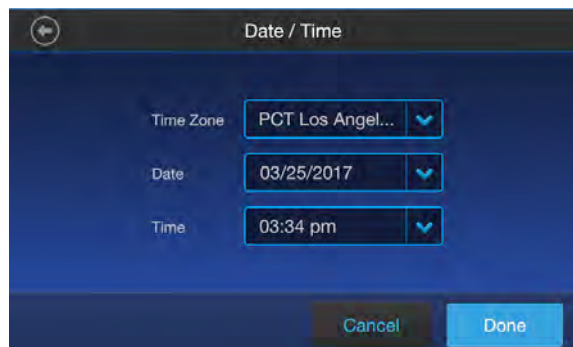
**Note:** The instrument name cannot have spaces. Separate consecutive characters with a hyphen or underscore; for example, *My\_Instrument*.

---



- **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**.

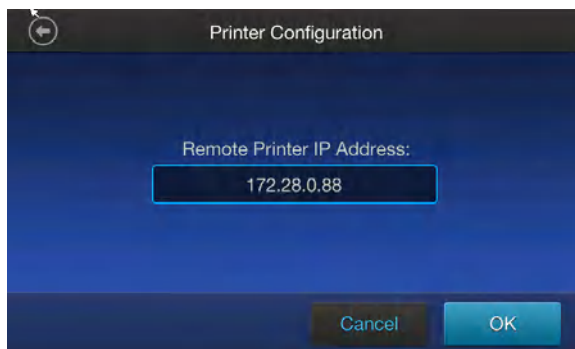
- **Multi-instrument setup**

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 12 and “Set up the wireless connection” on page 14.



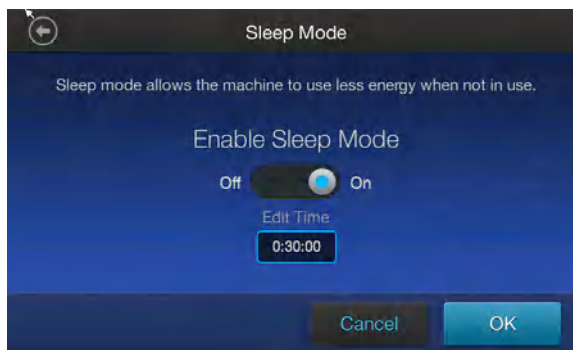
- ① Wireless panel
- ② Wired panel

- **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.

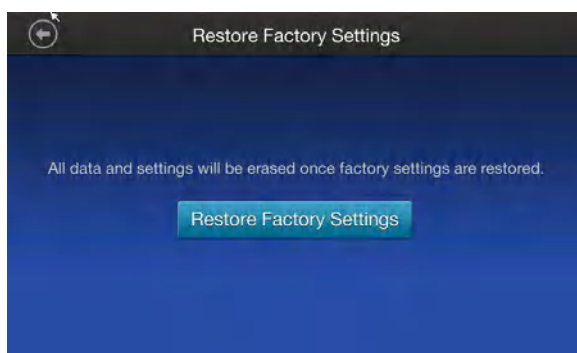


- **Language**

- 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.

## Restore Factory Settings (Administrator profile only)

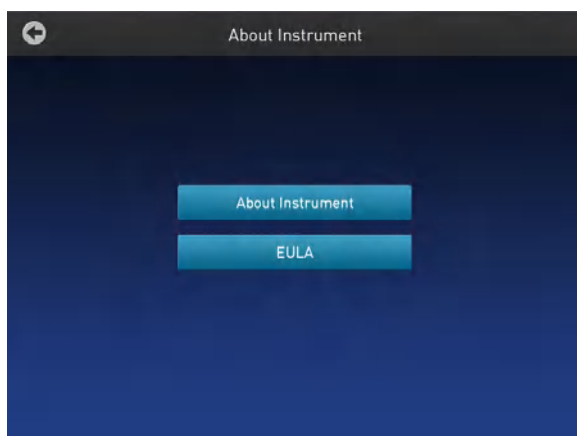
Press **Restore Factory Settings** to remove all the data and customized settings and revert to factory settings. All data and settings will be erased once factory settings are restored. At the end of the restoration process, the message, "Your instrument has been restored." is displayed and the instrument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



## About Instrument

Press **About Instrument** to find out more information about the instrument and view the End User License Agreement (EULA).

