

# Biometra TRIO

## Triple powered PCR

- Ultrafast heating and cooling rates
- TOS technology for annealing temperature optimization
- High-quality thermocycler »Made in Germany«



**Biometra**

PRODUCT LINE

# Biometra TRIO

## Triple powered PCR

### Threefold power for maximum flexibility in PCR

The Biometra Trio provides three independent sample blocks which can run three different PCR reactions in parallel. The Biometra Trio is a unique, premium instrument, »Made in Germany« and held to the absolute highest quality standards.

### Features of the Biometra Trio:

- **THREE BLOCK SYSTEM:** Three independent sample blocks for ultimate flexibility
- **FASTEST RAMPING, HIGHEST ACCURACY, BLOCK/WELL CONTROL:** 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
- **TEMPERATURE OPTIMIZATION STEP:** TOS-technology to determine the optimal annealing temperature
- **ADVANCED USER MANAGEMENT:** Individual rights settings for each user





**analytikjena**

Biometra TRIO

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## Premium quality for professionals

### Analytik Jena: Tradition plus innovation

Analytik Jena can look back on a long tradition of developing high-quality, highly precise analytical systems – a tradition that goes all the way back to the beginnings over 150 years ago with Ernst Abbe and Carl Zeiss. Over the past 25 years, Analytik Jena has become one of the world's most innovative manufacturers of analytical instrumentation.



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

Founded 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 thermocyclers dates back to the introduction of the original TRIO thermocycler in 1989.

### The premium quality »Made in Germany«

Developed at Biometra in Göttingen, the Biometra Trio thermocycler unites superior performance with the flexibility of three independent sample blocks to run three different PCR programs simultaneously.

The Biometra Trio features a 7" crystal clear, full-colored TFT touchscreen and an intuitive software interface including several features like the protocol wizard, user specific quick start of PCR programs, Advanced User Management (AUM) with individual rights settings and Temperature Optimization Step (TOS) function for the annealing temperature optimization of new primer pairs. PCR programs can be created and transferred back and forth between the Biometra Trio and a Biometra TAdvanced using the integrated USB function.

The speed and temperature uniformity of the Biometra Trio are unrivaled to date, yielding precise, reproducible results and an easy-to-use thermocycler with excellent technical specifications. The Biometra Trio thermocycler is manufactured with exceptionally high-quality materials to create a robust, long-lasting product that will meet the highest demands.

- Three independent sample blocks
- 7" full-colored TFT touch screen for easy operation
- Exchange of PCR programs with the Biometra TAdvanced thermocycler



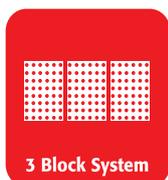
# Biometra TRIO

## Three sample blocks in ONE thermocycler



### Three independent Thermocyclers in one housing

The Biometra Trio thermocycler provides three independent blocks and heated lids in one housing. Thanks to the multiblock technology three different independent protocols can be run in parallel. The Biometra Trio is available in different versions with three blocks for 48 x 0.2 ml tubes, 30 x 0.5 ml tubes or as combi block version for 48 x 0.2 ml or 18\* x 0.5 ml tubes. Therefore the Biometra Trio offers high parallel throughput (up to 144 x 0.2 ml samples) in combination with the flexibility to run different protocols.



This makes the Biometra Trio the perfect instrument for laboratories requiring high flexibility and the need to frequently optimize new PCR protocols.

\* capacity increases to 35 x 0.5 ml tubes by use of small cap tubes

### The perfect block seal

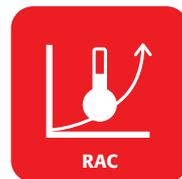
All sample blocks are also perfectly sealed to prevent condensation from coming into contact with either the Peltier elements located below the sample blocks or with other electronic components.

The seal protects the Peltier elements and extends the life of the instrument.

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

### High-speed aluminum block

The Biometra Trio thermocycler is available with three high-speed aluminum sample blocks. Fastest Ramping: Thanks to the powerful electronics, the Biometra Trio blocks can reach fastest Ramping rates of up to 5°C/s. Highest Accuracy: The Biometra Trio sample blocks are designed to have a very low mass to quickly adapt to temperature changes. When the lid is closed, the rubber sealing around the heated lids create an enclosed space. This improves temperature uniformity across the sample block, and allows the Biometra Trio to achieve excellent overall temperature uniformity at even the highest temperatures. Block Control: The Biometra Trio controls the sample block temperature without under- or overshooting the programmed target temperature.



