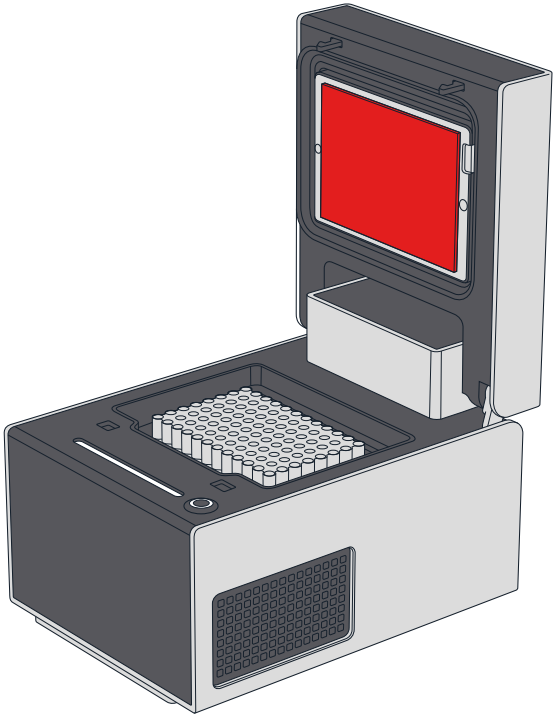
opentrons

Thermocycler GEN2

Quickstart Guide



Opentrons Labworks Inc.

December 2024

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Product Description

The Opentrons Thermocycler Module is a fully automated on-deck thermocycler, providing hands-free PCR in a 96-well plate format. Its heated lid works in combination with Opentrons single-use PCR lids or reusable rubber seals to help ensure efficient plate heating, protect samples against contamination, and reduce sample loss from evaporation.

Post-sales service & contacting Opentrons

If you have any questions about the use of the system, abnormal phenomena, or special needs, please contact: support@opentrons.com. Also visit www.opentrons.com.

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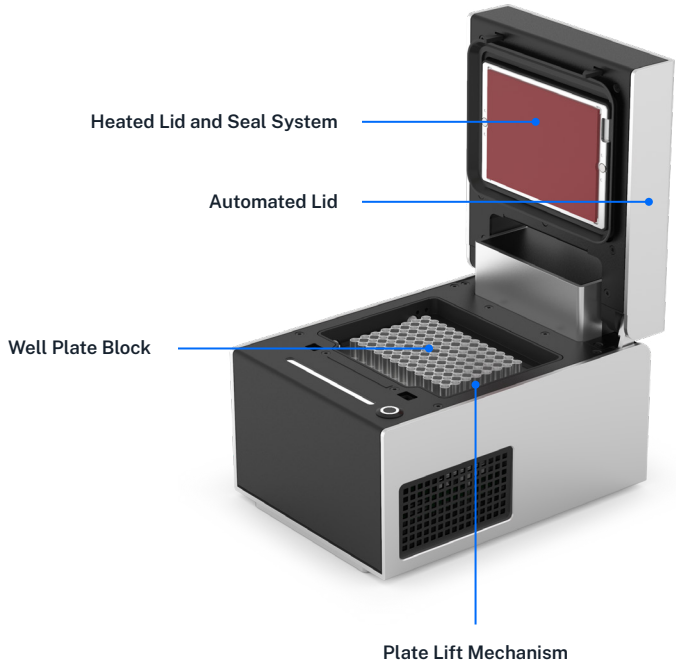
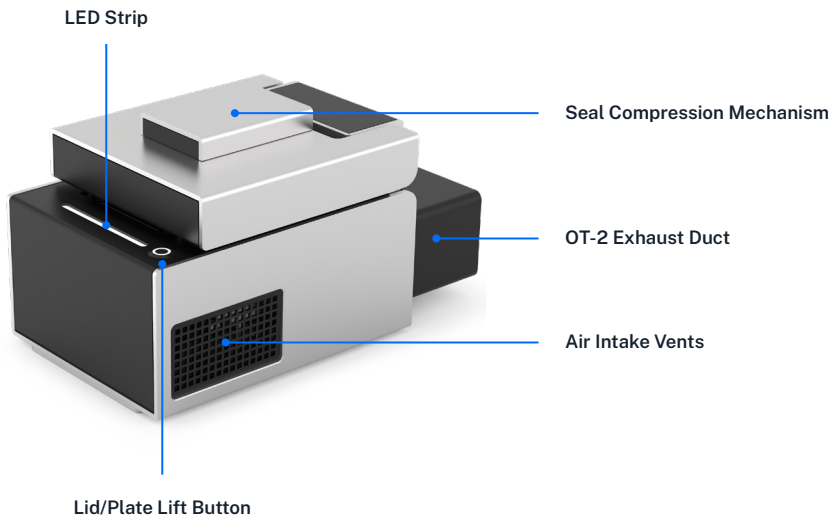
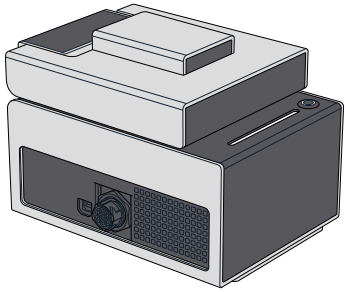
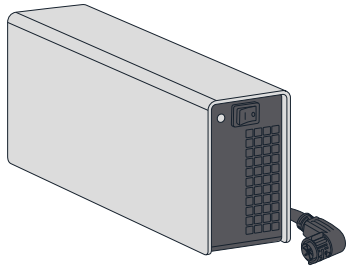
Product Elements