- Press **About Instrument** to find out more about the instrument (e.g., firmware version and instrument statistics).
- Press **EULA** to view the End User License Agreement. You can also save the EULA document to a USB drive.







## Run history

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

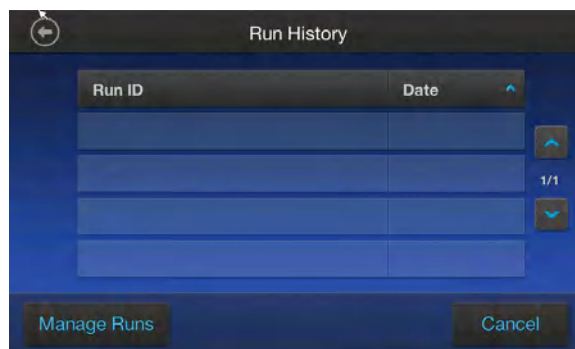
- Select a particular Run ID to view the details of that run.



- Press **Export** to save the run details to a USB memory device, or **Print** to print the run details.



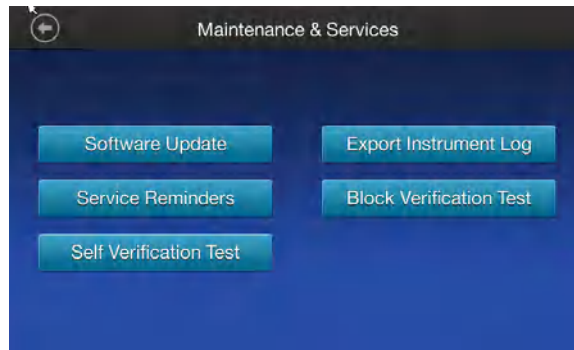
**Note:** If you are signed in with the Administrator profile, you can use **Manage Runs** function to perform functions like deleting a run history.





## Maintenance and services

Press **Maintenance & Services** to set the following instrument parameters.



---

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

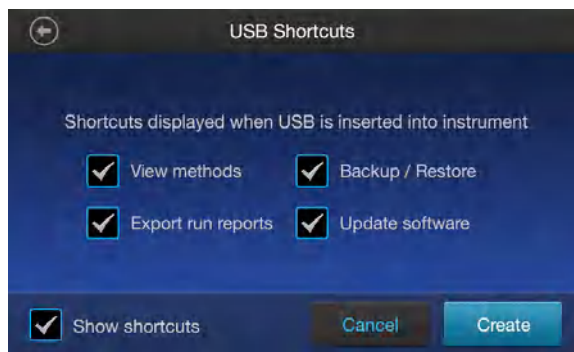
---

- Press **Software Update** to update the System firmware. See “Upgrade the system firmware” on page 37 for instructions on updating the firmware.
- Press **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.
- Press **Service Reminders** to set the time interval for the service reminders. Use the **Off** and **On** toggle button to set the service reminder. Select "On" to make the time interval field visible, then set the time interval field to choose the interval at which reminders are displayed.
- Press **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.
  - Press **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.
  - Press **Verify Cycle Performance** to check the cycle performance of the instrument.
- Press **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.

