

AllInOneCycler™

Thermal Block



Beyond the Border of PCR Technology ...

The patented (KR10-1343891) novel alloy block and cutting-edged temperature control algorithm improve the ramp rate of *AllInOneCycler™*, which is the faster among the currently released thermal cyclers.

In addition, user convenience is improved by supporting of interchangeable 6 types blocks depending on experimental purposes.

- Faster ramp rate(7.8 °C/sec)
- Excellent accuracy & uniformity
- Interchangeable thermal block
- Easy-to-use interface
- Compact & simple design



Faster ramp rate ●●●

Novel alloy block reduces the experimental time due to 30 % faster ramp rate compared to common aluminum block

While the maximum ramp rate of a standard thermal block for AllInOneCycler™ is 6.0°C/sec, the novel alloy thermal block* that can be interchangeably assembled with AllInOneCycler™ marks 7.8°C/sec in ramp rate. Because of the fast ramp rate, the researchers can save time and energy. Heat capacity of metal alloy used in the novel alloy thermal block is about 30 % lower than common aluminum block, so the ramp rate of the novel alloy thermal block is about 30 % higher than that of aluminum block.

* Novel alloy thermal block: The novel alloy material invented by Bioneer was patented in Korea (Korean patent registration 10-1343891), and is patent-pending in the United States, Europe, Japan and China.

$$\Delta T = \frac{Q}{C \times M}$$

※ When the amount of heat(Q) supplied is constant, the 'Heat capacity', 'Specific heat(C) x Specific gravity(M)', should be decreased in order to increase temperature change (ΔT).

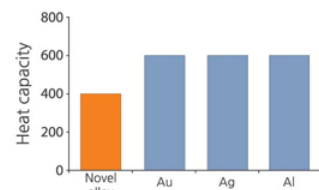


Figure 1. Heat capacity of the materials used in thermal block.

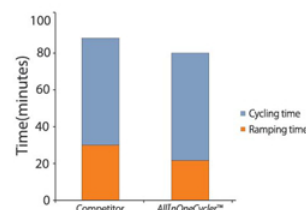


Figure 2. Comparison of operating times and amplification results between competitor and AllInOneCycler™.

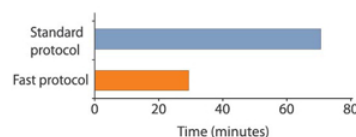


Figure 3. Comparison of operating times and amplification results between standard protocol (3-step) and fast protocol (2-step) when using AllInOneCycler™.

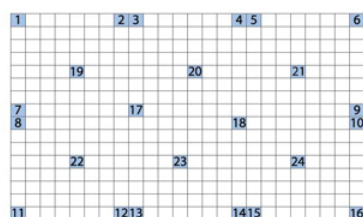
Excellent Accuracy and Uniformity ●●●

Precise temperature control system with cutting-edged algorithm enables the researcher to obtain reproducible results.

Precise temperature control system improves the temperature accuracy and uniformity on the whole well of the thermal block, and the temperature differences between center and border well are remarkably reduced. As a result, the user can achieve reproducible results because of these thermal reliability.



96 Well-block



384 Well-block

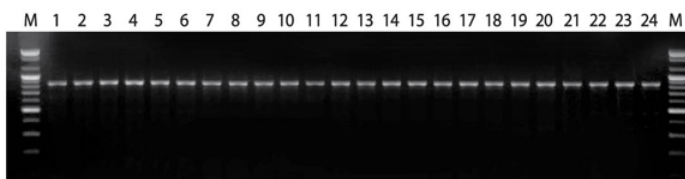
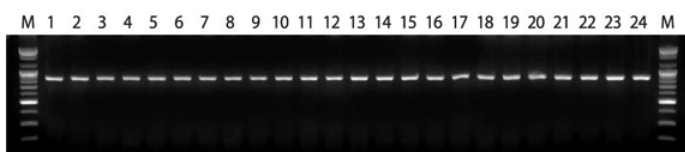


Figure 4. PCR amplification results on 24 representative wells on 96 well-block and 384 well-block to confirm temperature uniformity.

