

# Reliable Thermal Cycler Results

## Temperature measuring system Biometra TMS

Biometra TMS



# Controlled Reliability

Highly accurate temperature calibration of your thermal cycler for highest application safety

The Biometra TMS temperature measurement system offers laboratories fully automated temperature verification in Analytik Jena thermal cycler blocks and thus verification of factory instrument specifications. This calibration ensures the highest application safety for your research and routine tasks.

Order temperature calibration according to your personal requirements as a service from Analytik Jena and our partners.

*On site in your laboratory or at our service locations:*

- Individual or regularly scheduled temperature calibration
- Temperature calibration as part of thermal cycler maintenance
- Measurements of individual temperature profiles

*On site in your laboratory:*

- Temperature calibration as an additional option for qualification services (IQ/OQ)

## What distinguishes the Biometra TMS?

- 16 sensors per measuring tree allow simultaneous measurement of the entire thermal cycler sample block.
- Block type-specific sensor positions guarantee measurement data that ideally represent the temperatures of the Analytik Jena thermal cycler sample block.
- The precise measurement results are based on measurements in the hundredths of a Kelvin range.
- In addition to calibration, measurements of individually created temperature profiles are also possible.
- The Biometra TMS is the only system on the market with a coordinated design that can correctly check the factory specifications of Analytik Jena thermal cyclers.



Calibration of Analytik Jena thermal cyclers with the Biometra TMS ensures optimal measurement. Our qualified service team will be happy to support you.

# Focus on Precise Temperatures

You can rely on your results. We ensure this with precisely calibrated thermal cyclers.

With Analytik Jena thermal cyclers, you have chosen equipment that guarantees high-precision temperature control and thus contributes significantly to achieving excellent test results.

Within the framework of quality assurance, it is useful and, in regulated working environments, also necessary to verify the proper functioning of the thermal cycler, in particular that of the temperature control.

Correct verification requires reliable and powerful measuring instruments. With the Biometra TMS, Analytik Jena provides a unique temperature measurement system that optimally measures temperatures in the various sample block variants of Analytik Jena thermal cyclers under application conditions and evaluates them against original instrument specifications.

## Your benefits

- Fully functional thermal cycler for reliable test results in research and routine
- Accurate temperature control to avoid loss of valuable samples or high downstream application costs
- No unexpected equipment failures due to regular checks
- Calibration certificate for compliance with quality management requirements

The measurement results are presented in a meaningful report and issued with a calibration certificate. This means that you have all the relevant data for ISO-compliant documentation at hand.



Excellent thermal cycler temperature management meets high-end temperature calibration - the best you can do for your samples!

## The Measuring System in Detail

The reproducible and meaningful measurement of temperatures is subject to high requirements. In addition to block-specific compatibility, the use of high-precision sensors and virtually loss-free thermal connection, precisely coordinated evaluation routines also play a major role in the quality of the measurement data obtained.

It should also be taken into account that different thermal cyclers may have different temperature characteristics, e.g., in mean and uniformity. Different block designs and sub-

structures may require different representative sensor positions of a measuring device.

The Biometra TMS fulfills these requirements in an exemplary manner. The system was developed to match the powerful Analytik Jena thermal cyclers and offers the ideal opportunity to document their temperature accuracy and to be able to detect any deviations at an early stage in the course of long-term use. With this powerful combination, you can traceably ensure the reliability of your test results.



## The Right Solution for Every Block Format

Each measuring tree is equipped with 16 highly sensitive sensors and, depending on the block type, is designed as a mono, twin, or TRIO measuring head. The measurements are carried out with the device lid closed and with a defined lid contact pressure, so that any environmental influences are excluded and the same initial conditions are ensured.



Measuring tree for 96 well block



Measuring tree for 2 x 48 well block



Measuring tree for 384 well block

# Documentation of the Results

For ISO-compliant verification, all necessary parameters of the measuring system, the thermal cycler, and the evaluation method are documented and issued in an automatically generated report. The calibration report contains a calibration certificate with evaluation, as well as individual data of the various measured temperature plateaus in informative tables and descriptive graphs. In this way, you can be sure of complying with regulatory requirements.



### Measurement information

Date, time at the start of the measurement  
Date, time at the end of the measurement

### Device information

Device under test: Biometra TAdvanced 96 5G  
Part No.: 846-2-070-241  
Device serial number: 3003322  
Block module/module serial number: 2016318

### Information about the measuring system

Measuring tree type: Biometra TMS MT 96 200µl  
Part No.: 846-070-401

### Measurement results in detail

#### Overview diagram

Assignment of the graphs of

- A01 (red line)
- A12 (green line)
- E07 (blue line)
- F02 (purple line)

### Temperature Calibration with the Biometra TMS

#### Result

##### Measurement results

Step	Heating time [s]	Stabilization point	Avg. temperature [°C]	Uniformity [K]	Min. diff. [°C]	Max. diff. [°C]	Result
(1)	3000.00	3000.00	45.00	±0.01	45.00	45.00	Passed
(2)	3000.00	3000.00	75.00	±0.01	75.00	75.00	Passed
(3)	3000.00	3000.00	95.00	±0.01	95.00	95.00	Passed
(4)	3000.00	3000.00	125.00	±0.01	125.00	125.00	Passed

\*As soon as the test is passed, the test is automatically terminated.