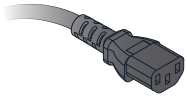




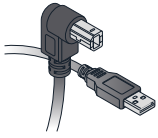
(1) Thermocycler



(1) Power Supply and
Power Supply Connector

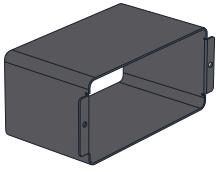


(1) Power Cable

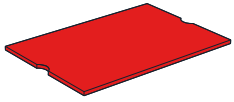


(1) USB Cable

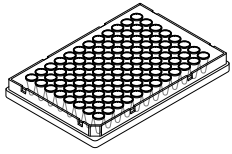
(2) OT-2 Duct Screws
(M3x6 mm socket head)



(1) OT-2 Exhaust Duct



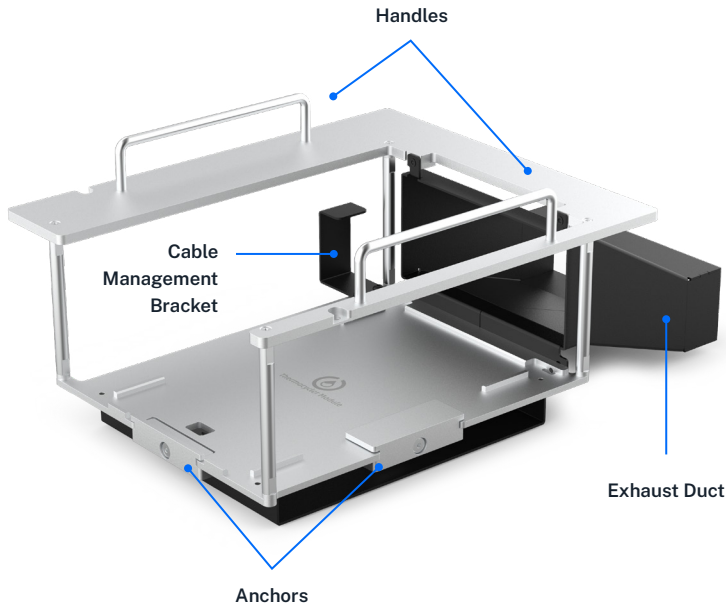
(5) Rubber
Automation Seals



(10) Opentrons
Tough PCR Plates

FLEX CADDIES

When used with a Flex robot, the Thermocycler Module GEN2 fits into a caddy that occupies space below the deck. The caddy places your labware closer to the deck surface and allows for below-deck cable routing. See the Modules chapter in the Flex Instruction Manual for more information.



The OT-2 does not use caddies. Modules clip directly to the deck. The Thermocycler ships with a short exhaust duct, which is used by the OT-2 only. The Thermocycler will not fit properly in its caddy with the OT-2 duct attached.

Module caddies are available for purchase at shop.opentrons.com.

Before You Begin

Review this section for important information about Thermocycler Module GEN2 deck placement, alignment, and anchor adjustments before installing the module.

