Thermal Cycling

PTC Tempo Thermal Cyclers

Visit bio-rad.com/PTCTempo for more information.

BIO-RAD

MODERN AND INTUITIVE SYSTEMS

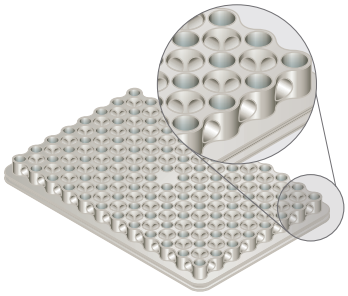
Engineered to maintain thermal performance, the PTC Tempo Thermal Cycler offers the flexibility to scale with your laboratory. This conventional PCR thermal cycler features a refreshed, intuitive user interface and flexible connectivity options for streamlining protocol management. A motorized lid enables automation, taking your PCR to the next level with modern instrument control.

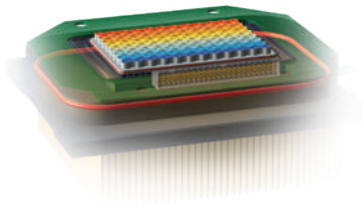
Search your mobile app store for **Bio-Rad AR** or visit **bio-rad.com/PTCTempo** to launch a virtual demo and see how the instrument fits in your lab. Contact your local sales representative for more information.

Download on the App Store

GET IT ON Google Play

UNIFORM THERMAL CYCLING





Superior Uniformity and Fast Ramping

It is critical that all wells maintain the proper temperature throughout each PCR step. Utilizing Peltier effect technology, the PTC Tempo Thermal Cycler has six independently controlled thermal electric modules (the heating and cooling elements of the thermal cycler) to maintain tight temperature uniformity at all points during a run — even during ramping. The patented reduced-mass sample block* heats and cools more quickly than standard blocks, improving thermal uniformity and minimizing edge effects.

* U.S. patents 7,955,573, 8,367,014, 8,557,196, and 7,632,464.

Efficient Optimization

Determining the optimal temperature for primer annealing is crucial for efficient and specific target amplification. The thermal gradient feature of the PTC Tempo Thermal Cycler allows optimization of an assay in a single experiment, minimizing the use of precious samples and reagents and saving valuable research time. At any step in a protocol, users can program a temperature gradient of 30–100°C with a 24°C span across the reaction block,** providing exceptional temperature uniformity and reproducibility within each gradient zone. The gradient feature employs dynamic ramping. The instrument algorithm adjusts ramp rates so that all wells come to their designated incubation temperature at the same time, making the incubation period consistent across all samples. Accurate incubation times are crucial for successful transfer of protocols from a gradient to a nongradient mode.

** U.S. patent 7,051,536.

Rapid Arrival at Target Temperature

The tight temperature control of the PTC Tempo Thermal Cycler produces high average ramp rates and tight uniformity during ramping to quickly reach the target temperature and shorten protocol run times.

STREAMLINED PRODUCTIVITY

Enhanced User Management

- Quickly learn the refreshed graphical user interface on an 8-inch, high-resolution touch screen
- Create new PCR protocols or modify existing ones
- Start runs faster with preprogrammed standard protocols

Organized Workflow

- Share protocols and completed runs via a network folder
- Efficiently arrange protocols and experiments with personalized folders
- Add unique user names and protect your files with optional passwords

Automation-Integration Ready

- Utilize the motorized lid of the PTC Tempo 96, PTC Tempo Deepwell, and PTC Tempo 384 Thermal Cyclers
- Readily integrate PTC Tempo 96, PTC Tempo Deepwell, and PTC Tempo 384 Thermal Cyclers into automated workflows to enable continuous loading of plates with robotic handlers

CONTEMPORARY CONNECTIVITY

More Connectivity Options
Bio-Rad understands that the modern world relies on seamless data connections. In addition to Ethernet connectivity, the PTC Tempo Thermal Cycler has WiFi capability for wireless operation and data retrieval. Protocol sharing is also possible via USB memory device or a local network connection, simplifying collaboration.