## 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.

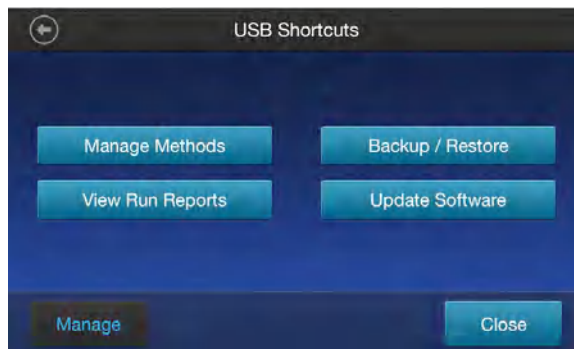


---

**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.

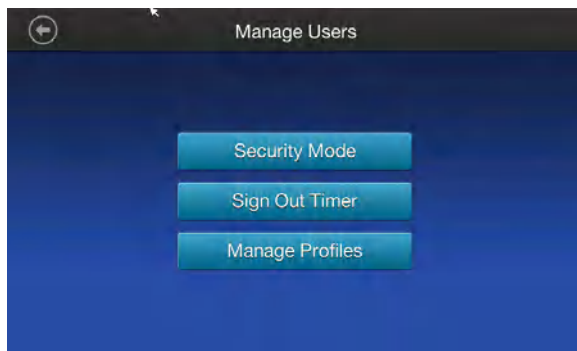




## Manage users (Administrator profile only)

Press **Manage Users** to manage the instrument when it is being used by multiple users.

- **Security Mode** is used to set the security mode of the instrument. You can choose from Open Mode, Restricted Mode 1, and Restricted Mode 2.
  - **Open Mode** allows the instrument to be used without having an account.
  - **Restricted Mode 1** allows the instrument to be used only by those with a valid account. See “Create a user profile on the PCR instrument” on page 15 for more information on creating a user account.
  - **Restricted Mode 2** is used to limit the options available on the instrument. In this mode, a user cannot edit, create, or delete methods. Users must log in, and once logged in, can only run methods that are designated by the administrator.  
The administrator must create an account for each user, and is required to designate which methods are available to each user. Methods that are available to users to run are saved in a folder called 'restricted'. See “Link the PCR instrument to Connect” on page 15 for more information on signing into an account as an administrator.
- **Sign Out Timer** is used to set the duration of inactivity before a user is automatically signed out. Press the **Edit Time** field, then use the numeric editor to enter the time limit.
- **Manage Accounts** is used to edit the administrator account information. Press a row with the account name to edit the account information.
  - Press **Delete Account** to delete an account.
  - Press **Reset Password** to reset a password.





# Ordering information

## Instrument part numbers

Contact your regional sales office to order kits, accessories, consumables, and spare parts for the MiniAmp™ Thermal Cycler (Cat. No. A37834) and the MiniAmp™ Plus Thermal Cycler (Cat. No. A37835).

## Consumables

Product	Cat. No.
<b>Single Tubes</b>	
MicroAmp™ Reaction Tube with Cap, 0.2 mL	N8010540 N8011540
MicroAmp™ Reaction Tube with Cap, 0.2 mL, assorted colors	N8010840
MicroAmp™ Reaction Tube with Cap, 0.2 mL, autoclaved	N8010612
MicroAmp™ Reaction Tube without Cap, 0.2 mL	N8010533 N8011533
MicroAmp™ Reaction Tube without Cap, 0.2 mL, assorted colors	N8010833
MicroAmp™ Optical Tube without Cap, 0.2 mL	N8010933
MicroAmp™ 96-Well Reaction Tube/Tray/Retainer Set, 0.2 mL	403083 403086
<b>Reaction Trays</b>	
MicroAmp™ 96-Well Tray for VeriFlex™ Block	4379983
MicroAmp™ 96-Well Tray/Retainer Set	4381850
<b>96-Well Plates</b>	
MicroAmp™ Optical 96-Well Reaction Plate	N8010560 4316813
MicroAmp™ Optical 96-Well Reaction Plate with Barcode	4306737 4326659