DECK PLACEMENT AND CABLE ALIGNMENT

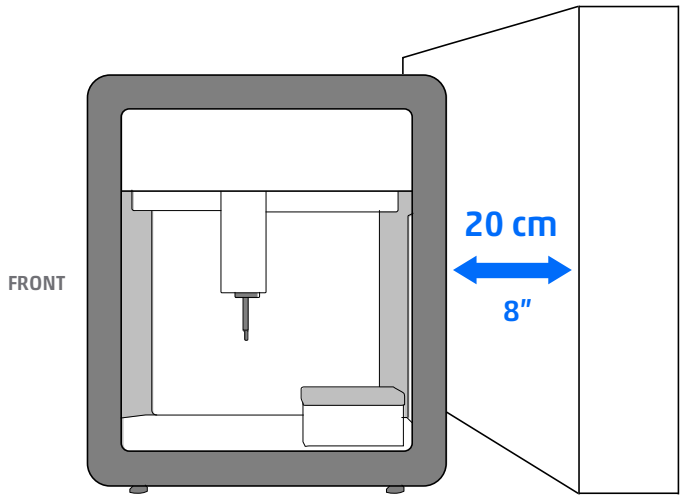
The supported deck slot positions for the Thermocycler depend on the robot you're using.

Robot model	Deck placement
Flex	Requires deck slots A1 and B1 and the A1 expansion slot.
OT-2	Requires deck slots 7, 8, 10, and 11.

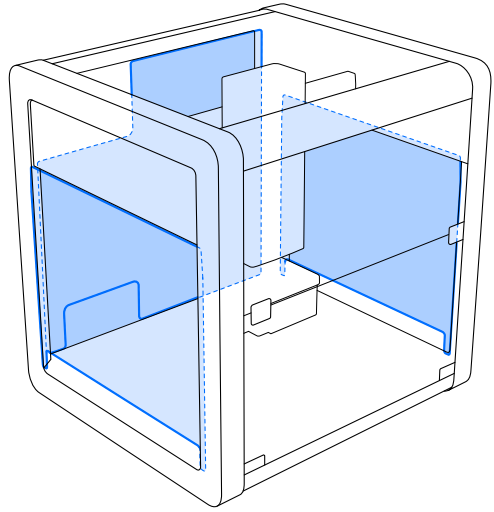
To properly align the module relative to the robot, make sure its exhaust port faces to the rear (away from the center of the deck). This keeps the exhaust port clear and aligns the power and USB ports to the left side of the robot for easy access.

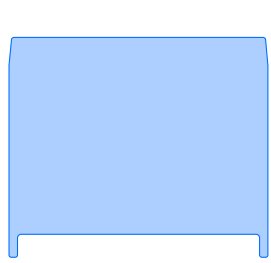
VENTILATION CLEARANCE

The Flex and OT-2 need at least 20 cm (8”) of side and back clearance. This space helps dissipate exhaust from the Thermocycler.

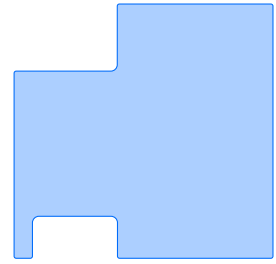


For OT-2 ventilation, Opentrons recommends using the side and rear window panels shown below. These panels are included with newer OT-2 models. If you have an older OT-2 and need these panels, contact us at support@opentrons.com.





2x Side Panels



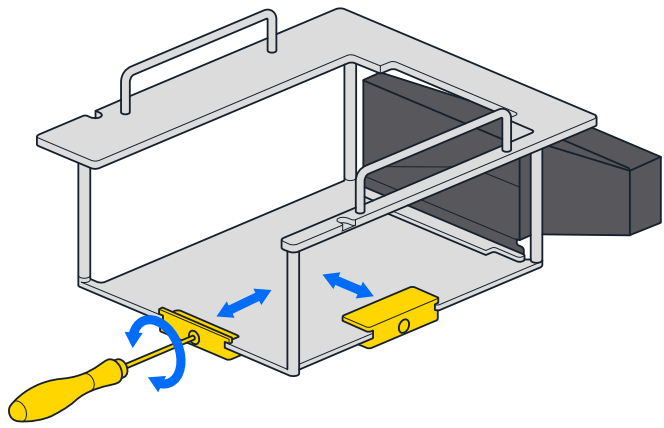
1x Rear Panel

The Thermocycler caddy has a built-in exhaust duct. Special window panels are not required to use this module with Flex.

