



BIOER

COOLING & HEATING BLOCK

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HANGZHOU BIOER TECHNOLOGY CO., LTD.

Chapter 4



Dry Bath series

Cooling & Heating block

Dry Bath adopts advanced microcomputer control and thermoelectric cooling technology. It can be widely applied in sample preparation, enzyme preservation, enzyme-substrate reactions, DNA amplification and blood coagulation.

One main body can be equipped with various optional blocks to satisfy experimental requirements of various test tubes and numbers of wells. Block replacement is simple and convenient. Metal block can protect samples from pollution. Cleaning and sterilization of blocks are very easy. Block with special specification can be customized and designed to meet more extensive using demand.

- Blocks customized based on various demands
- Powerful programming function
- Multiple specifications
- Small size
- Rapid and precise ramping rate
- Alternative to water bath and ice bath
- Unique oscillation function



ThermoShaker Mixing Block



ThermoQ



ThermoCell Mixing Block

ThermoShaker Mixing Block

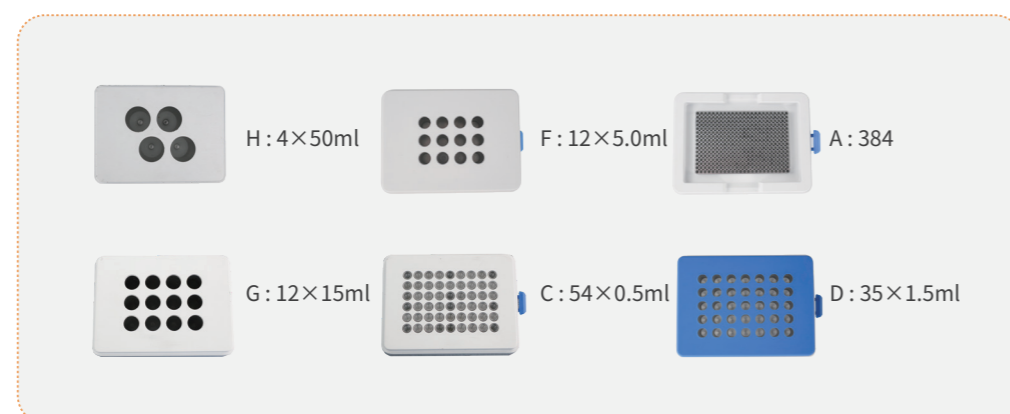


ThermoShaker represents the top level of dry bath manufacturing worldwide, which can realize shaking speed at 3000rpm. It presents super centrifugal rotation effect, and liquid vortex in tube can be observed with naked eyes. It can extremely facilitate smashing and vibration of samples. Thus, it is the most ideal automatic tool for reaction process of biological and chemical reactional samples such like incubation, catalysis, mixing and storage.

Compared with traditional screw-fixing module, the product adopts special-buckle mode which can realize rapid module replacement in 2 seconds. Also, the product is equipped with 8 modules to adapt to various test tubes, which can meet most demands in the market.

All blocks can build point-contact connection with main body through built-in sensors; thus once the block is installed, the main body will automatically recognize the type of the block without manual selection or setting. With touch-screen operation, user can enter into programming mode with one key and can edit 10 programs at one time. Besides regular shaking mode, the instrument is also equipped with free shaking mode through touching screen by finger. The instrument will start shaking through pressing fingerprint icon, while stop shaking once remove the finger.

Pictures of the blocks



Product features

- 01 High vibration frequency up to 3000rpm
- 02 High precision of temperature control, PID temperature control technology and thermoelectric cooling system ensure precise temperature control of the instrument which can reach $\leq 0.5^{\circ}\text{C}$
- 03 Rapid temperature ramping rate, heating rate can reach $8^{\circ}\text{C}/\text{min}$ while cooling rate can reach $7^{\circ}\text{C}/\text{min}$
- 04 Convenient block replacement, can replace within 2 seconds. The main body can automatically recognize block type
- 05 Equipped with 8 optional blocks
- 06 Touch screen operation, finger pressure vibration and finger screen touch-control free vibration mode
- 07 Over-temperature protection: automatic power-off protection when the temperature is over high, and temperature switch will automatically recover when the temperature falls

Product application

- Plasmid/RNA/DNA purification
- cDNA synthesis
- Enzymatic reaction (such as DNA restriction enzymes analysis, proteinase K digestion and connection)
- Bacterial strain and plasmid transformation
- DNA, RNA and albuminous degeneration
- Bacterial culture
- Lysis reaction under 100°C
- PCR reaction system preparation and mixing

