



thermal cyclers
NAHITA

Thanks to their highest features and incredible price, Nahita thermal cyclers are the first choice in a wide range of laboratories and research centres to perform the polymerase chain reaction or PCR, technique that allows obtaining millions of copies of a certain DNA template.

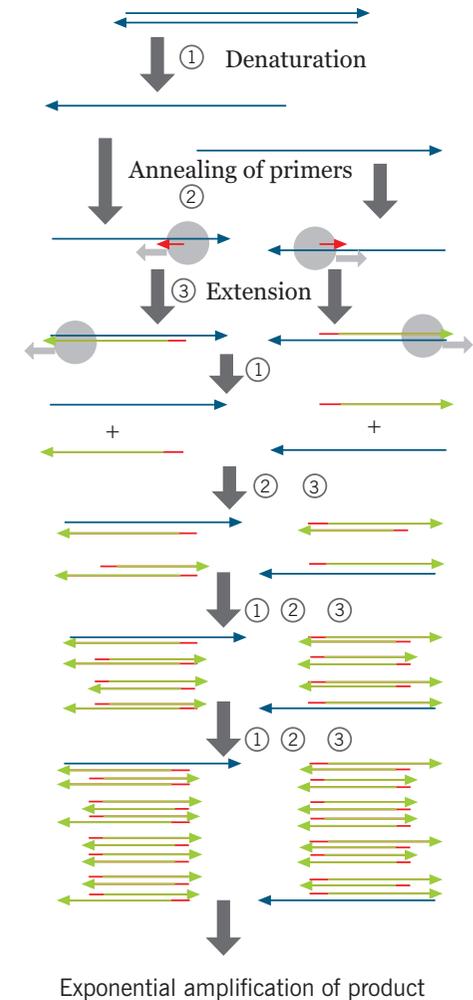
brief introduction to PCR

The most common protocol of PCR consists of a series of 20-30 cycles, in each one of them the new copies of DNA are multiplied exponentially. Each cycle is divided into 3 steps at different temperatures:

- **Denaturation:** separation of the two DNA strands by submitting the sample to high temperatures of about 95 °C. This way, each strand is free for joining the primers and the DNA polymerase.
- **Annealing of primers:** each primer will join its complementary sequence, thus acting as limits of the DNA region that is going to be amplified. For this annealing, temperature must go down to 50-60 °C depending on primer composition.
- **Extension:** DNA polymerase begins synthesizing the new DNA strand, starting from the primers. The optimum temperature for annealing depends on the polymerase used and is usually between 75-80 °C.

The application of PCR combined with other techniques as agarose gel electrophoresis or hybridization with specific probes (Southern blot), are practically unlimited and very different, reaching diverse fields as basic research, Medicine, forensic and police investigations, Paleontology or Archeology.

figure1:
PCR diagram



general features

Nahita thermal cyclers are equipped with Peltier-based technology that allows heating and cooling sample tubes by simply reversing the electric current, and that, together with the use of aluminium alloy blocks, allows obtaining the maximum performance and accuracy of the PCR technique:

- High quality and durability of Peltier-based components increasing the life time of the equipment
- Compact, light and noiseless design; for space-saving and easy setup and transportation
- LCD display that offers complete information about the different steps of the PCR protocol, the current step and protocol remaining time
- Intuitive interface and large keyboard for an easy and quick programming
- Combi-block to adapt to different type of tubes, strips or plates depending on analysis requirements
- Heated and height adjustable lid
- RS232 output for data transmission



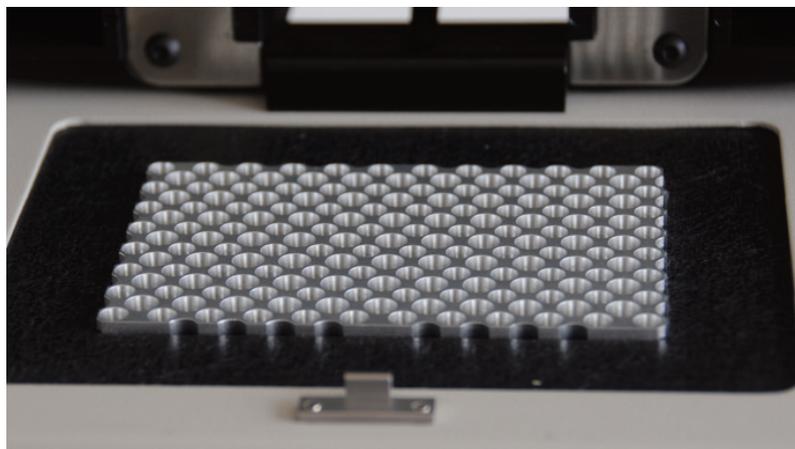
NAHITA thermal cyclers

[2 in 1 combi-block]

Made of aluminium alloy to reach the maximum performance and accuracy of the technique, it presents a combined configuration for different type of tubes avoiding the necessity of interchanging blocks and minimizing breakage and problems as well as saving space and money.