ANCHOR ADJUSTMENTS

Anchors are screw-adjustable panels on the Thermocycler caddy. They provide the clamping force that secures the module to its caddy. Use a 2.5 mm screwdriver to adjust the anchors.

- To loosen/extend the anchors, turn the screws counter-clockwise.
- To tighten/retract the anchors, turn the screws clockwise.



Adjusting an anchor on the Thermocycler caddy.

Before installation:

- Check the anchors to make sure they're level or extend slightly past the sides of the caddy.
- If the anchors interfere with installing the module, adjust them until there's enough clearance to seat the module and then tighten them to hold it in place.

Flex Attachment Steps

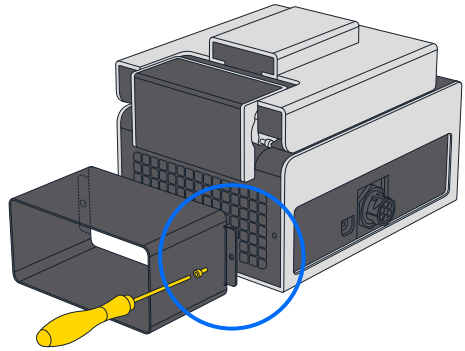
To attach the Thermocycler GEN2 to your Flex:

1. Use a 2.5 mm screwdriver to remove the A1 expansion slot plate and the A1 and B1 deck slot plates.
2. Using both hands, lift the module carefully and insert it into its caddy. Make sure the module's exhaust port faces the exhaust duct on the caddy.
3. Use a 2.5 mm screwdriver to turn the anchor screws clockwise to tighten the anchors. The module is secure when it doesn't move while gently pulling on it and rocking it from side to side.
4. Connect the USB cable to the module and route the remaining cable through the cable management bracket.
5. Connect the power connector to the module by pressing it firmly into place. Route the remaining cable through the cable management bracket.
6. Insert the caddy, exhaust duct first, into the open deck slot. Route the USB and power cables through the removable side covers as you lower the caddy into position.
7. Connect the USB cable to a USB port on the Flex.
8. Connect the power cable from the module to the external power supply unit. Manually tighten the locking ring to secure it to the power supply.
9. Connect the power supply to a wall outlet.
10. Turn on the Thermocycler power supply. If you see a white light on the Thermocycler, it is powered on. You can press the illuminated button to open and close the lid. When successfully connected, the module appears in the Pipettes and Modules section on your robot's device detail page in the Opentrons App.

OT-2 Attachment Steps

To attach the Thermocycler GEN2 to your OT-2:

1. Use a 2.5 mm screwdriver or hex L-key to attach the exhaust duct to the back of the Thermocycler. Use the two included screws, one on either side of the duct.



2. Using both hands, lift the module carefully, set it in its supported deck location, and press it gently into place.

3. Connect the USB cable to the module. Route the remaining cable through the cable management bracket and connect the other end of the USB cable to a USB port on the OT-2.

4. Connect the power connector to the module by pressing it firmly into place. Route the remaining cable through the side window.

5. Connect the power cable to the power supply unit. Manually tighten the locking ring to secure it to the external power supply.

6. Connect the power supply to a wall outlet.

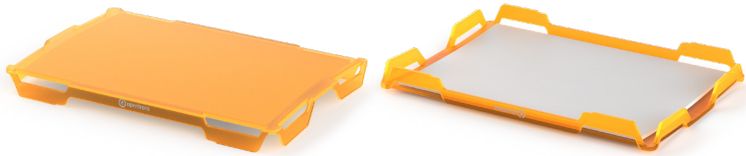
7. Turn on the Thermocycler power supply. If you see a white light on the Thermocycler, it is powered on. You can press the illuminated button to open and close the lid. When successfully connected, the module appears in the Pipettes and Modules section on your robot's device detail page in the Opentrons App.

Thermocycler Lid Seals

The Thermocycler GEN2 accepts the single-use Opentrons Tough PCR Auto-sealing Lid and the reusable rubber automation seals.

