

thermal cycler with optional gradient and non-gradient

Thermal cycler is a precision molecular biology laboratory equipment for temperature control of polymerase chain reaction PCR. By precisely controlling the temperature cycling of the sample in the denaturation, annealing and extension stages, the amplification of DNA fragments is realized.

Modern thermal cycler is equipped with high-definition color touch screen, real-time dynamic display of experimental curves, users can always grasp the progress of the experiment, support a variety of reaction modules and program storage, is the core equipment necessary for life science laboratories.

Main Features of the Thermal Cycler

1. high-definition 7-inch TFT full-color touch screen: user-friendly interface, support for real-time monitoring of graphical curves, intuitive and convenient operation.
2. the temperature uniformity: to ensure that the temperature of the sample in each well is the same, to improve the experimental repeatability and amplification efficiency.
3. modular design, easy to replace: no need to use tools to replace the reaction module to meet different experimental needs.



4. large-capacity program storage: built-in storage of 10,000 experimental programs, through the USB interface to support unlimited program import and export.
5. Gradient and standard function free switching: suitable for different PCR experiments, convenient for primer optimization and condition screening.
6. compact and exquisite appearance design: light structure, beautiful shape, suitable for experimental table placement.
7. advanced heat dissipation system: forward and rear air outlet design, multiple instruments can be placed side by side, saving experimental space.
8. Diversified module configuration: support a variety of well plate specifications, including in situ carrier plate, 96-well × 0.2 ml, 77-well × 0.5 ml combination module, standard 96-well module and high-throughput 384-well module.
9. Intelligent hot cover control: when the program ends or the sample temperature drops below the set value, the hot cover closes automatically to protect the sample and prolong the life of the equipment.

Working Principle

Thermal Cycler repeatedly cycles the temperature of the samples in the PCR reaction tubes or plates according to the set program by precisely controlling the heating element and the refrigeration system. Each cycle consists of:

- 1, denaturation phase: high temperatures, typically 94°C to 98°C, separate double-stranded DNA into single strands.
- 2, Annealing phase: reduced temperature, typically 50°C to 65°C to bind the primer to the target DNA sequence.
- 3, Extension phase: moderate temperature, usually 72°C allows the DNA polymerase to extend the new strand along the template.

The gradient function enables parallel screening of multiple conditions in the same experiment by setting different temperatures in different areas of the reaction plate, which improves experimental efficiency and optimization accuracy. The built-in temperature sensor provides real-time feedback of temperature data to ensure the precise execution of thermal cycling.

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Model	TC10
9677 Block	96 wells x 0.2 ml + 77 wells x 0.5 ml
96 Block	96 wells x 0.2 ml
384 Block	1 x 384 wellplate
Multifunctional Block	9677 block + in situ carrier

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Model	TC10
Display	7" TFT color full-touch LCD screen, with real-time display of program curves and graphics
USB Function	unlimited program download via USB drive. system software upgradable
Communication Interfaces	2 x USB ports and LAN
Temperature Control Range	0°C to 105°C
Heating rate	5°C per second
Cooling rate	4°C per second
Temperature uniformity	$\leq \pm 0.2^\circ\text{C}$
Temperature accuracy	$\leq \pm 0.1^\circ\text{C}$
Temperature resolution	0.1°C
Temperature control method	simulated sample or block

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Model	TC10
Variable temperature rate	0.1°C to 4°C per second
Program Storage Capacity	Up to 10,000 programs can be stored internally. unlimited programs can be downloaded via USB drive
Maximum Steps	30 steps per program, supporting multiple nested loops
Maximum Number of Cycles	Standard cycle: up to 100 cycles, up to 10,000 cycles with double-nested loops
Time Increment, Decrement	1 to 600 seconds. supports Long PCR experiments
Temperature Increment, Decrement	0.1°C to 10°C, supports Touchdown PCR experiments
Auto Pause	yes
Multi-user Password Login	No need to worry about your personal programs being viewed, copied, modified, or deleted by others. ensures user privacy and security
Tm Calculator	Automatically calculates denaturation and annealing temperatures by simply

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Model	TC10
	entering the base sequence, improving work efficiency
Low Temperature Preservation	Holding time can be set indefinitely
Real-time Temperature Curve Recording	Real-time display of hot lid and sample temperature changes during operation
Program Run Report	Detailed recording of the entire program operation process, providing accurate data support for experimental result analysis
PC Connectivity, optional	Allows one computer to remotely control and manage up to 50 units with ease
Heated Lid Height	Steplessly adjustable heated lid, suitable for various types of tubes and plates
Lid Opening Method	Adjustable TOP-OPEN lid technology with audible overpressure warning
Heated Lid Temperature	30°C to 112°C
Automatic Heated Lid Shutdown	The heated lid automatically shuts off when the program ends or when the sample block temperature falls below the set value

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Model	TC10
Gradient range, differential	30°C to 105°C, 1°C to 30°C
Power supply	100Vac to 240Vac, 50-60Hz, 600W
Dimensions	365x256x255mm
Weight	7.5kg