SimpliAmp™ Thermal Cycler PCR System Installation and Operation

Catalog Number A24811

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Note: For safety and biohazard guidelines, see the "Safety" appendix in the *SimpliAmp™ Thermal Cycler User Guide* (Pub. No. MAN0009889). Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Product description

This document summarizes procedures for installing and using the SimpliAmp™ Thermal Cycler, with "better than gradient™" VeriFlex™ technology. For detailed instructions, see the *SimpliAmp™ Thermal Cycler User Guide* (Pub. No. MAN0009889).

Figure 1 SimpliAmp™ Thermal Cycler

Required materials not provided

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

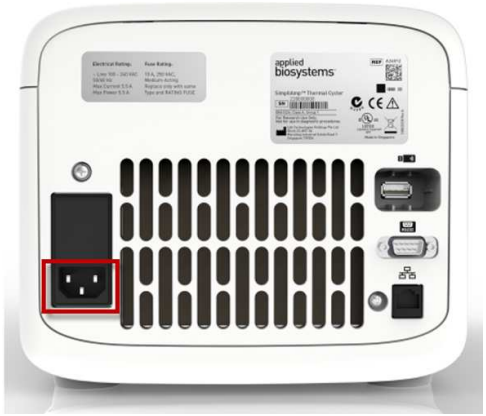
  Note: The use of one or more of the following electrical protective devices is recommended.

  - Power line regulator (100–240 V)
  - Surge protector/line conditioner (10-kVA)
  - Uninterruptible power supply (1.5-kVA)

Set up the SimpliAmp™ 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. Place the instrument at an installation site that meets the spatial and weight requirements for the thermal cycler (see "Technical specifications" on page 6).
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

The Home screen is displayed upon successful installation.

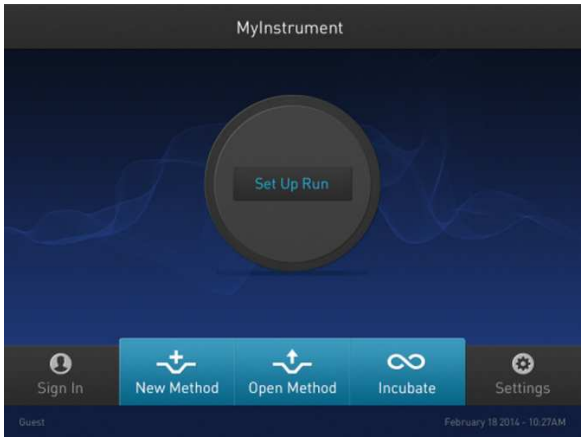


Figure 2 SimpliAmp™ Home screen

Connect the PCR instrument to the Internet

Connect your thermal cycler to the Internet. See the instrument user guide for detailed instructions.

- Connect through the instrument Ethernet port using a cable.
- Connect via wireless connection with the High-Power USB Wi-Fi Module (Cat. No. A26774).

Set up mobile and cloud connectivity to the SimpliAmp™ Thermal Cycler and your mobile device

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

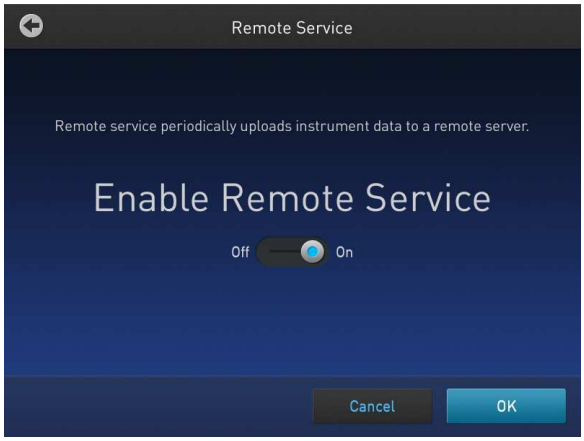
1. Go to **thermofisher.com/connect** from your web browser.
2. Click **Sign up now** and follow the prompts to create an account.

Link the PCR instrument to Connect (Administrator only)

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

Note: Multiple instruments can be added to your Connect account, but only one user profile from each instrument can be linked to your account.

1. Press **(Sign In)** > **Sign In**, then select your user profile.
2. Log in to your user profile.

   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 your Connect account login and password.
7. Press **Link Account**.

   Upon successful authentication, the the user profile is linked to Connect.

