



Bio-Rad Thermal Cyclers



Thermal Cycler Selection Guide



MJ Mini™ Cycler

- Portable 48-well thermal cycler; exceptional thermal performance



T100™ Cycler

- Reliable, easy-to-use 96-well cycler



S1000™ Cycler

- Advanced performance

Number of wells	48	96	96, 96 deep, dual 48, or 384
Interchangeable blocks	–	–	•
Thermal gradient capability	•	•	•
Upgrade to real-time PCR	–	–	–
Networking capability	–	–	•
Adjustable heated lid	•	–	•
Licensed for PCR	•	•	•
Temperature accuracy	±0.2°C	±0.5°C	±0.2°C
Temperature uniformity	±0.4°C	±0.5°C	±0.4°C
Settling time	10 sec	30 sec	10 sec
Maximum ramp rate	2.5°C/sec	4°C/sec	2.5–5°C/sec**
Average ramp rate	1.5°C/sec	2.5°C/sec	2–3.3°C/sec**
Display	LCD	5.7" color touch screen	LCD
Dimensions (W x D x H)	18 x 32 x 20 cm	26 x 47 x 23 cm	33 x 46 x 20 cm

* Gradient available with 96-well Alpha™ unit only.

** Depending on reaction module. For complete specifications, go to www.bio-rad.com/cyclers.



C1000 Touch™ Cycler

- Advanced performance and features
- Flexible platform; upgradable to CFX96 Touch™ and CFX384 Touch™ real-time PCR detection systems

DNA Engine Dyad® Cycler

- Dual-bay thermal cycler with graphical interface

DNA Engine Tetrad® 2 Cycler

- Updated version of the high-throughput cycler that powered the Human Genome Project

96, 96 deep, dual 48, or 384

2 x 96, dual 48, or 384

4 x 96, dual 48, or 384

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±0.2°C

±0.3–0.4°C**

±0.3–0.4°C**

±0.4°C

±0.4–0.5°C**

±0.4–0.5°C**

10 sec

30 sec

30 sec

2.5–5°C/sec**

3°C/sec

3°C/sec

2–3.3°C/sec**

1.5°C/sec

1.5°C/sec

8.5" color touch screen

Color LCD

Color LCD

33 x 46 x 20 cm

48 x 29 x 21 cm

47 x 61 x 21 cm





Bio-Rad Thermal Cyclers

Bio-Rad offers a wide range of thermal cyclers with proven performance and an unmatched combination of features. We have a cycler just right for every laboratory, whether you run only a few samples per week or perform high-throughput automated processes. If you have changing needs, choosing one of our modular platforms makes it simple and economical to add additional features, such as dual-block capacity, gradient optimization, and even real-time PCR, to your thermal cycler.

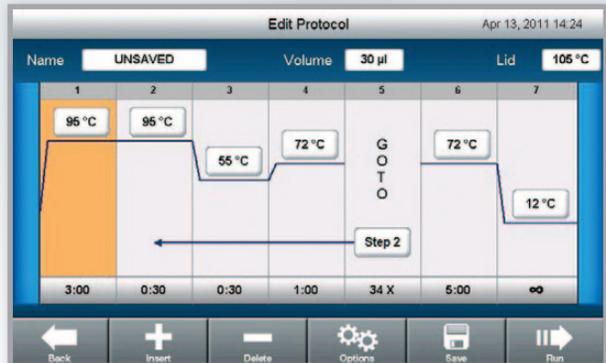


C1000 Touch Thermal Cycler

A Premium Instrument for PCR

The C1000 Touch cycler is the flagship instrument of the 1000-series thermal cycling platform, offering unmatched performance for fast, reliable results and a state-of-the-art interface with new ways to optimize protocols and monitor runs. The C1000 Touch cycler offers all the powerful features of the 1000-series platform.

- Save time by easily creating and viewing protocols using the large color touch screen display and intuitive graphical programming
- Store your data and manage and transfer files using a USB flash drive
- Protect files with optional log-in, restricted user privileges, and secure mode for controlled environments
- Save costs by upgrading to real-time PCR using the CFX96™ or CFX384™ optical reaction module
- Quickly optimize reactions for speed using the unique protocol autowriter



Quick and easy protocol programming. The protocol autowriter in the cycler's onboard software can automatically suggest a fast temperature protocol based on input parameters. Suggested protocol is based on standard PCR guidelines, with hot-start, initial denaturation, annealing, and extension steps. Further reductions of run times are achieved by minimizing the number of steps and cycles, incubation times, and temperature differentials.