DISPOSABLE PCR LIDS

Opentrons Tough PCR Auto-sealing Lids are sterile, single-use, translucent lids compatible with Opentrons Tough PCR plates, the Thermocycler, the Flex Gripper, and a special deck riser. They're ideal for protocols that require automated lid handling, sterile single-use consumables, or that include two or more PCR steps in a single automated protocol. Lids ship in a box of 20 and are certified to be free of ATP, pyrogens, DNA, DNase, RNase, and PCR inhibitors. See the online Thermocycler GEN2 instruction manual for more information.



DECK RISER

You can stack up to 5 auto-sealing lids on a special deck riser. The riser keeps lids away from the unsterilized deck and provides better access for the gripper. Also, the deck riser is autoclave-safe. You can clean and reuse it between protocol runs without worrying too much about contaminating sterile lids.

Note: You can place lids directly on the deck, although you can only stack a maximum of 3 lids this way. Also, the gripper can pick up lids from the deck without needing the riser. However, use the deck riser if you need to stack more lids or require a sterile environment.

Warning: Do not use the disposable lid while your Thermocycler has a rubber seal attached. Remove the rubber seal before using disposable lids in a protocol run.

REUSABLE AUTOMATION SEALS

The Thermocycler also uses adhesive backed rubber automation seals to help reduce evaporation. The module ships with a seal installed along with replacement seals and well plates. Discard the pre-installed seal and well plate before using the Thermocycler. Then, put a new seal on the module lid and use a new well plate for your initial protocol run.

Attaching the Rubber Automation Seal

Your Opentrons Thermocycler GEN2 uses rubber automation seals to help reduce evaporation. The Thermocycler ships with a seal already in place, which should not be used in a protocol run. Remove and discard the original seal. Then apply one of the included, new rubber automation seals to the lid of the module.

Note:

- Attach a seal *after* installing the module.
- Apply the seal to the module lid, *not* to the plate.
- Seals must be cleaned before your first Thermocycler run.
- *Do not* put seals in an autoclave.

After applying the seal, wipe it with a 1:10 diluted bleach solution. Rinse the seal by wiping it with molecular biology grade water. Air dry when finished.

Each seal may be used for several runs. You should check the state of the seal after each run and replace it if needed. Worn or damaged seals may result in increased evaporation of samples.

Additional Product Information

MAINTENANCE

Users should not attempt to service or repair the module themselves. If you have concerns about your module's performance or require maintenance, please contact Opentrons Support.

WARRANTY

All hardware purchased from Opentrons is covered under a 1-year standard warranty. Opentrons warrants to the end-user of the products that they will be free of manufacturing defects due to part quality issues or poor workmanship and also warrants that the products will materially conform to Opentrons' published specifications.

SUPPORT

Opentrons Support can help you with questions about our products and services. If you discover a defect, or believe your product is not functioning to published specifications, contact us at support@opentrons.com.

Please have the Thermocycler's serial number available when contacting support. You can find the serial number on the bottom of the module or in the Opentrons App. On the Thermocycler card in the Pipettes and Modules section of your robot's device detail page, click the three-dot menu (⋮) and then **About**.

APP DOWNLOAD

Control your liquid handling robot and module using the Opentrons App. Download the app for Windows, macOS, or Ubuntu at https://opentrons.com/ot-app/.

COMPLETED CERTIFICATIONS

IEC/UL/CSA, EN/BSI, FCC, IC

RECOMMENDED OPERATING CONDITIONS

Environmental temperature: 20–25 °C
Environmental humidity: 30–80%, non-condensing

WEEE POLICY

Opentrons is dedicated to adhering to the EU Directive on Waste Electrical and Electronic Equipment (WEEE – 2012/19/EU). Our goal is to ensure that our products are properly disposed of or recycled once they reach the end of their useful life.

Opentrons products that fall under the WEEE directive are labeled with the  symbol, signifying that they should not be thrown away with regular household waste but must be collected and handled separately.

If you or your business have Opentrons products that are at end of life or need to be discarded for a separate purpose, contact Opentrons for proper disposal and recycling.

MANUFACTURER DESCRIPTION

Opentrons Labworks Inc
45-18 Ct Square W
Long Island City, NY 11101

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For more information, download the complete
Opentrons Thermocycler Module GEN2 Instruction Manual
from the Opentrons Knowledge Hub.