Set Up Your Experiment Where and When You Want
The BR.io cloud platform is a Bio-Rad solution for cloud data management. The BR.io cloud platform can be accessed from a web browser, so no software installation is required. Simply type BR.io in the web address bar, log in or create a new account, and set up your dashboard. Link the BR.io cloud platform to your PTC Tempo Thermal Cyclers. Get the most out of your instrument by setting up experiments and retrieving protocols anywhere with internet access, minimizing time needed at the instrument. Monitor instrument status and protocol run status. You can even receive email notifications when runs are completed. All your data are stored securely on the cloud.

BR.io Cloud Platform Benefits for Laboratories

Remote setup and data access
- Create new experiments from anywhere and automatically transfer the protocols to the instrument
- Access data instantly upon completion of an experiment, no matter where you are

Remote instrument monitoring
- Remotely access instrument information, including model, serial number, and firmware version
- Monitor status of instruments located in different rooms, buildings, or sites from a single computer
- Check the progress of experiments without returning to the lab

Automatic data transfer and storage
- Eliminate the hassle of manual data transfer and the risk of data loss
- Mitigate data loss due to local storage malfunction or damage
- Ensure all your data are backed up automatically to the cloud

Cloud-enabled software
- Deploy easily without the need to install and manage software
- Access anytime from any internet-connected computer (Mac or PC) almost anywhere in the world

Enterprise-grade security and privacy controls
- Protect your account and data using our inherent strong password requirements
- Secure your intellectual property — your data are encrypted both in flight and at rest
- Have confidence in the safety of your data — the BR.io cloud platform is regularly tested for security vulnerabilities
- Utilize our data privacy controls for General Data Protection Regulation (GDPR) compliance

DEPENDABLE
SERVICE AND SUPPORT

Bio-Rad provides a comprehensive suite of services to ensure that your instruments are cared for and perform to our standard of quality, run after run. Our professional, knowledgeable, and experienced technical support specialists and service engineers are committed to quality and service. From research to regulated environments, Bio-Rad will help care for your investment and keep your projects in motion. Confirm that your PTC Tempo Thermal Cycler is performing at its highest accuracy and uniformity with thermal qualification services. Guarantee with documentation the proper installation and operation of your instrument by taking advantage of Installation Qualification (IQ) and Operational Qualification (OQ) Services.

Thermal Qualification Services
To confirm optimal performance of your PTC Tempo Thermal Cycler, a trained and certified Bio-Rad service engineer will:

- Assess PCR block accuracy, thermal uniformity, and instrument ramp rate
- Complete a rapid temperature cycling protocol mimicking an actual experiment to confirm that thermal block setting times are within specifications
- Provide an accurate qualification in accordance with National Institute of Standards and Technology (NIST) standards

Visit **bio-rad.com/ThermalValidation** for more information.

Installation Qualification (IQ) and Operational Qualification (OQ) Services
A certified service engineer will document that instruments are installed and functioning properly and ensure that instruments will generate reliable and reproducible data.

- Maximize instrument uptime with planned instrument qualification services that ensure your instruments are performing according to specifications
- Increase your confidence with instrument validation that helps minimize loss of precious samples and valuable time
- Meet regulatory compliance requirements

Visit **bio-rad.com/IQOQ** for more information.

Expertise
35+ years in **PCR**

Reliability
Thousands of systems installed in **160+** countries

Innovation
Top market leader in PCR

COMPLETE WORKFLOW

Bio-Rad offers a wide selection of reagents, consumables, and nucleic acid gel electrophoresis products to support your PCR workflow.

Reagents

Bio-Rad reagents enable a variety of PCR applications. iTaq DNA Polymerase is an antibody-mediated hot-start DNA polymerase suitable for both standard PCR and real-time PCR applications. For high-fidelity applications, iProof PCR Reagents featuring Sso7d* fusion polymerase technology are offered in kit or master mix formats.