C1000 Touch Reaction Modules for PCR



- 96-well fast reaction module, gradient enabled**
- Holds 96 x 0.2 ml tubes or one 96-well plate
- 96-deep well reaction module, gradient enabled**
- Holds 96 x 0.2 ml tubes, 48 x 0.5 ml tubes, or one 96-well plate
- 384-well reaction module, gradient enabled**
- Holds one 384-well plate



- Dual 48/48-well fast reaction module, gradient enabled**
- Holds 2 x 48 x 0.2 ml tubes or two 48-well plates

Upgrade to Real-Time PCR with CFX96 or CFX384 Optical Reaction Module



- 96-well fast reaction module, gradient enabled**
- Holds 96 x 0.2 ml tubes or one 96-well plate

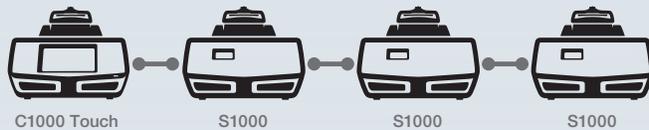


- 384-well reaction module, gradient enabled**
- Holds one 384-well plate

S1000 Thermal Cycler

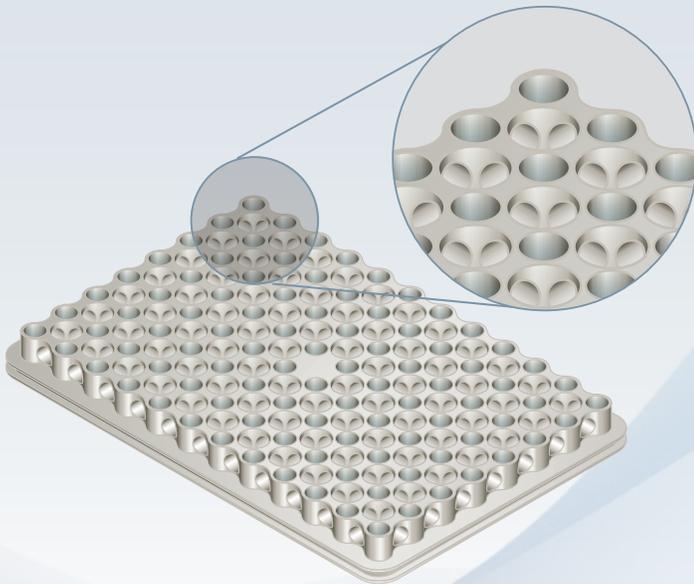
A Great Companion

The S1000 thermal cycler is just right for researchers who require the same great thermal performance as the C1000 Touch cycler. Those who simply need dependable performance can use the S1000 cycler as a stand-alone instrument for PCR.



The S1000 cycler offers the same thermal performance as the C1000 Touch cycler and still allows you to:

- Choose your favorite vessels and sealers for use with the fully adjustable heated lid
- Easily optimize your results with a gradient-enabled reaction module that suits your needs: dual 48/48-well fast, 96-deep well, or 384-well module
- Save time by finishing runs sooner with the patented* reduced-mass honeycomb sample block; faster ramping and settling produce the shortest time to target temperature
- Increase your throughput by connecting up to 3 S1000 cyclers to a C1000 Touch cycler to form a high-throughput multi-bay instrument



The patented* reduced-mass honeycomb sample block heats and cools more quickly than standard blocks, so average ramp rates are increased and overall run times are reduced.

* U.S. patent 7,632,464.