**(continued)**

<b>Product</b>	<b>Cat. No.</b>
MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Caps	403012
MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Adhesive Films	4314320
MicroAmp™ EnduraPlate™ Optical 96-Well Clear Reaction Plates with Barcode	4483354 4483352
MicroAmp™ EnduraPlate™ Optical 96-Well Blue Reaction Plates with Barcode	4483343
MicroAmp™ EnduraPlate™ Optical 96-Well Green Reaction Plates with Barcode	4483349
MicroAmp™ EnduraPlate™ Optical 96-Well Red Reaction Plates with Barcode	4483350
MicroAmp™ EnduraPlate™ Optical 96-Well Yellow Reaction Plates with Barcode	4483395
MicroAmp™ EnduraPlate™ Optical 96-Well Multicolor Reaction Plates with Barcode	4483355 4483356
MicroAmp™ EnduraPlate™ Optical 96-Well Clear GPLE Reaction Plates with Barcode	4483348 4483351
<b>8-Well Strips</b>	
MicroAmp™ 8-Tube Strip, 0.2 mL	N8010580
MicroAmp™ 8-Tube Strip, 0.2 mL, assorted colors	N8010838
MicroAmp™ Optical 8-Tube Strip, 0.2 mL	4316567
MicroAmp™ 8-Cap Strip, clear	N8010535 N8011535
MicroAmp™ 8-Cap Strip, assorted colors	N8010835
MicroAmp™ Optical 8-Cap Strips	4323032
<b>Accessories</b>	
MicroAmp™ Adhesive Film Applicator	4333183
MicroAmp™ Multi Removal Tool	4313950
MicroAmp™ Cap Installing Tool	4330015
MicroAmp™ 96-Well Base	N8010531
MicroAmp™ Splash-Free 96-Well Base	4312063
MicroAmp™ Centrifuge Adapter	N8013822



# Instrument specification and layout

## Site requirements

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

- Meets the spatial and weight requirements (see “System specifications” on page 57)
- Meets environmental requirements (see “Environmental requirements” on page 55)
- 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	15 to 30°C (59 to 86°F)
Humidity	15 to 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.

## Technical specifications

Feature	Specification
Maximum block ramp rate <sup>[1]</sup>	<ul style="list-style-type: none"> <li>MiniAmp: 3.0°C/sec</li> <li>MiniAmp Plus: 3.5°C/sec</li> </ul>
Maximum sample ramp rate	<ul style="list-style-type: none"> <li>MiniAmp: 2.2°C/sec</li> <li>MiniAmp Plus: 2.7°C/sec</li> </ul>
Temperature accuracy	±0.25°C (35–99.9°C)
Temperature range for protocol run	0.0–100.0°C
Temperature non-uniformity <sup>[2]</sup>	≤0.5°C
Dimensions	<ul style="list-style-type: none"> <li>Height: 20 cm (7.87 in)</li> <li>Width: 19 cm (7.48 in)</li> <li>Depth: 39 cm (15.35 in)</li> </ul>
Weight	6.75 kg (14.9 lb)
PCR volume range	<ul style="list-style-type: none"> <li>Supported: 10–100 µL</li> <li>Allowable: 1–100 µL</li> </ul>
Instrument memory	USB, on-board
Display interface	5 inch color TFT LCD
Power	100–240 V, 50–60 Hz, Maximum 500 W
VeriFlex™ block <sup>[3]</sup>	<ul style="list-style-type: none"> <li>3 VeriFlex™ Zones</li> <li>Supported: 10°C (5°C zone-to-zone)</li> <li>Allowable<sup>[4]</sup>: 20°C (10°C zone-to-zone)</li> </ul>
Ambient humidity	15–80% Relative Humidity, non-condensing (acceptable range)
Ambient operating temperature	15–30°C (acceptable range)

<sup>[1]</sup> Reaction volume of 1 µL.

<sup>[2]</sup> 30 seconds after clock starts.

<sup>[3]</sup> For MiniAmp™ Plus Thermal Cycler only.

<sup>[4]</sup> Temperature accuracy ±0.5°C and Temperature non-uniformity < 0.75°C.



## System specifications





**Table 5 Physical dimensions, weight, and power consumption**

Parameter	Instrument footprint	Recommended clearance	Total
Height	Height: 20 cm (7.87 in)	24 cm (9.44 in) <sup>[1]</sup>	44 cm (17.3 in)
Width	Width: 19 cm (7.48 in)	0 cm (0 in)	19.0 cm (7.5 in)
Depth	Depth: 39 cm (15.35 in)	23.0 cm (9 in) <sup>[2]</sup>	62 cm (24.4 in)
Weight	6.75 kg (14.9 lb)		
Power consumption	Maximum consumption: 500 W		
	Average during thermal cycling: 161 W		
	During sleep/ standby: 28 W		

