heating cooling dry bath incubator with peltier technology

Heating and cooling dry bath incubator is a high-precision temperature control laboratory equipment, incorporating advanced semiconductor hot and cold two-way regulation technology and PID intelligent temperature control algorithms, designed for laboratory environments with stringent temperature control requirements.

Heating & Cooling Dry Bath Incubator

Main Features

1. High-definition operation interface: Graphical panel displays temperature, time, mode, and more—making operation easy and information clear.
2. Dual timing mode: Switch between hours|minutes or minutes|seconds timing for long or short experimental needs.
3. Hot lid temperature control: Independently set hot lid temperature to prevent condensation and evaporation, ensuring result accuracy.

4. Multi-stage program operation: Supports multi-point temperature settings and cycle control for complex reaction paths and gradient experiments.
5. Intelligent preheating & power failure recovery: Preheat in advance to save time; automatic recovery prevents experiment interruption.
6. Auto-start on power: Device runs automatically after power-on, boosting high-throughput lab efficiency.
7. Temperature calibration & identification: Built-in calibration lets users set custom parameters; module auto-identification avoids misuse.
8. Double over-temperature protection: Hardware/software protection keeps samples and experiments safe.

Core Advantages

1. Hot & cold dual-control: Semiconductor chip (Peltier effect) enables integrated heating/cooling with fast, precise response.
2. Compact, modular: Space-saving design; interchangeable metal modules adapt to centrifuge tubes, PCR tubes, microtubes, etc.
3. Flexible multi-process control: Multi-stage program and cycle operation for integrated, multi-step reactions (e.g. enzyme pretreatment, incubation, preservation).

Working Principle

1. Peltier module absorbs/releases heat via electron migration, rapidly raising or lowering temperature.
2. PID controller uses sensor feedback for closed-loop current regulation, keeping temperature fluctuations within ±0.5°C.
3. Thermally conductive aluminum alloy bath with silicone pad ensures uniform heat transfer and avoids contamination.
4. Adjustable heat cover system creates a buffer layer above samples, preventing condensation and concentration changes.

Application Areas

1. Molecular biology: Enzyme reactions, DNA/RNA extraction, nucleic acid protection, reverse transcription—requires stable temperature and thermal cover.
2. Genetic engineering: PCR incubation, probe hybridization, single-stranded DNA synthesis—dry bath avoids water bath contamination.
3. Clinical/biochemical analysis: Reagent preheating, blood incubation, enzyme activity tests, small sample preservation.
4. Pharmaceutical & chemical R&D: Drug synthesis, reaction kinetics, catalytic testing—high/low temp control for reactions.

5. Food & environmental testing: Sample preheating, digestion, concentration for accurate processing.

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Model	**DB10**	**DB10R**
Temperature range	ambient+5°C to 100°C	ambient-25°C to 100°C
Temperature resolution	0.1°C	
Temperature accuracy	≤0.3°C	
Temperature uniformity	≤0.3°C	
Temperature rise time	≤12 minutes, 25°C to 100°C	
Refrigeration method	no	peltier
Temperature reduction time 1	fan cooling	≤12 minutes, 100°C to 25°C
Temperature reduction time 2	fan cooling	≤25 minutes, ambient to ambient-25°C
Hot lid temperature setting	off to +10°C	

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Model	**DB10**	**DB10R**
Multi-point operation	5 points	
Multi-point cycle operation	99 cycles	
Timer	1 second to 99 hours 59 minutes or continuous	
External dimensions	300x200x210mm	
Power supply	230Vac, 50-60Hz, 150W	
Weight	4.0kg	4.7kg