Product parameters

Product model	MB-202
Temperature setting range	$0\sim 100^{\circ}\text{C}$ (resolution 0.1°C)
Temperature control precision	$\leq \pm 0.5^{\circ}\text{C}$ ($15\sim 100^{\circ}\text{C}$)
Temperature control method	Block mode
Temperature uniformity	$\leq \pm 0.5^{\circ}\text{C}$ ($20\sim 45^{\circ}\text{C}$) $\leq \pm 0.8^{\circ}\text{C}$ ($< 20^{\circ}\text{C}$ or $> 45^{\circ}\text{C}$)
Vibration frequency	300rpm~3000rpm
Vibration amplitude	3mm
Timing range	1s~99h59min
Input power	100V-240V AC, 50/60Hz, 180W
Outer dimension (mm)	$310\times 210\times 145$ (L×H×W) (main body)
Net weight	Main body 5.9kg (with 384 wells, net weight 6.3kg)
Safety certification	CE/EMC/MET/RoHS2.0, GB4793.1

Product parameters

Module	A 384	B 96×0.2ml	C 54×0.5ml	D : 35×1.5ml E : 35×2.0ml	F 12×5.0ml	G 12×15ml	H 4×50ml	J : 32×0.2ml +20×1.5ml
Max. vibration frequency (rpm)	3000	2000			1000			2000
Temperature heating and cooling time	≤12min (25°C~95°C)				≤18min (25°C~95°C)	≤21min (25°C~95°C)		≤12min (25°C~95°C)

ThermoShaker Mixing Block

ThermoCell Cooling & Heating Block

ThermoCell Mixing Block

ThermoQ

ThermoCell Cooling & Heating Block



ThermoCell Dry Bath adopts microcomputer control and thermoelectric cooling technology to achieve multi-function and multi-application. It is equipped with programming function, which can set 5 temperature points to realize continuous operation among two or more temperature points.

Product features

- 01 large-screen colorful VFD display, clear temperature and time display
- 02 meticulously designed software, easy operation and practical function
- 03 soft button, comfortable, easy and durable
- 04 wide range of temperature use, temperature deviation can be calibrated
- 05 various blocks available for selection, applicable to various centrifugal tube, test tube and micro-well plate
- 06 easy and convenient block replacement; special block can be customized and designed
- 07 CE certified product, over-temperature protection, more reliable and safer use

Product parameters

Product name	ThermoCell Cooling & Heating Block	
Product model	HB-202	CHB-202
Temperature setting range	10~105°C	-10~105°C
Temperature control range	(ambient temperature +5 °C) ~105 °C	0~100°C
Time setting range	1min-99h59min	
Temperature fluctuation	≤±0.5°C	
Temperature control precision	≤±0.5°C	
Block uniformity	≤±0.5°C	
Heating time	≤12min(20°C~100°C)	≤35min(20°C~100°C)
Cooling time	/	≤25min(20°C~0°C)
Standard module	A: 40×1.5ml; B: 54×0.5ml; C: 96×0.2ml; D: 24×φ15mm; H: 40×2.0ml; G: 26×0.5ml+24×1.5ml; J: 96-well ELISA Plate; water tank module E: 115mm×73mm×38mm(L×W×H)	
Heating	Heating pipe	TE
Cooling	/	TE
Dimension	300×200×160mm(L×W×H)	
Net weight	2.8kg	3.2kg
Power	220V~50Hz 120W	
Certification	Ferrotec Peltier/CE/EMC/RoHS2.0/PICC product quality liability insurance	

ThermoCell Mixing Block



ThermoCell Mixing Block is a product which has adopted thermoelectric refrigerator of long service life and high efficiency, brush-less DC motor and 32-digit microcomputer control technology, and it features advantages including high temperature control precision, stable running and simple convenient operation. Meanwhile, it perfectly combines vibration and constant temperature, greatly shortens the operation time of experiment, and thus improves efficiency of users.

It can be widely applied in incubation, catalysis, and storage of reactional samples, degeneration settlement of nucleic acid and protein, PCR reaction, Elisa, initial denaturation of electrophoresis and serum condensation, etc.