<sup>[1]</sup> With the heated cover open

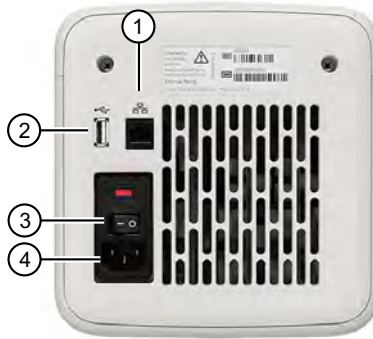
<sup>[2]</sup> At the rear of the instrument to ensure adequate airflow and cooling

## 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 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 6 Pre-defined categories and run methods**

Category	Method name
Blank Template	<ul style="list-style-type: none"><li>• General PCR Run</li><li>• Blank PCR 1</li><li>• Blank PCR 2</li></ul>
Basic PCR	<ul style="list-style-type: none"><li>• AmpliTaq™ 360</li><li>• AmpliTaq™</li><li>• Basic PCR Taq</li><li>• DreamTaq™ DNA Polymerase 3-Step</li></ul>
Hot Start	<ul style="list-style-type: none"><li>• AmpliTaq Gold™ 360</li><li>• AmpliTaq Gold™</li><li>• AmpliTaq Gold™ Fast PCR Run</li><li>• Platinum™ Taq DNA Polymerase</li><li>• Platinum™ Taq SuperMix</li></ul>
Sequencing	<ul style="list-style-type: none"><li>• BigDye™ Direct Cycle Sequence</li><li>• BigDye™ Direct PCR Run</li><li>• BigDye™ Kit Fast Run</li><li>• BigDye™ Kit Standard Run</li></ul>
Optimization	<ul style="list-style-type: none"><li>• Time Release Run</li><li>• Touchdown PCR Run</li></ul>
RT-PCR	SuperScript™ III 1-Step System

**Table 6 Pre-defined categories and run methods (continued)**

Category	Method name
High Fidelity	<ul style="list-style-type: none"> <li>• AccuPrime™ PFX 2-Step</li> <li>• AccuPrime™ PFX 3-Step</li> <li>• AccuPrime™ Taq High Fidelity</li> <li>• Platinum™ PFX 2-Step</li> <li>• Platinum™ PFX 3-Step</li> <li>• Platinum™ Taq High Fidelity</li> <li>• Phusion™ Flash PCR Master Mix 2-Step</li> <li>• Phusion™ Flash PCR Master Mix 3-Step</li> <li>• Phusion™ High Fidelity DNA Polymerase 2-Step</li> <li>• Phusion™ High Fidelity DNA Polymerase 3-Step</li> </ul>
High Specificity	<ul style="list-style-type: none"> <li>• AccuPrime™ PFX 2-Step</li> <li>• AccuPrime™ PFX 3-Step</li> <li>• AccuPrime™ Taq DNA Polymerase</li> <li>• AccuPrime™ Taq High Fidelity</li> </ul>
Next-Gen Sequencing	TargetSeq™ Exome Enrichment
Long PCR	<ul style="list-style-type: none"> <li>• Elongase™ 2-Step</li> <li>• Elongase™ 3-Step</li> <li>• AccuPrime™ Taq High Fidelity</li> <li>• Platinum™ Taq High Fidelity</li> </ul>

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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		

(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 2	Temperature	—	68.0	—	—	50	105.0
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		15				

(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 3	Ramp Rate	—	3.5/3.0	—	—	50	105.0
	Temperature		68.0				
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	15	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		52.0				
	Hold Time		15				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

### AmpliAq™ 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	95.0	72.0			
	Hold Time	180	30	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		58.0	4.0			

(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 2	Hold Time	—	30	Infinite	—	50	105.0
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

### AmpliAq 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	300	15	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		55.0	4.0			
	Hold Time		30	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		60				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

### AmpliAq 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	96.0	72.0			
	Hold Time	600	3	10			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		

(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 2	Temperature	—	62.0	4.0	—	50	105.0
	Hold Time		3	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		5				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

