PCR

Optimal Amplification Performance

Biometra TOne

analytikjena
An Endress+Hauser Company

Biometra TOne

The Biometra TOne is the latest member in the family of Biometra Thermal Cyclers, offering the same, well-known, familiar performance.

It additionally comes with an ideal price-performance ratio for each user, without missing the typical high-grade technology and excellent quality »Made in Germany«.

Features of Biometra TOne:

- **Optimal price – performance ratio**
- **Fast Ramping, Best Accuracy:** Superior sample block temperature control
- **Whisper Quiet:** Low noise emission of max. 45 dB
- **High Performance Smart Lid:** Defined pressure control for highly reproducible results
- **Linear Gradient Tool:** For easy gradient programming using the primer annealing temperature

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Quality for PCR

Tradition plus innovation: Analytik Jena can look back on a long tradition of developing high-quality, highly precise analytical systems. Over the past 25 years, Analytik Jena has become one of the world's most innovative manufacturers in this field.

The Biometra product line: More than 25 years of experience and expertise

Established in Göttingen, Germany, in 1985, Biometra is an Analytik Jena AG brand offering high-quality life science products. Biometra's more than 25 years of experience developing and manufacturing thermal cyclers dates back to the introduction of the original TRIO thermal cyclers in 1989.

The premium quality »Made in Germany«

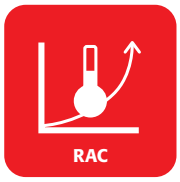
Developed in Göttingen, the Biometra TOne thermal cycler is based on a powerful new electronics and unites excellent performance with innovative design. The latter includes a 7" full-colored touchscreen and a new, intuitive software interface. The fast ramping and temperature uniformity of the Biometra TOne are yielding precise, reproducible results and an easy-to-use thermal cycler with excellent technical specifications. The Biometra TOne thermal cycler is manufactured with exceptionally high-quality materials to create a robust, long-lasting product that will meet the highest demands.

- New electronics combined with a modern design
- 7" full-colored touchscreen for easy operation

Uniting Versatility and High Performance

High-speed thermal block: The Biometra TOne is available with high-performance sample blocks, coated by a special alloy to protect it from corrosion. Amplification results are always excellent and reliable with ideal reproducibility.

Fast Ramping: Thanks to the new electronics, the Biometra TOne can reach high heating and cooling rates of up to 4 °C/sec.