Thermal gradient function ●●●

Gradient function* enables to find the best experimental conditions at once.

The researcher can find the optimal experimental conditions easily by using gradient function of *AllInOneCycler*™ at once, and also reduce the time and consumables for additional experiments to set optimal condition.

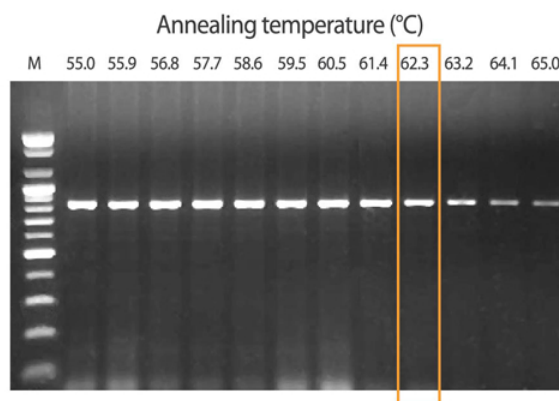
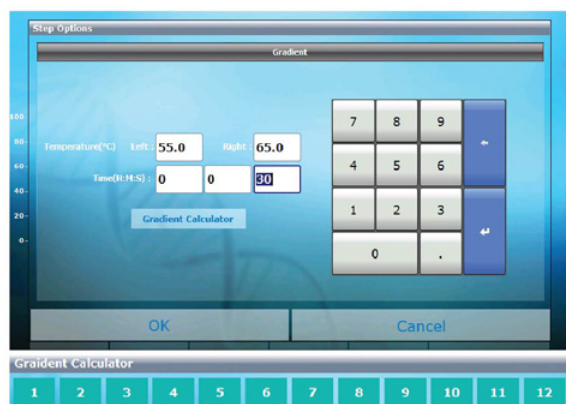


Figure 5. Amplification results of 830 bp of human genomic DNA using the gradient temperature function of the *AllInOneCycler*™ to find the optimal PCR condition.

*Gradient function is not available in the U.S., Japan, German, France and Italy

Interchangeable thermal block system ●●●

It can be selected from six different thermal blocks in accordance with their experimental purposes.

Bioneer provides the interchangeable thermal blocks made of 2 different metals (normal and novel alloy) and classified to 3 sample-well types (96-well, 384-well and slide PCR). The researcher can choose a thermal block among 6 interchangeable blocks for their experimental purposes.



96-well 0.2 ml tube



384-well 0.02 ml tube



Slide PCR 76.2 x 25.4 mm glass

Figure 6. Interchangeable sample blocks for *AllInOneCycler*™.

Easy-to-use interface ●●●

Easier to use by graphical user interface

Through graphical user interface with 7-inch touch LCD screen, the user can use AllInOneCycler™ easily and conveniently. In addition, the user can reduce the time to set PCR protocols by selecting among 8 template protocols supplied in 'New Protocol' menu.

For high-throughput research, the user can test large amount of samples at the same time by AllInOneCycler™ PC Control software that operating and monitoring the multiple devices.



● New Protocol



Figure 7. Create new PCR protocols in the 'New Protocol' menu. Make your own protocols by just touching on the screen.

● Template Protocols



Figure 8. On the 'New Protocol' menu, select a proper protocol among 8 templates.

● Open Protocol

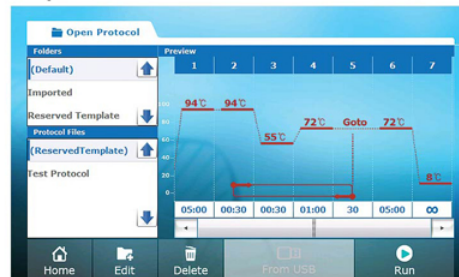


Figure 9. On the 'Open Protocol' menu, you can find previously saved protocols that are displayed instantly on the screen.