Visit **bio-rad.com/PCRreagents** and **bio-rad.com/PCRReagentSelector** to learn more.

* U.S. patent 7,560,260.

Consumables

Ensure amplification success with a variety of Bio-Rad consumables, such as Hard-Shell™ PCR Plates and PCR plate seals. Hard-Shell PCR Plates are precisely manufactured for optimal fit and cycling performance. Adhesive foils and optically clear seals are designed with a strong adhesive that minimizes sample evaporation.

Visit **bio-rad.com/PCRplastics** and **bio-rad.com/PCRPlasticSelector** to learn more.

Horizontal Electrophoresis Cells and Power Supplies

Sub-Cell™ GT Cells are versatile and allow for multisample throughput in nucleic acid applications. Power your Sub-Cell System with the PowerPac Basic Power Supply. The unit is lightweight and stackable, and the vertical display is clearly visible on shelves and lab benches alike.

Visit **bio-rad.com/SubCells** and **bio-rad.com/PowerSupplies** to learn more.

Agarose Powders and Precast Gels

Bio-Rad offers a wide selection of Certified Agarose and ReadyAgarose Precast Gels for optimal and convenient nucleic acid electrophoresis. Certified Agaroses are genetic quality tested (GQT) grade to guarantee product quality and ensure confidence in both routine separations and downstream molecular biology applications.

Visit **bio-rad.com/Agarose** and **bio-rad.com/ReadyAgarose** to learn more.

Electrophoresis Buffers and Molecular Rulers

Separate fragments by size and evaluate nucleic acid integrity with Bio-Rad molecular rulers. Save preparation time and standardize runs with premixed electrophoresis running buffers that are compatible with both handcast and precast gels.

Visit **bio-rad.com/DNAElectro** to learn more.

Imaging Systems

Market-leading and easy-to-use, Bio-Rad gel documentation systems such as the GelDoc Go Gel Imaging System are reliable for all your DNA and protein gel documentation needs.

Visit **bio-rad.com/Imaging** to learn more.

SYSTEM SPECIFICATIONS

General Specifications

Sample block type	Fixed
Dimensions (W x D x H)	28 x 50 x 26 cm (11 x 20 x 10 in.)
Power	100–240 V, 50/60 Hz, 850 W max
Electrical approvals	IEC, CE
Memory	4.6 GB; 100,000 files, which include protocols and run reports
Noise level	50–70 dB at steady state
Touch-screen display	8 in. LCD
Programming options	Step-based graphical and automatic
Security features for regulated environments	Password protection and secure user mode
Reporting	Exportable run logs and system logs
Temperature control modes	Calculated and block
Onboard operating system	Linux
Communications	WiFi, BR.io cloud platform, USB-A 2.0, Ethernet, USB barcode scanner
Heating and cooling method	Peltier
Lid heating	30–110°C
Temperature range	4–100°C
Thermal accuracy	±0.2°C of programmed target at 90°C
Thermal uniformity	±0.4°C well-to-well within 10 sec of arrival at 90°C




System-Specific Specifications	96-Well	Deepwell	48/48-Well	384-Well
Lid type	Automated	Automated	Nonautomated	Automated
Weight	15 kg (33 lb)	15 kg (33 lb)	14 kg (31 lb)	15 kg (33 lb)
Sample capacity	96 x 0.2 ml tubes or 1 x 96-well plate	96 x 0.2 ml tubes, 48 x 0.5 ml tubes, or 1 x 96-well plate	2 x 48 x 0.2 ml tubes or 2 x 48-well plates	1 x 384-well plate
Sample volume	1–50 µl (10–50 µl recommended)	1–125 µl (10–125 µl recommended)	1–50 µl (10–50 µl recommended)	1–30 µl (3–20 µl recommended)
Maximum ramp rate	5°C/sec	2.5°C/sec	4°C/sec	2.5°C/sec
Average ramp rate	3.3°C/sec	2°C/sec	3°C/sec	2°C/sec
Gradient				
Operational range	30–100°C	30–100°C	30–100°C	30–100°C
Programmable span	8 rows, 1–24°C	8 rows, 1–24°C	8 rows, 1–24°C	16 rows, 1–24°C