### AmpliAq 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	300	15	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		30				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

### AmpliAq™ 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			



(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—	50	105.0
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—	50	105.0
	Temperature		72.0				
	Hold Time		30				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—	50	105.0
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—	50	105.0
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—	50	105.0
	Temperature		72.0				
	Hold Time		30				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	37.0	80.0	96.0	96.0	4.0		
	Hold Time	900	120	60	10	Infinite		
Step 2	Ramp Rate	—	—	—	3.5/3.0	—		
	Temperature				50.0			
	Hold Time				5			
Step 3	Ramp Rate	—	—	—	3.5/3.0	—		
	Temperature				60.0			
	Hold Time				75			

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	96.0	72.0			
	Hold Time	600	3	120			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		62.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		30				

[1] Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	96.0	96.0	4.0			
	Hold Time	60	10	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		50.0				
	Hold Time		5				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		60.0				
	Hold Time		75				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	96.0	96.0	4.0			
	Hold Time	60	10	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		50.0				
	Hold Time		5				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		60.0				
	Hold Time		240				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	95.0	95.0	72.0	4.0		
	Hold Time	120	30	600	Infinite		
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		60.0				
	Hold Time		30				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

## Elongase™ 2-Step 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	30	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

## Elongase™ 3-Step 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	60	30	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		30				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	10	1	60	Infinite		
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		15				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	10	1	60	Infinite		
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		65.0				
	Hold Time		5				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		15				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	600	Infinite		
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		30				
Step 3	Ramp Rate	—	—	—	—		
	Temperature						
	Hold Time						

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	3.5/3.0		
	Temperature	98.0	98.0	72.0	4.0		
	Hold Time	30	10	600	Infinite		
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		65.0				
	Hold Time		30				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		30				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

**Platinum™ 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

**Platinum™ PFX 3-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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	120	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	30	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		30				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.

## Platinum™ Taq SuperMix 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	94.0	4.0			
	Hold Time	30	15	Infinite			
Step 2	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		55.0				
	Hold Time		15				
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	60.0	94.0	68.0			
	Hold Time	900	15	300			
Step 2	Ramp Rate	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	94.0	55.0	4.0			
	Hold Time	120	30	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		68.0				
	Hold Time		60				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0	3.5/3.0	—		
	Temperature	95.0	95.0	72.0			
	Hold Time	60	15	420			
Step 2	Ramp Rate	—	3.5/3.0	3.5/3.0	—		
	Temperature		55.0	4.0			
	Hold Time		15	Infinite			
Step 3	Ramp Rate	—	3.5/3.0	—	—		
	Temperature		72.0				
	Hold Time		30				

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	—	—	—		
	Temperature	47.0					
	Hold Time	3600					

<sup>[1]</sup> Values for MiniAmp™/MiniAmp™ Plus 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 <sup>[1]</sup>	3.5/3.0	3.5/3.0				
	Temperature	94.0	94.0				
	Hold Time	15	15				
Step 2	Ramp Rate	3.5/3.0	3.5/3.0				

(continued)

Cycle/Step		Stage				Reaction volume (µL)	Cover temp. (°C)
		1	2	3	4		
Step 2	Temperature	65.0	55.0	—	—	50	105.0
	Hold Time	30	30				
	AutoDelta Temperature	-0.5	—				
	AutoDelta Starting Cycle	1	—				

[1] Values for MiniAmp™/MiniAmp™ Plus Thermal Cycler.



# 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 MiniAmp™ or MiniAmp™ Plus Thermal Cycler. For more information visit [thermofisher.com](https://www.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.



# Safety



**WARNING! GENERAL SAFETY.** Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDSs, see the “Documentation and Support” section in this document.