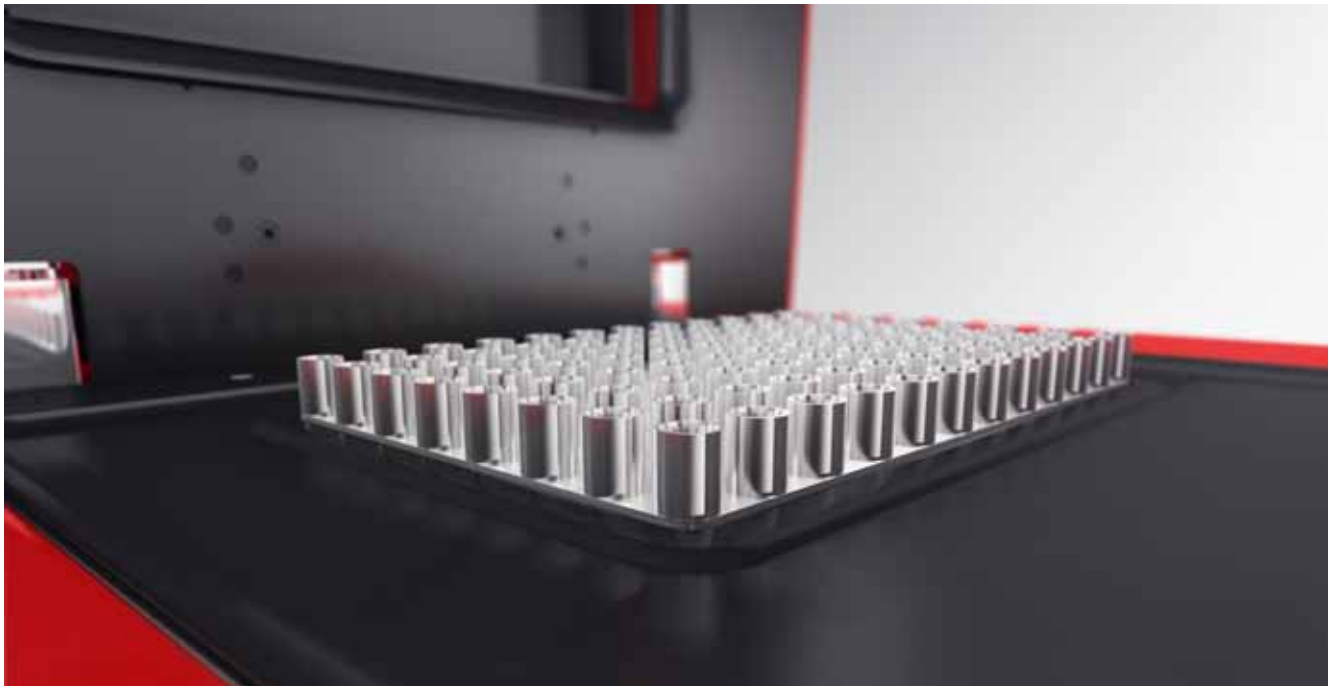


Block Control: The Biometra TOne controls the sample block temperature without under- or overshooting the programmed target temperature. This reflects our philosophy that the instrument does exactly what the user has programmed it to do. The ingenious temperature control system incorporated into our **RAC** (**R**amping – **A**ccuracy – **C**ontrol) technology maximizes experimental reproducibility and achieves outstanding temperature control accuracy.

The perfect block seal

The sample block is also perfectly sealed to prevent condensation from coming into contact with either the peltier elements located below the sample block or with other electronic components. The seal protects the peltier elements and extends the lifetime of the instrument.

- Excellent heating and cooling rates for quick protocol run times
- Superior temperature uniformity for reproducible results
- Perfect protection from corrosion and condensation

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Each Detail Matters

Biometra TOne is not only a thermal cycler, it is an dependably partner for day-to-day routine work as well as for complex PCR optimizations. Therefore each details matters.

Whisper Quiet

The airflow of the Biometra TOne thermal cycler has been optimized to keep the maximum noise level of the instrument down to extremely low 45 decibels. This efficient airflow system also means that the Biometra TOne takes up very little space. At 26 x 43 centimeters, the dimensions of the unit would appear to be average at first glance – its effective footprint, however, also has to include the clearance zone needed to accommodate sufficient airflow at the back of the instrument. The efficient airflow of the Biometra TOne keeps this additional space requirement down to just ten centimeters – much lower than that of other thermal cyclers. A combination of low noise and a minimal footprint, **Whisper Quiet** technology is the result of 25 years of thermal cycler development experience.

- Smaller effective footprint
- Efficient airflow
- Whisper Quiet technology for quiet operation

High-Performance Smart Lid (HPSL)

The heated lid of the Biometra TOne is equipped with **HPSL** technology. An integrated slip clutch always maintains constant contact pressure, regardless of the shape and height of the plastic ware. This optimizes the contact between the sample block well and the walls of the plastic ware, resulting in reproducible conditions. As soon as the heated lid is closed, a rubber seal on the lid encapsulates the space surrounding the sample block. This closed space increases the sample block temperature uniformity and prevents condensation formation during the final PCR cooling step.

- Optimum contact pressure regardless of the PCR tubes used
- High sample block temperature uniformity
- Reproducible conditions

Automatic lid-opening mechanism

The Biometra TOne comes with an one-touch opening mechanism – just press the locking mechanism, and the heated lid opens. A spring mechanism holds the lid in the open position, preventing it from dropping down. The locking mechanism automatically engages when the operator closes the lid.

- Heated lid opens at the press of a button
- The lid's 90° opening angle provides ready access to the sample block
- No risk to the user of burns or bruises

Easy Programming and Intuitive Handling

Thermal cyclers are well known in day-to-day molecular biological work. Creating new PCR protocols can take a lot of time, especially if all parameters for every step need to be set manually. Biometra TOne again convince with several features for easiest programming and intuitive handling of the whole thermal cycler.

The intelligent way to program a gradient

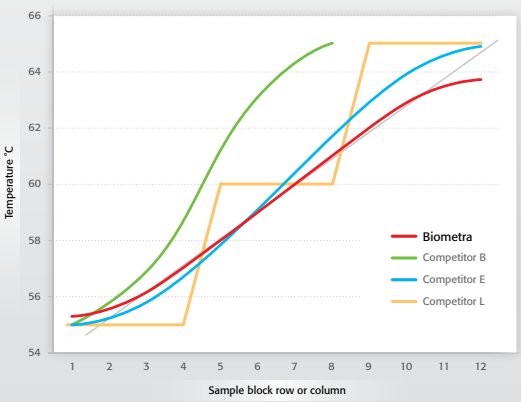
Determining the optimum annealing temperature is a challenge when creating a new primer pair. Using the gradient tool allows the operator to find the optimum annealing temperature under experimental conditions and apply that temperature value to routine applications.