Product features

- 01 Thermoelectric refrigerator of long service life and high efficiency, PID temperature control technology
- 02 DC current technology, stable and reliable vibration, long service life
- 03 300 rpm ~ 1500 rpm, adjustable amplitude
- 04 Multiple standard sample modules for selection, suitable for various centrifugal tubes, test tubes and micro-well plates; blocks can be customized based on user's requirements
- 05 Large-screen colorful VFD display and friendly operation interface, can rapidly set temperature, speed and time parameters
- 06 Temperature calibration function
- 07 Short oscillation jog function

Product parameters

Product name	ThermoCell Mixing Block
Main body model	MB-102
Temperature range	Blow ambient temperature 14 °C~100 °C (minimum setting temperature 0 °C)
Temperature fluctuation	≤±0.5°C
Temperature control precision	≤±0.5°C
Heating time	≤12min(20~100°C)
Heating speed	≥5°C/min
Cooling time	≤8min (fall from ambient temperature by 10°C), ≤15min (fall from 100°C to 10°C above ambient temperature)
Cooling speed	≥6 °C/min (fall from 100°C to ambient temperature), ≥0.8 °C/min (fall from ambient temperature by 10°C)
Vibration frequency	300rpm~1500rpm
Vibration amplitude	3mm
Timing time	1-99h59m
Standard module	Module A: 40 × 1.5ml; Module B: 54 × 0.5ml; Module C: 96 × 0.2ml; Module D: 24×φ15mm; Module H: 40 × 2.0ml; Module G: 26 × 0.5ml +24 × 1.5ml ; Module J: 96-well ELISA Plate (may customize module)
Input power	AC220V±22V 150W 50±1Hz
Dimension	328×166×249(L×H×W)
Weight	8.5kg
Certification	Ferrotec Peltier/CE/EMC/RoHS2.0/PICC product quality liability insurance

* The above performance parameters refer to Block A, parameters of other blocks will be specified otherwise.

ThermoShaker Mixing Block

ThermoCell Cooling & Heating Block

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ThermoQ

ThermoQ



ThermoQ Dry Bath adopts the design of convenient replaceable block and the hot lid has creatively dismountable design of the heating part. The combination of simple two-key interface operation and powerful PC software editing function, plus the compact portable design which can be held on palm with cute appearance, make your experiment more convenient and easier.

Product features

Superior hot lid performance

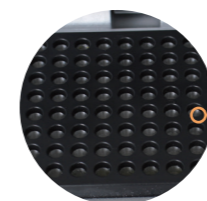
- Auto-pressure hot lid design, effectively prevents cover explosion and evaporation during operation.
- The heating part can be easily dismantled; buckle design helps disassembling with one step.
- User-defining hot lid switch status; user can independently connect to computer for setting and the setting will be automatically stored.
- Temperature of hot lid and block change simultaneously and the former is always 10°C higher than the latter; when temperature of block is lower than 15°C, the hot lid will automatically stop heating.
- It is applicable to LAMP, PCA, NASBA, RPA, sample storage, enzyme reaction, degeneration settlement of nucleic acid and protein, initial denaturation of electrophoresis and serum condensation, etc.



Buckle design

Superior module performance

- Integrated replaceable module design, without complicated dismantling tools, five blocks can be easily replaced.
- Metal block effectively prevents module pollution; anti-scald protection design frees experimenter from touching high-temperature metal and thus intensifies safety of experiment.
- The product has adopted the most advanced thermoelectric cooler which is able to run for over 50,000 hours without fault.
- The cooling & heating instrument can raise the temperature from ambient temperature to 100°C within 8 minutes and the time for temperature fall can be less than 8 minutes (100°C ~4°C), which greatly shortens the time.
- Built-in over temperature protection device (including block and hot lid); directly cutting off heating when the temperature is over high to ensure absolute safety of experiment.
- Two-key rapid setting, and master the instrument use in one minute.



Anti-scald design

Superior performance of temperature control station

- Two temperature control base units available: heating & cooling, or heating only.
- 24V DC current input; also, can be used in vehicle-mounted power, can be used for long-distance constant-temperature and constant-humidity transport of reagent.
- Connection to USB port of computer through USB B port; software control, multi-section program setting, more powerful functions.



USB B port

Innovative software

- PC software controls instrument operation, 1 computer can control multiple instruments.



1 computer can control multiple instruments.