S1000 Reaction Modules for PCR



96-well fast reaction module, gradient enabled

- Holds 96 x 0.2 ml tubes or one 96-well plate

96-deep well reaction module, gradient enabled

- Holds 96 x 0.2 ml tubes, 48 x 0.5 ml tubes, or one 96-well plate

384-well reaction module, gradient enabled

- Holds one 384-well plate



Dual 48/48-well fast reaction module, gradient enabled

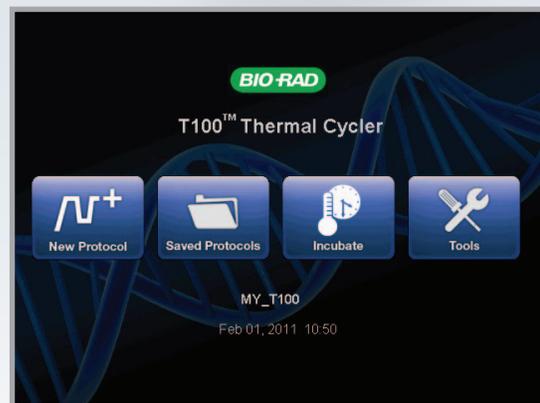
- Holds 2 x 48 x 0.2 ml tubes or two 48-well plates

T100 Thermal Cycler

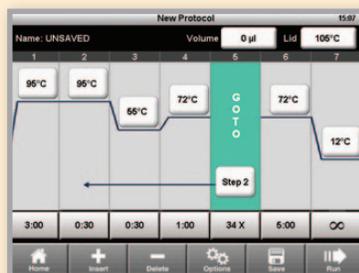
The Easiest-to-Use Instrument in Your Laboratory

The T100 thermal cycler's intuitive touch screen makes running PCR easier than ever before. The T100 thermal cycler's performance, features, and ease of use are efficiently streamlined into a compact footprint that fits in any laboratory. The 96-well thermal cycler has been engineered by the most trusted name in PCR for long-lasting performance and reliable results. The T100 thermal cycler is the smart PCR choice of both experts and novices.

- Save time programming with the intuitive touch screen
- Get superior results faster by optimizing your PCR assays in a single run using a thermal gradient
- Save valuable benchspace with the compact design
- Keep your protocols organized using personalized folders or a USB flash drive
- Be confident in your results with the reliability you expect from Bio-Rad



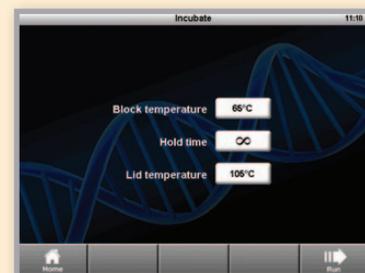
Get started quicker. Intuitive button-driven navigation puts your most frequently used tasks at your fingertips.



Create a new protocol in just seconds. The protocol editor displays the thermal profile in an intuitive, graphical format.



Keep your files organized. The T100 thermal cycler keeps your protocols in a personal folder.



Incubate instantly. The convenient incubate feature keeps your samples at a constant temperature for ligations or restriction digests.

MJ Mini 48-Well Thermal Cycler

Small on Size, Big on Performance

The MJ Mini cycler is a compact 48-well instrument designed to provide exceptional thermal performance. This powerful thermal cycler demonstrates the same performance as higher-capacity models and arrives at thermal uniformity remarkably fast, producing the precision needed for sensitive assays.

- Thermal gradient technology permits simultaneous incubation at 8 different temperatures for optimizing reactions in a single run
- 6 x 8 sample array accommodates 0.2 ml tubes, tube strips, one 48-well plate, or up to twelve 0.5 ml tubes
- Textual and graphical display options allow rapid program modifications



DNA Engine® Multi-Bay Thermal Cyclers

The DNA Engine multi-bay thermal cyclers feature interchangeable Alpha units that can be used with identical performance on any of the three cycler configurations. Three Alpha unit formats are available, including a 96-well thermal gradient-enabled block, a dual 48/48-well block, and a 384-well block. The Alpha units have adjustable heated lids that accommodate a full spectrum of reaction vessels. Fast PCR protocols for shorter run times are included with the preinstalled programs. The DNA Engine multi-bay thermal cyclers are ideal for a growing and diverse laboratory because they allow you to adjust your cycler's capacity and vessel formats as your research needs change.

DNA Engine Dyad Cycler

- Compact 2-bay instrument that runs up to 4 independent blocks when equipped with dual blocks
- Graphical interface with color display and point-and-click navigation

DNA Engine Tetrad 2 Cycler

- 4-bay, high-throughput cycling workhorse that powered the Human Genome Project
- 1,536-well capacity when equipped with four 384-well blocks
- Graphical interface and color display with point-and-click navigation

Alpha Unit Options for the DNA Engine Multi-Bay Thermal Cyclers

Alpha units feature adjustable heated lids that are manually set to optimize the sealing pressure for different types of vessels and sealers.