Specifications

Instrumental specifications			
Method of heating / cooling	Peltier element	Ramp rate control	0.1 °C/sec (32.18 °F/sec)
Temperature range	4.0 °C ~ 99.9 °C (39.2 °F ~ 211.82 °F)	Operating temperature	15 °C ~ 30 °C (59 °F ~ 86 °F)
Max ramp rate*	Heating : 7.8 °C/sec (46.04 °F/sec) Cooling : 6.4 °C/sec (43.52 °F/sec)	Operating humidity	20 % ~ 80 %, no condensation
Temperature accuracy	± 0.3 °C (± 32.54 °F)	Dimensions (W x H x D)	246 x 232 x 369 mm (9.68 in x 9.14 in x 14.53 in)
Temperature uniformity	≤ 0.3 °C (≤ 32.54 °F)	Weight	8.4 kg (18.52 lbs)
Lid temperature	90 °C ~ 110 °C (194 °F ~ 230 °F)	Display	7-inch Touch LCD screen
Gradient range	20 °C ~ 95 °C (68 °F ~ 203 °F)	Power consumption	100-240 V~, Max 8.5 A, 50/60 Hz, 630 VA
Temperature differential range	1 °C ~ 20 °C (33.8 °F ~ 68 °F)	Port	2 USB ports for data storage

* The max ramp rate is using AllInOneCycler™ Fast 96 well PCR system (Cat. no. A-2041-1F). When using AllInOneCycler™ 96 well PCR system (Cat. no. A-2041-1N), the max block ramp rate are 6.0 °C/sec for heating and 4.2 °C/sec for cooling.

Ordering Information

Cat. no.	Product Description
AllInOneCycler™ PCR system	
A-2041-1N	AllInOneCycler™ 96 well PCR system
A-2041-2N	AllInOneCycler™ 384 well PCR system
A-2041-3N	AllInOneCycler™ Slide PCR system
A-2041-1F	AllInOneCycler™ Fast 96 well PCR system
A-2041-2F	AllInOneCycler™ Fast 384 well PCR system
A-2041-3F	AllInOneCycler™ Fast Slide PCR system
AllInOneCycler™ thermal block	
A-2041-1-1	AllInOneCycler™ 96 well thermal block only
A-2041-2-1	AllInOneCycler™ 384 well thermal block only
A-2041-3-1	AllInOneCycler™ Slide thermal block only
A-2041-1-2	AllInOneCycler™ Fast 96 well thermal block only
A-2041-2-2	AllInOneCycler™ Fast 384 well thermal block only
A-2041-3-2	AllInOneCycler™ Fast Slide thermal block only
AllInOneCycler™ PC control software	
A-2041-9	AllInOneCycler™ PC control software

Related Products

Cat. no.	Product Description
DNA polymerase & PCR PreMix	
K-2012	AccuPower® PCR PreMix, 96 tubes
K-2631	AccuPower® ProFi PCR PreMix, 96 tubes
K-2111	AccuPower® Multiplex PCR PreMix, 96 tubes
K-2611	AccuPower® PyroHotStart Taq PreMix, 96 tubes
Reverse transcriptase & RT-PCR PreMix	
K-2044	AccuPower® CycleScript RT PreMix, dT ₂₀ , 96 tubes
K-2201	AccuPower® RocketScript™ Cycle RT PreMix, 96 tubes
K-2501	AccuPower® RocketScript™ RT-PCR PreMix, 96 tubes
Plastic consumables	
TC2-02-N	0.2 ml Flat Cap PCR Tube, 1000 tubes
TC-02-N	0.2 ml Dome Cap PCR Tube, 1000 tubes
T-028-CN	0.2 ml 8-Strip PCR Tube with 8-strip Caps
3247-01	0.2ml PCR Tubes with individual attached UltraFlux® I
3420-00	Semi skirt 96-Well PCR Cycle Plate, 10 plates
3430-00	Full skirt 384-Well PCR Cycle Plate, 10 plates
3510-00	96 well sealing mat, 5 ea

Please visit Bioneer's homepage (www.bioneer.com) for more information about the related product including the enzymes and plastic wares.

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