Ordering Information

Catalog #	Description
Instruments	
12015382	**PTC Tempo 96 Thermal Cycler**
12015392	**PTC Tempo Deepwell Thermal Cycler**
12015309	**PTC Tempo 48/48 Thermal Cycler**
12015394	**PTC Tempo 384 Thermal Cycler**
1814000	**PX1 PCR Plate Sealer**
Accessories	
12018650	**PTC Tempo Thermal Cycler WiFi Adapter**, U.S. only
12018509	**PTC Tempo Thermal Cycler WiFi Adapter**, global
1849000	**Tube Frame for 0.2 ml Tubes**, for use with 48/48- and 96-well reaction modules
1849001	**Tube Frame for 0.2 ml Tubes**, for use with 96–deep well and deepwell reaction modules
12020274	**Tube Frame for 0.5 ml Tubes**, for use with 96–deep well and deepwell reaction modules
12014294	**Plate Lifter for 384-Well Reaction Module**
12019776	**PTC Tempo Thermal Cycler API**, 1 license
12013205	**Ethernet Cable**
Reagents	
1725310	**iProof HF Master Mix**, 100 x 50 µl reactions, 2.5 ml
1725320	**iProof GC Master Mix**, 100 x 50 µl reactions, 2.5 ml
1708870	**iTaq DNA Polymerase**, 250 U (5 U/µl), 50 µl
1708872	**$MgCl_2$ Solution for PCR**, 50 mM, 1.25 ml
1708874	**dNTP Solution Mix**, 10 mM, 200 µl
12012802	**Reliance Select cDNA Synthesis Kit**, 25 x 20 µl reactions
1708840	**iScript Reverse Transcription Supermix**, 25 x 20 µl reactions
1725034	**iScript gDNA Clear cDNA Synthesis Kit**, 25 x 20 µl reactions
1725037	**iScript Advanced cDNA Synthesis Kit**, 25 x 20 µl reactions
1708896	**iScript Select cDNA Synthesis Kit**, 25 x 20 µl reactions
1708890	**iScript cDNA Synthesis Kit**, 25 x 20 µl reactions
Plastics	
TLS0801	**0.2 ml 8-Tube PCR Strips without Caps**, low profile, clear, 120
TFI0201	**0.2 ml PCR Tubes with Flat Caps**, high profile, clear, 1,000
TWI0201	**0.2 ml PCR Tubes with Domed Caps**, high profile, clear, 1,000
TBS0201	**0.2 ml 8-Tube PCR Strips without Caps**, high profile, clear, 125
TBC0802	**0.2 ml 8-Tube PCR Strips and Domed Cap Strips**, high profile, clear
TCS0803	**0.2 ml Flat PCR Tube 8-Cap Strips**, optical, ultraclear
HSP9601	**Hard-Shell 96-Well PCR Plates**, low profile, thin wall, skirted, white/clear, 50
MLL9601	**Multiplate 96-Well PCR Plates**, low profile, unskirted, clear, 25
HSL9601	**Hard-Shell 96-Well PCR Plates**, low profile, semi-skirted, clear/clear, 25
HSL9605	**Hard-Shell 96-Well PCR Plates**, low profile, semi-skirted, clear/white, 25
HSL9905	**Hard-Shell 96-Well PCR Plates**, low profile, semi-skirted, clear/white, barcoded, 25
HSS9601	**Hard-Shell 96-Well PCR Plates**, high profile, semi-skirted, clear/clear, 25
HSS9901	**Hard-Shell 96-Well PCR Plates**, high profile, semi-skirted, clear/clear, barcoded, 25
MLP9601	**Multiplate 96-Well PCR Plates**, high profile, unskirted, clear, 25
MLL4801	**Multiplate 48-Well PCR Plates**, low profile, unskirted, clear, 50
MLP4801	**Multiplate 48-Well PCR Plates**, high profile, unskirted, clear, 50
HSP3801	**Hard-Shell 384-Well PCR Plates**, thin wall, skirted, clear/clear, 50