96-well Alpha unit, gradient enabled

- Holds 96 x 0.2 ml tubes, one 96-well plate, or up to 30 x 0.5 ml tubes

384-well Alpha unit

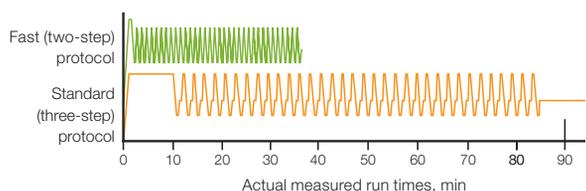
- Holds one 384-well plate



48/48 Dual Alpha™ unit

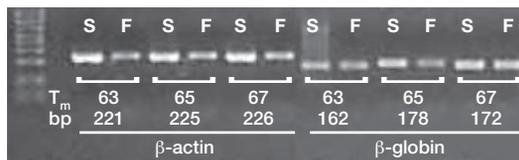
- Holds 48 x 0.2 ml tubes, one 48-well plate, or up to 12 x 0.5 ml tubes in each block
- Independently controllable blocks, so separate protocols can be run side by side

Performing Fast PCR with Bio-Rad Products

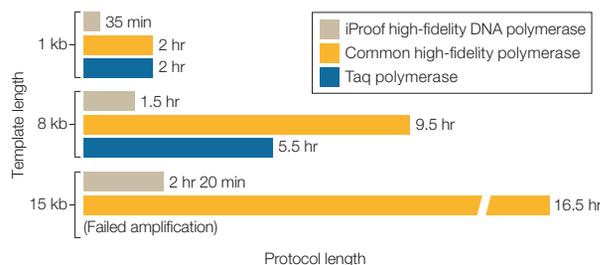


PCR run times can be dramatically reduced without giving up the flexibility, modularity, and gradient capability of Bio-Rad thermal cyclers. With our cyclers, enzymes, and reaction vessels you can:

- Shorten PCR runs from 1.5 hr to 35 min
- Reliably amplify long (1 kb), longer (8 kb), and extra-long (15 kb) targets 3–4 times faster than with standard protocols
- Obtain SYBR® Green real-time PCR quantitation data in <40 min with any Bio-Rad real-time PCR system



Fast two-step protocol results are comparable to those generated using standard protocols. β -actin and β -globin targets were amplified from human genomic DNA using iTaq™ DNA polymerase. Standard (S) protocol, 1.5 hr; fast (F) protocol, 35 min.

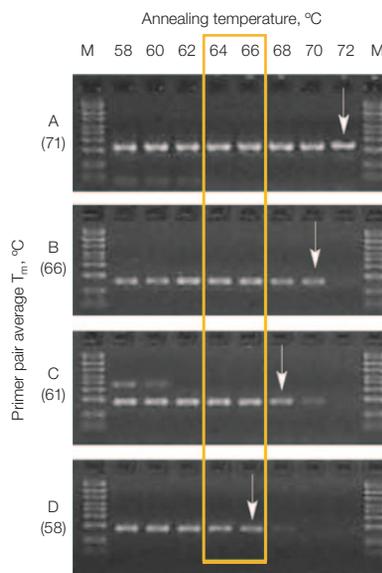


For long (1–15 kb) targets, use of iProof™ high-fidelity DNA polymerase reduces run times three- to fourfold. Targets of 1, 8, or 15 kb were amplified using three different polymerases. A two-step PCR protocol was used with iProof polymerase; three-step protocols using the shortest recommended extension times were used with other polymerases. Because iProof polymerase requires an annealing temperature 5–8°C above typical annealing temperatures, two-step protocols often can be run without redesigning primers.

Thermal Gradient

Optimize Reactions in a Single Run

- Optimizing incubation temperatures improves speed and specificity of PCR and real-time PCR
- Thermal gradient feature allows optimization of denaturation, annealing, or extension temperature in 1 experiment
- Multi-zone temperature control ensures accuracy and reproducibility for dependable results
- Dynamic ramping keeps incubation times constant
- Thermal gradients are available on all of Bio-Rad's thermal cyclers and real-time PCR systems



Gradient optimization of different PCR reactions. All reactions were evaluated in a single run. Four different primer sets (A, B, C, and D) were designed and tested for amplification. Arrows indicate the annealing temperature that provided the highest specificity while maintaining good yield. Yellow box indicates optimal temperatures. M, markers; T_m , melting temperature.