Connect by mobile device

1. Download the "Instrument Connect Mobile Application" on your mobile device.
   a. For iPad™ or iPhone™ devices, download the application from the iTunes™ music store by searching for Instrument Connect by Thermo Fisher Scientific.
   b. For Android devices, download the application from Google™ Play by searching for Instrument Connect by Thermo Fisher Scientific.
2. Launch the Instrument Connect Mobile Application and log in using your Connect login and password.

3. Capture the QR code on the instrument screen.

How to use the SimpliAmp™ Thermal Cycler

Operate the instrument using the touchscreen. For detailed instructions on using the thermal cycler, see the *SimpliAmp™ Thermal Cycler User Guide* (Pub. No. MAN0009889).

In the Home screen for the touchscreen, you can set up a run by creating a new method for a run. To set up a run using a new method:

1. Press **New Method** or **Set Up Run**.
2. Select a template.
3. In the edit mode, edit the parameters of the method template such as temperature, time, number of steps/stages.
4. To access advanced editing options, press **Manage Steps** > **Advanced Options**. Advanced editing options include VeriFlex™ blocks for optimization, simulation modes, ramp rates, and AutoDelta.
5. Save the new method in a folder.
6. (*Optional*) Press **Start Run** to start the Method.

Maintenance guidelines

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.

To ensure proper operation:

- Regularly:
  - Wipe the instrument surfaces with a lint-free cloth.
  - Clean the vents, touchscreen, and sample block of the instrument.
  - Clean the sample wells with 100% isopropanol.
- Use only consumables recommended by Thermo Fisher Scientific for the instrument.
  Use of consumables that are larger or smaller than the specified volume can damage the instrument, contaminate the sample block, and/or decrease the PCR yield (due to inefficient thermal transfer).
- **Do not use sharp objects on the touchscreen.**
  Use only your fingers or blunt objects to enter commands on the instrument touchscreen. Sharp and/or pointed objects such as writing utensils can damage the surface of the touchscreen.
- **Back up frequently.**
  Routinely back up the configurations and files on your instrument to a USB drive. Regular backups protect against data loss caused by user error, power failure, or instrument error. For more information, see the *SimpliAmp™ Thermal Cycler User Guide* (Pub. No. MAN0009889).

How to use the MicroAmp™ 96-well Tray and Retainer

IMPORTANT! Use the MicroAmp™ 96-well Tray and Retainer to prevent crushing of tubes in the thermal cycler.

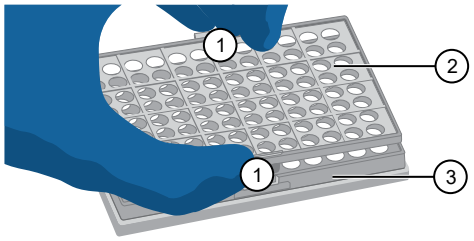
When small number of tubes (1–2 tube strips or ≤8–16 tubes are placed in the sample block without support, they can be crushed or deformed when the lid of the thermal cycler is closed over the block. Using the tray and retainer set allows the pressure to be distributed evenly over the tubes and prevents uneven pressure across the block.

Using the tray and retainer set is optional when using ≥3 tube strips or ≥16 tubes that are distributed evenly across the block.

- The **blue** tray and retainer set is compatible for use with MicroAmp™ **single tubes or tube strips** with **separate** cap strips.
- The **blue** tray by itself is compatible for use with MicroAmp™ **tube strips** with **attached** caps.
- The **black** retainer is compatible for use with **single** MicroAmp™ reaction **tubes with attached caps**.

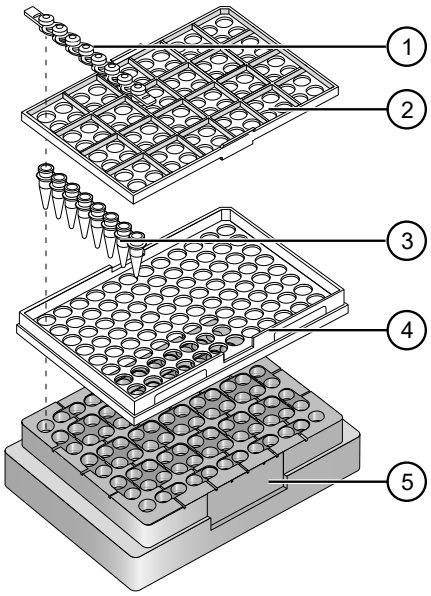
Prepare samples using MicroAmp™ tubes/tube strips with separate cap strips