The ingenious temperature control system incorporated into our RAC (Ramping – Accuracy – Control) technology maximizes the reproducibility of experiments.



# Biometra TRIO

## Designed down to the smallest detail

### Whisper Quiet

The airflow of the Biometra Trio thermocycler has been optimized to keep the maximum noise level of the instrument down to an extremely low 45 decibels. This efficient airflow system also means that the Biometra Trio takes up very little space.

At 30 x 41 centimeters, the instrument has a very small footprint and thanks to an efficient airflow design the clearance zone needed for sufficient ventilation is only 10 cm.

A combination of low noise and a minimal footprint, the **Whisper Quiet** technology, is the result of 25 years of thermocycler development experience.



- Small footprint
- Efficient airflow
- Quiet operation

### High-Performance Smart Lid (HPSL)

The heated lid of the Biometra Trio 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 Trio includes a one-touch opening mechanism – just press the locking mechanism, and the heated lid automatically swings open. 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

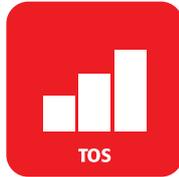


# Biometra TRIO

## Temperature Optimization Step (TOS)

### The safe way to determine the annealing temperature

Finding the best primer annealing temperature is crucial for the specificity and efficiency of PCR reactions. Often, only a limited optimisation of an experiment is completed, leading to unspecific by-products or reduced PCR sensitivity. By using the Biometra Trio **Temperature Optimization Step (TOS)** function new primer pairs with unknown annealing temperatures can be tested quickly and optimized in very short time. The Temperature Optimization Step (TOS) function makes use of the three sample blocks and provides three different temperatures for a selected program step. Just set the temperature for sample block 2 and define the temperature difference (temperature increment) for block 1 and 3. For maximum ease of use, programs containing Temperature Optimization Steps automatically start on all three sample blocks simultaneously.



- Entry of the primer annealing temperature
- The temperature difference (increment) between blocks is definable
- Easy programming of even-numbered temperature values



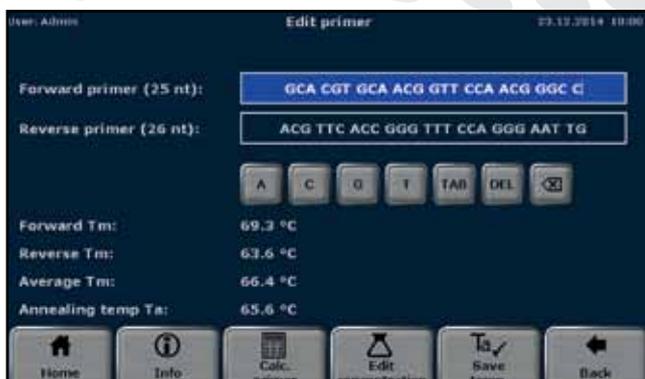
### Easy programming

Creating new PCR programs takes a lot of time if the parameters for every step need to be set manually. The Biometra Trio offers two options for easy protocol creation:

- Pre-installed program templates
- Protocol wizard

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

The protocol wizard offers the ability to create specific PCR programs by entering just a few inputs. The protocol wizard is based on program templates for specific polymerases. For up to eight different polymerases program templates can be saved in the Biometra Trio software and only the annealing temperature, cycle number and product length must be filled in to create a specific PCR programs. Furthermore the protocol wizard includes a primer annealing temperature calculator and the calculated  $T_a$  value can be used for protocol creation.



# Biometra TRIO

## Excellent simplicity

### Multi-step programming

The Biometra Trio thermocycler provides preinstalled program templates for a variety of applications. To make it easy to edit a template or to create a new program, the software also comes with a multi-step programming feature that allows users to enter all of the parameters for every program step within a single screen.

- Quickly program new programs or edit program templates
- Switch easily between program steps
- No more constantly switching back and forth between different screens

### Direct spreadsheet and graphical programming

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 your settings. All fields for the input of program parameters are shown in one single screen. One touch leads from the easy spreadsheet to the alternative graphical programming mode. With direct spreadsheet or graphical programming – used in combination with Multi-Step Programming, the protocol wizard and preinstalled templates – editing of PCR programs has never been faster or easier.