PCR Consumables

Bio-Rad offers a full line of PCR reagents, reaction vessels, and sealers that help you achieve maximum performance with your thermal cycler.

Our extensive selection of reagents includes options for high-fidelity and long PCR, real-time quantitative PCR, and reverse transcription PCR.

Bio-Rad's broad selection of reaction vessels, including 0.5 ml and 0.2 ml tubes, full-height and low-profile microplates, and high-density 384-well plates, allows you to choose the best vessel for your application. A full selection of reliable sealers is available for each vessel type and can be selected based on vessel type, cycling application, or storage method. We also offer specialized sealers for real-time PCR. Use the table below to find the best vessels and sealers to use in your Bio-Rad thermal cycler or real-time PCR detection system.

For more information about any of these products, go to www.bio-rad.com/amplification.



	0.5 ml Individual PCR Tubes (TBI-0501)	0.2 ml Individual PCR Tubes (TFI-0201, TWI-0201)	Full-Height 0.2 ml Tube Strips (TBS-0201)	Low-Profile 0.2 ml Tube Strips (TLS-0801, TLS-0851)	Multiplate™ 48- and 96-Well Unskirted PCR Plates (MLP-4801, MLP-9601)	Multiplate Low-Profile 48- and 96-Well Unskirted PCR Plates (MLL-4801, MLL-4851, MLL-9601, MLL-9651)	Hard-Shell® 96-Well Skirted PCR Plates (HSP-9601, HSP-9655)	Hard-Shell 96-Well Semi-Skirted PCR Plates (HSS-9601)	Hard-Shell 384-Well Skirted PCR Plates (HSP-3801, HSP-3805)	iQ™ 96-Well Semi-Skirted PCR Plates (223-9441)	Domed 8-Cap Strips (TCS-0801)	Optical Flat 8-Cap Strips (TCS-0803)	Microseal® 'A' Film (MSA-5001)	Microseal 'B' Adhesive Seals (MSB-1001)	Microseal 'F' Foil (MSF-1001)	96-Well PCR Plate Sealing Mats (223-9442)	Microseal 'P' and 'P+' Pads (MSP-1001, MSP-1002)	Chill-out™ Liquid Wax (CHO-1411)
MJ Mini thermal cycler	○	●	○	●	○	●					●	●						○
T100 thermal cycler		●	●		●			●		○	●	●	○	●	○	○		○
S1000 and C1000 Touch thermal cyclers	○*	●	○	●	○	●	●	○	●	○	●	●	○	●	○	○		○
DNA Engine multi-bay thermal cyclers	○	●	○	●	○	○	●	○	●	○	●	●	○	●	○	○	○	○
MiniOpticon™ system				●		●						●						○
MyiQ™, MyiQ™ 2, and iQ™5 systems			●		○			●		●			●		●			○
CFX96 Touch and CFX384 Touch systems				●		●	●		●			●		●				

● Best choice ○ Compatible

* 96-deep well reaction module.

For more information, request bulletin 6090.