## Symbols on the instrument

Symbols may be found on the instrument to warn against potential hazards or convey important safety information. In this document, the hazard symbol is used along with one of the following user attention words:



- **CAUTION!** – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- **WARNING!** – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **DANGER!** – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

Symbol	English	Français
	Environmental protection symbol of the China RoHS directive. The number in the symbol indicates the "Environment-friendly Use Period" of the product in years. The symbol is used if a substance restricted in China is used in excess of the maximum permitted limit.	Symbole de protection de l'environnement de la directive RoHS de la Chine. Le nombre indiqué dans le symbole indique "période d'utilisation favorable à l'environnement" du produit au cours des années. Le symbole est utilisé si une substance restreinte en Chine est utilisée au-delà de la limite maximale autorisée.

Symbol	English	Français
	Caution, risk of danger Consult the manual for further safety information.	Attention, risque de danger Consulter le manuel pour d'autres renseignements de sécurité.



(continued)

Symbol	English	Français
	Protective conductor terminal (main ground)	Borne de conducteur de protection (mise à la terre principale)
	<p>Do not dispose of this product in unsorted municipal waste</p> <p><b>⚠ CAUTION!</b> To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.</p>	<p>Ne pas éliminer ce produit avec les déchets usuels non soumis au tri sélectif.</p> <p><b>⚠ MISE EN GARDE !</b> Pour minimiser les conséquences négatives sur l'environnement à la suite de l'élimination de déchets électroniques, ne pas éliminer ce déchet électronique avec les déchets usuels non soumis au tri sélectif. Se conformer aux ordonnances locales sur les déchets municipaux pour les dispositions d'élimination et communiquer avec le service à la clientèle pour des renseignements sur les options d'élimination responsable.</p>

## Safety alerts on this instrument

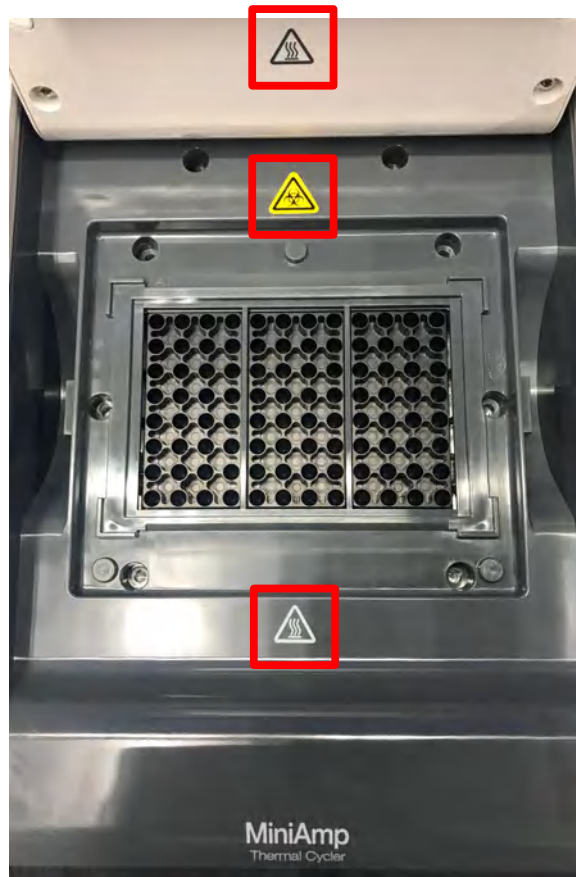
Additional text may be used with one of the symbols described above when more specific information is needed to avoid exposure to a hazard. See the following table for safety alerts found on the instrument.

English	Français
<b>⚠ CAUTION! Hazardous chemicals.</b> Read the Safety Data Sheets (SDSs) before handling.	<b>⚠ MISE EN GARDE ! Produits chimiques dangereux.</b> Lire les fiches signalétiques (FS) avant de manipuler les produits.
<b>⚠ CAUTION! Hazardous waste.</b> Refer to SDS(s) and local regulations for handling and disposal.	<b>⚠ MISE EN GARDE ! Déchets dangereux.</b> Lire les fiches signalétiques (FS) et la réglementation locale associées à la manipulation et à l'élimination des déchets.

## Location of safety labels on the instrument



**Figure 2** Location of the safety label on the rear panel of the instrument



**Figure 3** Location of the safety label on the 96-Well Sample Block





## China RoHS Compliance

本表格依据 SJ/T11364 的规定编制

The following table is prepared in accordance with the provisions of SJ/T11364.