- All parameters in one screen
- Spreadsheet view equals written records of PCR programs in the laboratory notebook
- Toggle between programming modes quickly



# Biometra TRIO

Next level



## User-specific quick-start list

The Biometra Trio thermocycler offers two options for finding programs quickly:

1. Users can check a program in the program preview before starting it.
2. The user-specific quick-start feature lists the five latest started or edited programs by whichever user has logged in.
  - The quick-start feature is user specific, showing only the programs for the logged in user
  - No need to spend a 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

No.	User	Program no.	Name	BlockType	Program Type
1	ADM	02	Test 5	Mini 20C	
2	ADM	05	Test 1	Mini 20C	
3	ADM	04	Test 3	Mini 20C	
4	ADM	05	Test 4	Mini 20C	
5	ADM	02	Test 2	Mini 20C	

Navigation buttons: Home, New from template.

## Extended self-test

The extended self-test covers all of the relevant functions of the thermocycler and summarizes the results in a report.

- Six different testing fields
- Results are stored on the instrument and can be called up individually for each testing field
- No additional costs from required extras such as a USB dongle

No.	Date	Time	Block Type	Serial Number	Block	Test result
1	08.04.2013	12:04:18	40 well	20112344	A1	Pass
2	08.04.2013	11:43:34	40 well	20112294	A1	Pass

Navigation buttons: Home, Back.

# Biometra TRIO

Made for the user

## Advanced User Management (AUM)

The Biometra Trio software can manage up to 30 user accounts with three standard user levels available: administrator, users with generic rights and users with limited rights. A convenient menu allows the administrator to configure settings for each user individually by either activating or deactivating specific rights. Access to the instrument can be limited to authorized personnel – avoiding unwanted changes to system settings and PCR protocols – by applying the user administration tool in combination with the password protection of user accounts. The user management can be switched off by the administrator if this feature is not of interest for a workgroup.



- Three different user groups with default rights
- Rights can be set individually for each user
- User administration can be switched on or off



## GLP conformity

In addition to retaining run log files (exported for long-term archival), the Biometra Trio also documents PCR runs by saving error messages and results from the initial and extended self-test. The documentation tools in combination with AUM allow GLP-compliant operation of the Biometra Trio thermocycler.

- Extensive tools for documenting PCR runs
- External archival option
- Access rights can be configured individually



# Biometra TRIO

## Technical data

Name	Biometra TRIO 30	Biometra TRIO 48	Biometra TRIO combi
Capacity	3 blocks for 30 x 0.5ml tubes each	3 blocks for 48 x 0.2ml tubes or 48 well microplates or 6 x strips of 8 each	3 combi blocks for 18 x 0.5ml tubes** or 48 x 0.2ml tubes, or 48 well microplates or 6 x strips of 8
Block material	Aluminum	Aluminum	Aluminum
Block coating	Special alloy	Special alloy	Special alloy
Max. heating rate*	4.0 °C/sec	5.0 °C/sec	3.0 °C/sec
Max. cooling rate*	3.6 °C/sec	4.2 °C/sec	2.7 °C/sec
Multiblock tool	Temperature Optimization Step (TOS)		
Temperature Uniformity	95°C	+/- 0.60 °C after 15 s	
	70°C	+/- 0.30 °C after 15 s	
	55°C	+/- 0.20 °C after 15 s	
Temperature Range	3 °C to 99 °C		
Control Accuracy	+/- 0.1 °C		
Software	User specific quick start of the last five programs, program preview prior to start, toggle between spreadsheet and graphical programming mode, Temperature Optimization Step (TOS), Service Info Files (SINF), Extended Self-Test (EST), adjustable ramp rates, PC control via Ethernet, comprehensive user administration tool, protocol wizard, annealing temperature calculator		
Program memory	Total capacity of 350 programs in up to 30 user directories		
Display	7" color touchscreen		
Automatic restart after power failure	Yes		
High-Performance Smart Lid (HPSL) technology	Yes		
Lid Temperature Range	30 °C to 110 °C		
Power consumption	1000 Watts		
Power supply	100 V, 115 V, 230 V, 50–60 Hz		
Noise emission	Very low		
Interfaces <sup>1</sup>	USB A, Ethernet		
Ambient conditions	15 °C to 35 °C, 70 % air humidity, max 2000 m NN		
Dimensions (W x H x D)	300 mm x 250 mm x 410 mm		
Weight	17.3 kg		
<b>Order information</b>			
Order number	846-x-070-720	846-x-070-723	846-x-070-724

\* Measured within sample block

\*\* Capacity increases to 35 x 0.5 ml tubes by use of small cap tubes

<sup>1</sup> The network cable must be at least performance class Cat 5e and the cable configuration has to be STP

X = 2 for 230 V EN/DE, 4 for 115 V EN, 5 for 100 V EN

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Subject to changes in design and scope of delivery  
as well as further technical development!