Programming gradients usually means to set temperature for the first and the last row to determine the gradient range. For most thermal cyclers, the temperature interval is not the same from one row of the sample block to the next. In addition, the sigmoidal temperature curve of the gradient brings two disadvantages:

1. The automatically resulting temperatures for the other rows of the sample blocks, in particular in its center, are almost always odd-numbered.
2. The temperature differences between the rows are unevenly distributed, increasing towards the center of the sample block.

The Linear Gradient Tool (**LGT**) enables programming of a temperature gradient with defined temperature intervals (increment) between the individual rows of the sample block. It allows the user to enter the calculated Tm value minus, e.g., 5 °C and the desired temperature increment (e.g. ± 1 °C) between the rows of the sample block. For maximum comfort, the Linear Gradient Tool now supports programming of even-numbered temperature values for a maximum number of rows.

- Entry of the primer annealing temperature
- The temperature interval (increment) between individual rows is definable
- Easy programming of even-numbered temperature values



The graph below shows temperature curves for a sample block with a gradient ranging from 55 °C to 65 °C at increments of 1 °C per row. For the Biometra thermal cyclers (red line), the temperature difference between rows three and ten are exactly the same like Biometra. Competitor E also applies the gradient along the long side of the sample block. In this case, however, the temperature difference between the rows varies, producing a sigmoidal temperature curve. The temperature differences between rows vary for competitor B as well. Additionally the gradient is applied along the short side of the sample block, resulting in fewer temperature intervals within the block. Although competitor L keeps the temperature constant within a given zone, the number of different temperatures used is considerably smaller.

Pre-installed program templates

The Biometra TOne software offers a number of pre-installed program templates for different applications. The program templates provide a general protocol structure and can be easily adapted for the current experiment.

Multi-step programming

Editing a template or setup of new protocols is quite simple due to the multi-step programming feature, which allows users to enter all of the parameters for every program step within a single screen. Thus the multi-step programming renders constantly switching back and forth between different screens unnecessary and enables to change easily from step to step.

Direct spreadsheet and graphical programming

Additionally PCR programs can be edited very fast by direct easy spreadsheet or graphical programming. Just touch the parameter to be modified, enter the desired value and confirm the settings. All parameters needed are shown in one single screen. Only one touch redirects the user from the easy spreadsheet to the alternative graphical programming mode.

User-specific quick-start list

Once a PCR protocol is created, the Biometra TOne thermal cycler offers two options to load programs quickly. On the one hand users can check a protocol in the preview before starting it and on the other hand the quick-start feature lists the five latest started or edited programs of the logged in user. Resultant the user specific quick-start avoids long time searching for the desired program. The system retains each user's quick-start list, even if the user has been absent for a long period of time

Extended self-test

The extended self-test covers all of the relevant functions of the thermal cycler and summarizes the results in a report. Up to seven different tests are carried out and results are stored on the instrument where they can be called up individually for each test.

Technical Data

General	Biometra TOne 96	Biometra TOne 96G
Block Capacity	96 x 0.2 ml, 96-well microtiter plates, 12 x 8 well strips 0.2 ml	
Block Coating	Special alloy	
Block Material	Aluminium	
Max. Heating Rate	4.0 °C/sec *	
Avg. Heating Rate	3.8 °C/sec *	
Gradient Span**	-	0.1 to 20.0 °C
Temperature Uniformity	95 °C ± 0.60 °C after 15s 70 °C ± 0.30 °C after 15s 55 °C ± 0.20 °C after 15s	
Control Accuracy	± 0.1 °C	
Software	User-specific quick start option for the five most recent programs; program preview before start; option for toggling between table and graph programming mode; linear gradient tool; service info file (SINF) generation; expanded self-test; adjustable heating and cooling rates; gradient temperature diagram view; Ethernet-based PC control; user administration tool	
Display	7“ color touchscreen	
Automatic restart after power failure	Yes	
High-Performance Smart Lid (HPSL) technology	Yes	
Noise emission	Approx. 45 dB max.	
Interfaces	USB A, Ethernet	
Dimension	26 cm x 43 cm x 21 cm	

Order Information

Order number	Description
846-2-070-311	Biometra TOne 96, 230 V Thermal cycler with 96 well sample block (0.2 ml)
846-2-070-301	Biometra TOne 96G, 230 V Thermal cycler with 96 well sample block (0.2 ml) and gradient function
846-4-070-311	Biometra TOne 96, 115 V Thermal cycler with 96 well sample block (0.2 ml)
846-4-070-301	Biometra TOne 96G, 115 V Thermal cycler with 96 well sample block (0.2 ml) and gradient function
846-5-070-311	Biometra TOne 96, 100 V Thermal cycler with 96 well sample block (0.2 ml)
846-5-070-301	Biometra TOne 96G, 100 V Thermal cycler with 96 well sample block (0.2 ml) and gradient function

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