Ordering Information

Catalog #	Description
MJ Mini Thermal Cycler	
PTC-1148C	MJ Mini 48-Well Personal Thermal Cycler , with adjustable heated lid, holds 48 x 0.2 ml tubes, 6 x 8-tube strips, one 48-well plate, or 12 x 0.5 ml tubes
T100 Thermal Cycler	
186-1096	T100 Thermal Cycler , includes 96-well thermal cycler, power cord, T100 tube support ring
S1000 Thermal Cycler	
184-2000	S1000 Thermal Cycler Chassis , includes power cord; does not include reaction module
185-2148	S1000 Thermal Cycler with Dual 48/48 Fast Reaction Module , includes S1000 thermal cycler chassis, dual 48/48 fast reaction module
185-2196	S1000 Thermal Cycler with 96-Well Fast Reaction Module , includes S1000 thermal cycler chassis, 96-well fast reaction module
185-2197	S1000 Thermal Cycler with 96-Deep Well Reaction Module , includes S1000 thermal cycler chassis, 96-deep well reaction module
185-2138	S1000 Thermal Cycler with 384-Well Reaction Module , includes S1000 thermal cycler chassis, 384-well reaction module
C1000 Touch Thermal Cycler	
184-1100	C1000 Touch Thermal Cycler Chassis , includes USB flash drive, power cord; does not include reaction module
185-1148	C1000 Touch Thermal Cycler with Dual 48/48 Fast Reaction Module , includes C1000 Touch thermal cycler chassis, dual 48/48 fast reaction module, USB flash drive
185-1196	C1000 Touch Thermal Cycler with 96-Well Fast Reaction Module , includes C1000 Touch thermal cycler chassis, 96-well fast reaction module, USB flash drive
185-1197	C1000 Touch Thermal Cycler with 96-Deep Well Reaction Module , includes C1000 Touch thermal cycler chassis, 96-deep well reaction module, USB flash drive
185-1138	C1000 Touch Thermal Cycler with 384-Well Reaction Module , includes C1000 Touch thermal cycler chassis, 384-well reaction module, USB flash drive
1000-Series Reaction Modules	
184-0148	Dual 48/48 Fast Reaction Module , independent dual 48-well reaction module, fits C1000™, C1000 Touch, and S1000 thermal cyclers, gradient enabled
184-0196	96-Well Fast Reaction Module , fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
184-0197	96-Deep Well Reaction Module , fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
184-0138	384-Well Reaction Module , fits C1000, C1000 Touch, and S1000 thermal cyclers, gradient enabled
184-5096	CFX96 Optical Reaction Module , for use with C1000 Touch thermal cycler chassis, includes CFX Manager™ software, license for qbase ^{PLUS} software, communication cable, reagents, consumables
184-5384	CFX384 Optical Reaction Module , for use with C1000 Touch thermal cycler chassis, includes CFX Manager software, license for qbase ^{PLUS} software, communication cable, reagents, consumables

Catalog #	Description
DNA Engine Multi-Bay Thermal Cycler Chassis	
PTC-0220G	DNA Engine Dyad Dual-Bay Thermal Cycler Chassis , does not include Alpha units (requires 2)
PTC-0240G	DNA Engine Tetrad 2 Thermal Cycler Chassis , does not include Alpha units (requires 4)
Alpha Units for DNA Engine Cyclers	
ALS-1296GC	96-Well Alpha™ Unit with Hot Bonnet® Heated Lid , holds one 96-well plate, 96 x 0.2 ml tubes, or up to 30 x 0.5 ml tubes
ALS-1238GC	384-Well High-Capacity Alpha Unit with Hot Bonnet Heated Lid , holds one 384-well microplate
ALD-1244GC	48/48 Dual Alpha Unit with Two Heated Lids , includes 2 independent blocks, each block holds 48 x 0.2 ml tubes, one 48-well plate, or up to 12 x 0.5 ml tubes

SYBR is a trademark of Molecular Probes, Inc.

Notice regarding Bio-Rad thermal cyclers and real-time systems: Purchase of this instrument conveys a limited non-transferable immunity from suit for the purchaser's own internal research and development and for use in human in vitro diagnostics and all other applied fields under U.S. Patent Number 5,475,610 (Claims 1, 44, 158, 160-163, and 167 only), or corresponding claims in its non-U.S. counterpart, owned by Applera Corporation. No right is conveyed expressly, by implication, or by estoppel under any other patent claim, such as claims to apparatus, reagents, kits, or methods such as 5' nuclease methods. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Bio-Rad's real-time thermal cyclers are licensed real-time thermal cyclers under Applera's U.S. Patent Number 6,814,934 B1 for use in research, human in vitro diagnostics, and all other fields except veterinary diagnostics.

Bio-Rad's thermal cyclers and real-time thermal cyclers are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 6,767,512 and 7,074,367.

Practice of the patented 5' Nuclease Process requires a license from Applied Biosystems. The purchase of these products includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research when used with the separate purchase of Licensed Probe. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Hard-Shell plates are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 7,347,977; 6,340,589; and 6,528,302.



**Bio-Rad
Laboratories, Inc.**

Life Science
Group

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