1. Separate the **blue** tray and retainer by squeezing the release catch as indicated in the graphic.



① Release catch
② MicroAmp™ 96-Well Retainer
③ MicroAmp™ 96-Well Tray

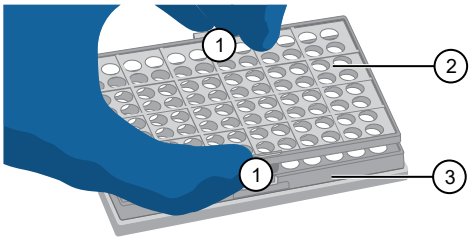
2. Place the **blue** tray on the 96-well base.
3. Load the tube strips on the tray.
4. Pipette the reaction mixture into the tubes.
5. Place the **blue** retainer over the tubes and snap the retainer into the tray.
6. Seal the tube strip using a MicroAmp™ cap strip. See “Seal tubes strips with cap strips” on page 5 for instructions.
7. Remove the **blue** tray/retainer assembly containing the sealed tube strips from the 96-well base and place the assembly into the instrument.



① MicroAmp™ 8-Cap strip
② MicroAmp™ 96-Well Retainer
③ MicroAmp™ 8-Tube Strip (0.2-mL) or MicroAmp™ Reaction Tube without Cap (0.2-mL)
④ MicroAmp™ 96-Well Tray
⑤ MicroAmp™ Splash Free 96-Well Base

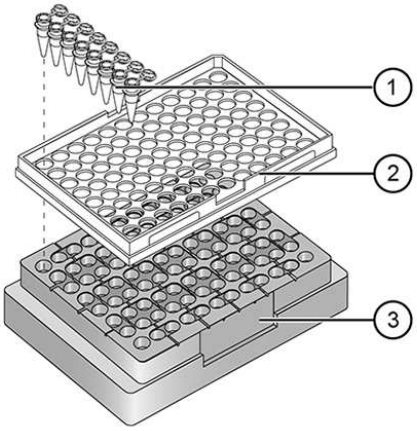
Prepare samples using MicroAmp™ tube strips with attached caps

1. Separate the **blue** tray and retainer by squeezing the release catch as indicated in the graphic.



① Release catch
② MicroAmp™ 96-Well Retainer
③ MicroAmp™ 96-Well Tray

2. Place the **blue** tray on the 96-well base.
3. Load the tube strips on the tray.
4. Pipette the reaction mixture into the tubes.
5. Seal the tube strip using a MicroAmp™ cap strip. See “Seal tubes strips with cap strips” on page 5 for instructions.
6. Remove the **blue** tray containing the sealed tube strips from the 96-well base and place the tray and sealed tube strips into the instrument.

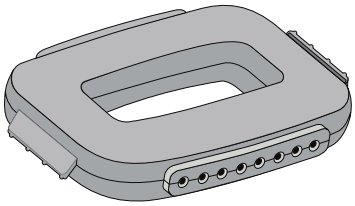


① MicroAmp™ 8-Tube Strip with Attached Caps (0.2-mL)
② MicroAmp™ 96-Well Tray
③ MicroAmp™ Splash Free 96-Well Base

Seal tubes strips with cap strips

IMPORTANT! Apply significant downward pressure on the sealing tool in all steps to form a complete seal on top of the tubes.

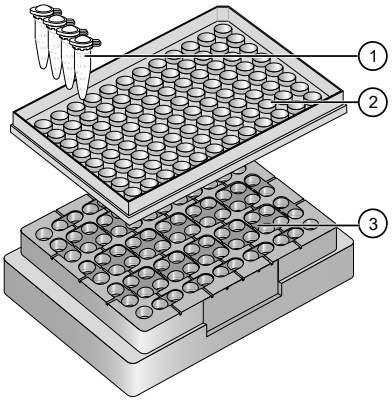
1. Align and place the cap strips on the tubes.
2. Seal the cap strips using the rocking capping tool:



   a. Slip your fingers through the handle with the holes in the tool facing down.
   b. Place the holes in the tool over the first eight caps in a row.
   c. Rock the tool back and forth a few times to seal the caps.
   d. Repeat for remaining caps in the row, then for all remaining rows.

Prepare samples using MicroAmp™ Reaction Tubes

1. Set the **black** tray on a 96-well base.
2. Place the reaction tubes in the **black** tray.



① MicroAmp™ Reaction Tube with Cap (0.2-mL)
② MicroAmp™ 96-Well Tray for VeriFlex™ Blocks
③ MicroAmp™ Splash Free 96-Well Base

3. Pipette the reaction mixture into the reaction tubes.
4. Cap the tubes.
5. Remove the **black** tray with sealed reaction tubes from the 96-well base and place the tray and sealed tubes into the instrument.