Maximum capacity according to the tube used:

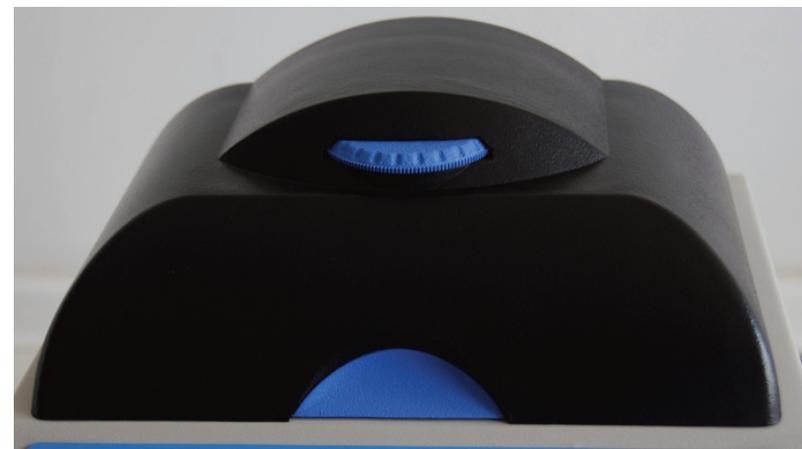
- 96 x 0.2 mL standard tubes
- 77 x 0.5 mL thin-wall tubes
- 8 x 12 tube-strips of 0.2 mL
- 12 x 8 tube-strips of 0.2 mL
- 1 x 96 wells plate



[Heated and adjustable lid]

The features of the lid of Nahita thermal cyclers increase accuracy and reproducibility of analysis:

- Heated lid up to 105 °C to avoid water condensation in tube lids that would produce a concentration of solutes and modify the optimal conditions for reaction.
- Height adjustment system so as the lid is perfectly adjusted assuring a good thermal contact with tubes.

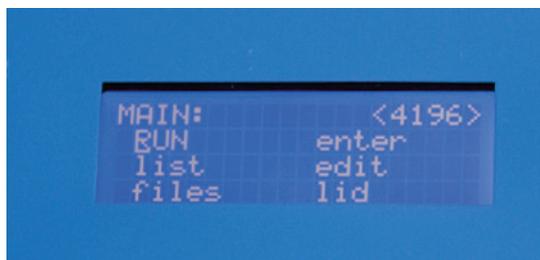


[Application software]

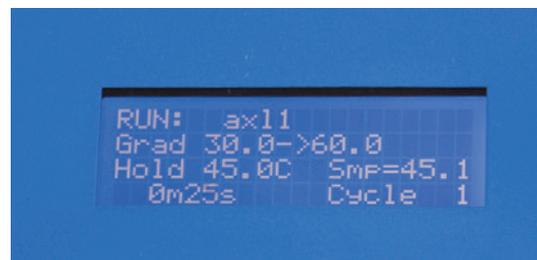
- 1 | Memory for more than 125 different programs
- 2 | 2 different temperature control modes available:
 - Block temperature: the programmed temperature is that of the block
 - Tube temperature: by inputting the volume of sample in tubes the estimated temperature inside the tubes can be programmed
- 3 | Possibility of performing special variants of the PCR technique since for each step of a cycle the following parameters can be programmed:
 - Temperature increase/decrease: in each cycle the step temperature can be increased or decreased respecting to the previous cycle (for Touchdown PCR)
 - Time increase/decrease: in each cycle the step time can be increased or decreased respecting to the previous cycle (for Long PCR)
 - Temperature heating rate
 - Pause: to input a pause in the segment (for hot start PCR)
 - Gradient (only model MG96G): especially aimed to determine the optimal annealing temperature in a single experiment
- 4 | Immediate visualization of information in each phase or cycle of the program
- 5 | Pause and resume function
- 6 | Automatic restart in case of power loss