部件名称 Part Name	产品中有害物质的名称及含量 Hazardous Substances (Cat. No. A37028 and A37029)					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr (VI))	多溴联苯 Polybrominate d biphenyls (PBB)	多溴二苯醚 Polybrominate d diphenyl ethers (PBDE)
100062489 Base 底座外壳	×	○	○	○	○	○
100062506 HTD CVR 热器盖	×	○	○	○	○	○
100062543 HSG Top Rim 顶部轮辋	×	○	○	○	○	○
100062544 Drip Pan 滴水盘	×	○	○	○	○	○

○: 表示该有害物质在该部件所有均质材料中的含量均在 **GB/T26572** 规定的限量要求以下。  
○: Indicates that said hazardous substance contained in all of the homogenous materials for this part is below the limit requirement of **GB/T 26572**.

×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 **GB/T26572** 规定的限量要。  
×: Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of **GB/T 26572**.



# Safety information for instruments not manufactured by Thermo Fisher Scientific

Some of the accessories provided as part of the instrument system are not designed or built by Thermo Fisher Scientific. Consult the manufacturer's documentation for the information needed for the safe use of these products.

## Instrument safety

### General



**CAUTION! Do not remove instrument protective covers.** If you remove the protective instrument panels or disable interlock devices, you may be exposed to serious hazards including, but not limited to, severe electrical shock, laser exposure, crushing, or chemical exposure.

### Physical injury



**CAUTION! Moving Parts.** Moving parts can crush, pinch and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing.



**WARNING! Sharp Edges.** The edges of this container are sharp.

### Electrical safety



**WARNING! Ensure appropriate electrical supply.** For safe operation of the instrument:

- Plug the system into a properly grounded receptacle with adequate current capacity.
- Ensure the electrical supply is of suitable voltage.
- Never operate the instrument with the ground disconnected. Grounding continuity is required for safe operation of the instrument.



**WARNING! Power Supply Line Cords.** Use properly configured and approved line cords for the power supply in your facility.



**WARNING! Disconnecting Power.** To fully disconnect power either detach or unplug the power cord, positioning the instrument such that the power cord is accessible.



## Cleaning and decontamination



**CAUTION! Cleaning and Decontamination.** Use only the cleaning and decontamination methods specified in the manufacturer's user documentation. It is the responsibility of the operator (or other responsible person) to ensure the following requirements are met:

- No decontamination or cleaning agents are used that could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in the equipment.
- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan (decontamination forms may be requested from customer service).
- Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.

## Safety and electromagnetic compatibility (EMC) standards

The instrument design and manufacture complies with the following standards and requirements for safety and electromagnetic compatibility.

### Safety

Reference	Description
EU Directive 2014/35/EU	European Union “Low Voltage Directive”
IEC 61010-1 EN 61010-1 UL 61010-1 CSA C22.2 No. 61010-1	<i>Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements</i>
IEC 61010-2-010 EN 61010-2-010 UL 61010-1-2-010 CSA C22.2 No. 61010-2-010	<i>Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-010: Particular requirements for laboratory equipment for the heating of materials</i>
IEC 61010-2-081 EN 61010-2-081 UL 61010-1-2-081 CSA C22.2 No. 61010-2-081	<i>Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes</i>



## EMC

Reference	Description
Directive 2014/30/EU	European Union “EMC Directive”
EN 61326-1	<i>Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 1: General Requirements</i>
AS/NZS CISPR11	<i>Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radiofrequency Equipment</i>

## Environmental design standards

Reference	Description
Directive 2012/19/EU	European Union “WEEE Directive” – Waste electrical and electronic equipment
Directive 2011/65/EU	European Union “RoHS Directive” – Restriction of hazardous substances in electrical and electronic equipment
SJ/T 11364-2014	“China RoHS” Standard – Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products



## Chemical safety



**WARNING! GENERAL CHEMICAL HANDLING.** To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. To obtain SDSs, see the “Documentation and Support” section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.
- **IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.





# Documentation and support