Technical specifications

The following table displays the system specifications for the SimpliAmp™ Thermal Cycler.

Table 1 SimpliAmp™ Thermal Cycler technical specifications:

Feature	Specification
Maximum block ramp rate[1]	4°C/sec
Maximum sample ramp rate[1]	3°C/sec
Temperature accuracy	±0.25°C (35 to 99.9°C)
Temperature range for protocol run	0°C to 100.0°C
Temperature non-uniformity[2]	<0.5°C
Dimensions	• Height: 21 cm (8.27 in) • Width: 24.0 cm (9.45 in) • Depth: 46 cm (18.11 in)
Weight	8.5 kg (18.3 lb)
PCR volume range	• Supported: 10 - 100 µL • Settable: 1 - 100 µL
Instrument memory	USB, on-board
Display interface	8" color TFT LCD
Power	100-240 V, 50-60 Hz Max: 600 W
VeriFlex™ blocks	• 3 VeriFlex™ zones • Supported 10°C (5°C zone-to-zone) • Settable[3] 20°C (10°C zone-to-zone)
Ambient humidity	15% - 80% Relative Humidity, non-condensing (acceptable range)
Ambient operating temperature	15°C to 30°C (acceptable range)

[1] Reaction volume @ 1 µL
[2] 30 seconds after clock start
[3] Temperature accuracy ±0.5°C and Temperature non-uniformity < 0.75°C

Table 2 Power and communication ports

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
	RS232 serial communication port for connecting the probe for the Temperature Verification Kit
	USB v2.0 port for connecting to USB-enabled Wi-Fi Card

Accessory products

Product	Cat. No.
96-well 0.2-mL reaction plates	
MicroAmp™ Optical 96-Well Reaction Plate	N8010560, 4316813
MicroAmp™ Optical 96-Well Reaction Plate with Barcode	4306737, 4326659
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™ TriFlex 3 x 32-Well PCR Reaction Plate	A32810, A32811
96-well 0.1-mL reaction plates	
MicroAmp™ Fast Optical 96-Well Reaction Plate, 0.1 mL	4346907
MicroAmp™ Fast Optical 96-Well Reaction Plate with Barcode, 0.1 mL	4346906, 4366932
MicroAmp™ EnduraPlate™ Optical 96-Well Fast Clear Reaction Plates with Barcode	4483485, 4483494
384-well reaction plates	
MicroAmp™ Optical 384-Well Reaction Plate	4343370
MicroAmp™ Optical 384-Well Reaction Plate with Barcode	4309849, 4326270, 4343814
MicroAmp™ EnduraPlate™ Optical 384-Well Clear Reaction Plates with Barcode	4483285, 4483273
Strip tubes and caps	
MicroAmp™ Fast 8-Tube Strip, 0.1 mL	4358293
MicroAmp™ Optical 8-Tube Strip with Attached Optical Caps, 0.2 mL	A30588
MicroAmp™ Optical 8-Tube Strip with Attached Domed Caps, 0.2 mL	A30589
MicroAmp™ 8-Tube Strip, 0.2 mL	N8010580
MicroAmp™ Optical 8-Tube Strip, 0.2 mL	4316567
MicroAmp™ 8-Cap Strip, clear	N8010535, N8011535
MicroAmp™ Optical 8-Cap Strips	4323032
MicroAmp™ 12-Cap Strip	N8010534, N8011534
Single Tubes	
MicroAmp™ Fast Reaction Tube with Cap, 0.1 mL	4358297, 4358293
MicroAmp™ Reaction Tube with Cap, 0.2 mL	N8010540, N8011540, N8010612
MicroAmp™ Reaction Tube without Cap, 0.2 mL	N8010533, N8011533
MicroAmp™ Optical Tube without Cap, 0.2 mL	N8010933
Seals and covers	
MicroAmp™ Clear Adhesive Film	4306311
MicroAmp™ Optical Adhesive Film	4360954, 4311971
MicroAmp™ 32-Well Clear Adhesive Film	A32812
Accessories	
MicroAmp™ Splash-Free 96-Well Base	4312063
MicroAmp™ 96-Well Support Base	4379590
MicroAmp™ 96-Well Base	N8010531
MicroAmp™ 96-Well Reaction Tube/Tray/Retainer Set, 0.2 mL	403083, 403086

Limited product warranty

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For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

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