HSP3901	**Hard-Shell 384-Well PCR Plates**, thin wall, skirted, clear/clear, barcoded, 50
12001925	**ddPCR™ 96-Well Plates**, semi-skirted, clear/clear, 25
MSA5001	**Microseal™ 'A' PCR Plate and PCR Tube Sealing Film**, nonadhesive sealing film, 50
MSB1001	**Microseal 'B' PCR Plate Sealing Film**, adhesive, optical, 100
MSC1001	**Microseal 'C' PCR Plate Sealing Film**, adhesive, optical, 100
MSF1001	**Microseal 'F' PCR Plate Seal**, foil, pierceable, 100
1814030	**PCR Plate Heat Seal**, clear, optical, 100
1814040	**PCR Plate Heat Seal**, foil, pierceable, 100
1814045	**PCR Plate Heat Seal**, foil, peelable, 100
Agaroses	
1613102	**Certified Molecular Biology Agarose**, 500 g
1613107	**Certified Low Range Ultra Agarose**, 125 g
1613112	**Certified Low Melt Agarose**, 125 g, for DNA fragments ≥1,000 bp
1613115	**Certified PCR Low Melt Agarose**, 500 g, for DNA fragments ≤1,000 bp
1613105	**Certified PCR Agarose**, 500 g, for DNA fragments ≤1,000 bp
Buffers	
1610770	**10x TBE (Tris/Boric Acid/EDTA) Buffer**, 5 L
1610733	**10x TBE (Tris/Boric Acid/EDTA) Buffer**, 1 L
1610773	**50x TAE (Tris/Acetic Acid/EDTA) Buffer**, 5 L
1610743	**50x TAE (Tris/Acetic Acid/EDTA) Buffer**, 1 L
1610433	**Ethidium Bromide Solution**, 10 mg/ml
1610729	**EDTA**, 500 g, ≥99% pure
1610716	**Tris**, 500 g, ≥99.8% pure
Horizontal Electrophoresis	
1704486	**Mini-Sub™ Cell GT Horizontal Electrophoresis System**
1640300	**Mini-Sub Cell GT Horizontal Electrophoresis System and PowerPac Basic Power Supply**
1704485	**Wide Mini-Sub Cell GT Horizontal Electrophoresis System**
1640301	**Wide Mini-Sub Cell GT Horizontal Electrophoresis System and PowerPac Basic Power Supply**
1704482	**Sub-Cell GT Horizontal Electrophoresis System**
1640302	**Sub-Cell GT Horizontal Electrophoresis System and PowerPac Basic Power Supply**
Rulers	
1708351	**EZ Load 20 bp Molecular Ruler**, 20–1,000 bp, 50 bands
1708352	**EZ Load 100 bp Molecular Ruler**, 100–1,000 bp, 10 bands
1708353	**EZ Load 100 bp PCR Molecular Ruler**, 100–3,000 bp, 30 bands
1708354	**EZ Load 500 bp Molecular Ruler**, 500–8,000 bp, 16 bands
1708355	**EZ Load 1 kb Molecular Ruler**, 1–15 kb, 15 bands
1708200	**AmpliSize™ Molecular Ruler**, 50–2,000 bp, 10 bands
Imaging	
12009077	**GelDoc Go Gel Imaging System with Image Lab Touch Software**, includes UV/Stain-Free Imaging Tray
1660531	**UView Mini Transilluminator**

Visit **bio-rad.com/PTCTempo** for more information about the PTC Tempo Thermal Cycler.

Visit **BR.io** for more information about the BR.io cloud platform.

Bio-Rad PCR reagents and analytical instruments are manufactured under an ISO 13485:2016 certified Quality Management System and are quality control tested to ensure consistent product performance you can trust.

Bio-Rad Laboratories, Inc.

Life Science Group

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