Software displays

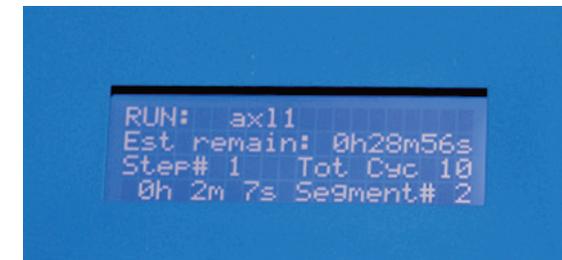
01 display: main menu



02 display: running program



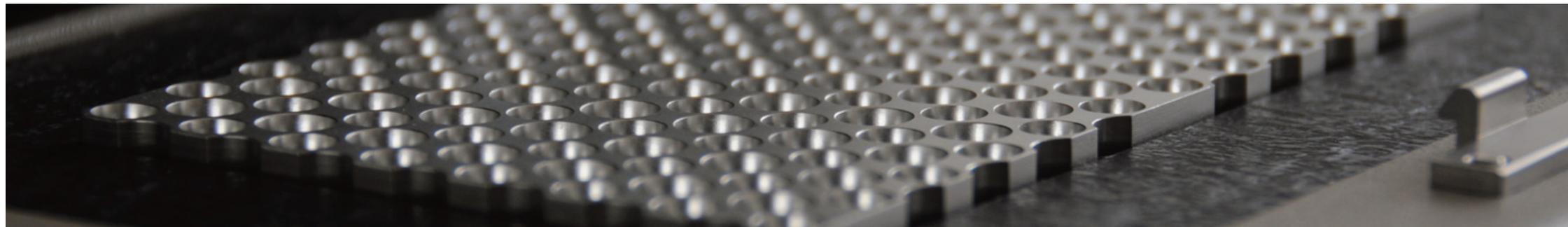
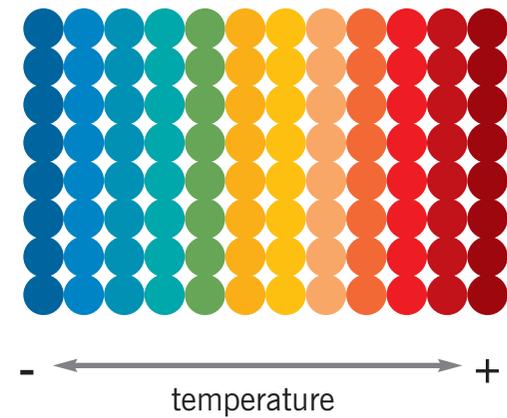
03 display: additional info about running program



[Gradient function (only model MG96G)]

Length and temperature of each step, especially annealing step, must be determined for each PCR reaction. Gradient function, available in Nahita thermal cycler model MG96G, allows programming a gradient up to 30 °C so as a different temperature is set in each column of the block; this way, different conditions can be tested in a single experiment speeding up and making easier the set-up of the technique.

[Temperature gradient]



technical features

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Code	50604096	50604196
Model	MG96+	MG96G
Technology	Peltier	
Block		
Capacity	96 x 0.2 mL; 77 x 0.5 mL	
Compatibility	Tubes of 0.2 mL and 0.5 mL (thin-wall) 8 and 12 tube-strips 96 wells PCR plates	
Temperature	0 °C – 99.9 °C	
Max. heating rate	3 °C/s	
Max. cooling rate	2 °C/s	
Temp. uniformity	≤ ± 0.2 °C	
Temp. accuracy	≤ ± 0.2 °C	
Temp. Control mode.	Tube and block	
Adjustable heating rate	0.1 °C – 3 °C	
Display	Large blue LCD	
Programming		
Programs	> 125	
Max. number cycles	99	
Temp. increase/decrease	-10 °C / 10 °C	
Time increase/decrease	1 s- 60 s	
Auto pause	Yes	
Auto restart	Yes	
Hold at 4 °C	Unlimited time	
Running time display	Yes	
Lid		
Temperature	105 °C	
Height	Adjustable	
Auto off	Yes	
Gradient		
Gradient range	No	1 °C – 30 °C
Accuracy	No	≤ ± 0.3 °C
Column uniformity	No	≤ ± 0.3 °C
Temp. range.	No	30 °C – 99.9 °C
Dimensions approx. (LxWxH)	315x240x275 mm	
Weight approx.	8.8 Kg	
Power	220 V ± 25%, 50/60 Hz.	