ThermoShaker Mixing Block

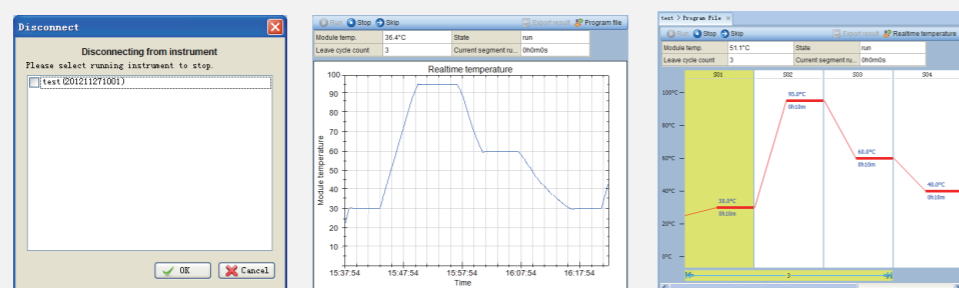
ThermoCell Cooling & Heating Block

ThermoCell Mixing Block

ThermoQ

Innovative software

- Powerful editing function, multi-point setting of time range for temperature, creatively add cycle setting, program setting simulates PCR program, greatly improve applicability.
- Practical QC function: real-time monitoring during operation, and complete report can be printed when the experiment is finished.
- Support hot plugging: during computer connected operation, hot plugging will not have an impact on the instrument running and the instrument can run through the entire process without connected; during the experiment process, your computer will not be occupied.
- The computer software will record the instrument running diary in real time, and the record is simple and clear.
- Instrument program automatic memory function: when the computer is connected and operation program is set, the instrument will automatically record the setting. No setting is required before next operation, and the former program will be operated directly, making it rapid and convenient.



Hot plugging function Real-time temperature monitoring Experiment operation interface

Order information		Single heating type	Heating and cooling type
Instrument	Without hot lid	HB-T1	CHB-T1
	With hot lid	HB-T2	CHB-T2
Module	20×0.5ml+15×1.5ml	HB-A	CHB-A
	35×1.5ml	HB-B	CHB-B
	54×0.5ml	HB-C	CHB-C
	96×0.2ml	HB-D	CHB-D
	35×2ml	HB-E	CHB-E
Select fittings	Temperature control station	HB-BA	CHB-BA
	Hot lid heating part	HLD	

Product parameters

Main body model	HB-T1 (without hot lid)	CHB-T1(without hot lid)
	HB-T2(with hot lid)	CHB-T2(with hot lid)
Blocks	A: 20×0.5ml+15×1.5ml; B: 35×1.5ml; C: 54×0.5ml; D: 96×0.2ml; E: 35×2ml;	
Temperature control range	Ambient temperature + 5 ~ 100 °C	0~100°C
Temperature display resolution	0.1°C	
Temperature rise time	≤10 min (ambient temperature 20 ~ 100 °C)	≤8 min (ambient temperature 20 ~ 100 °C)
Temperature fall time	/	≤8 min (100 ~ 4 °C)
Temperature uniformity	≤±0.5°C	
Temperature control precision	≤±0.2°C	
Temperature fluctuation	≤±0.1°C	
Time setting range	0~99h59min or ∞	
Program segment setting function	Yes	
Cycle setting function	Yes	
Program automatic memory	Yes	
QC report print function	Yes	
Maximum number of segments	9	
Maximum number of cycles	99	
Working temperature of hot lid	≥ module + 10 °C; when the temperature of module is below 15 °C, the hot lid will not be heating (for example, when the temperature of module is 50 °C, the temperature of hot lid is 60 °C ± 3 °C)	
Temperature rise time of hot lid	Temperature rise of hot lid is quicker than module, the time for rising from ambient temperature to 110 °C is shorter than 10min.	
Hot lid status	Heating part of hot lid can be dismantled (without heating part, test tube can also be pressed)	
Power supply	AC100~240V 50~60Hz 90W (universal 24V DC current power adapter)	AC100~240V 50~60Hz 120W (universal 24V DC current power adapter)
Working status display	Three-color LED light (red means heating status, yellow means constant temperature status and green means cooling status)	
Temperature display	Three-digit display	
Alarm	Buzz alarm in case of sensor abnormality, red light flicker when in working status	
Over temperature protection	Both module and hot lid are equipped with over temperature protection functions.	
Dimension mm	150×170×145(L×W×H)	
Net weight	≤1.8kg (weight may vary for different modules)	≤2.0kg (weight may vary for different modules)
Certification	CE/EMC/MET/PICC product quality liability insurance	

Note: parameters of hot lid are only that of instrument with heating part of hot lid. The data is ideal value measured in standard lab environment.

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ThermoCell

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ThermoQ