#### Heated lid test

The heated lid test is not subject to the specifications mentioned under "Evaluation Criteria". The heated lid test is used to test the function of the heated lid and has a basic accuracy of ±0.1 K. Set reference value: 50.00 °C. The heated lid reached 47.58 °C after 1.03 s. With this, the test is passed.

#### Non-conformities

No deviations were detected.

#### Overall result

The measured values of the calibration are within the specified limits. The device has passed the test.

### Temperature step 95.0 °C

#### Measured data

Position	Time						
	5 s	10 s	15 s	30 s	60 s	90 s	120 s
A01	94.20	94.52	94.66	94.80	94.89	94.93	94.96
A12	94.18	94.45	94.59	94.76	94.86	94.90	94.93
B04	95.04	95.21	95.26	95.28	95.30	95.31	95.32
B07	94.79	95.02	95.12	95.20	95.26	95.30	95.32
B09	94.93	95.11	95.19	95.25	95.28	95.30	95.31
C02	95.08	95.26	95.33	95.38	95.41	95.43	95.44
C11	94.91	95.07	95.15	95.24	95.29	95.30	95.32
D06	95.02	95.23	95.32	95.37	95.41	95.43	95.44
E07	94.94	95.16	95.25	95.32	95.36	95.38	95.39
F02	94.79	95.03	95.13	95.22	95.27	95.28	95.28
F11	94.73	94.95	95.07	95.19	95.25	95.26	95.27
G04	94.62	94.89	95.01	95.11	95.14	95.15	95.15
G06	94.58	94.84	94.96	95.07	95.14	95.17	95.18
G09	94.78	95.02	95.13	95.23	95.27	95.28	95.29
H01	93.91	94.22	94.37	94.55	94.65	94.69	94.71
H12	93.85	94.15	94.31	94.51	94.61	94.65	94.67

#### Calculated data

Property	Time						
	5 s	10 s	15 s	30 s	60 s	90 s	120 s
Avg. temp. [°C]	94.65	94.88	94.99	95.09	95.15	95.17	95.19
Uniformity [K]	1.23	1.11	1.02	0.87	0.80	0.78	0.77
Deviation [K]	-0.35	-0.12	-0.01	0.09	0.15	0.17	0.19

The system is calibrated so as to be traceable to ITS-90 by a DIN EN ISO 9001:2015 certified laboratory. The measuring equipment used to calibrate the measuring system is regularly calibrated according to DIN EN ISO 17025 in a DAkkS-certified laboratory and is traceable to national or international standards.

# Our Service Offer

We want your Analytik Jena equipment to operate reliably and within its specifications over its entire service life.

Through various services, we therefore ensure that you can fully rely on the results you achieve with our equipment. Planned maintenance also prevents inconvenient equipment breakdowns.

## Our services for thermal cyclers

- Installation/Operation Qualification
- Calibration
- Maintenance
- Extended warranty agreements
- Full service agreements

## Compatible Devices

High-precision temperature calibration with our unique Biometra TMS temperature measurement system as a separate service or as part of one of our services is available for the following Analytik Jena thermal cycler models:

Endpoint thermal cycler	Real-time thermal cycler
Biometra TOne 96/96 G	qTOWERiris
Biometra TAdvanced 96/96 G	qTOWERiris touch
Biometra TAdvanced 96 S/96 SG	qTOWERiris 384
Biometra TAdvanced 384/384 G	qTOWER <sup>3</sup> /G
Biometra TAdvanced 60/60 G	qTOWER <sup>3</sup> 84/G
Biometra TAdvanced Twin 30/48/48 G/Combi	qTOWER <sup>3</sup> touch/G touch
Biometra TRIO 30/48/Combi	qTOWER <sup>3</sup> auto
Biometra TRobot II 96 G/96 SG	qTOWER <sup>3</sup> 84 auto
Biometra TRobot II 384 G	
Biometra TProfessional 96/96 G	
Biometra TProfessional Standard 96/96 G/96 SL/96 G SL	
Biometra TProfessional Basic 96/96 G/96 XL/96 G XL	
Biometra TProfessional 384/384 G	
Biometra TProfessional TRIO 30/48/Combi	
FlexCycler <sup>2</sup> 96/96 G	
FlexCycler <sup>2</sup> Twin 48/48 G/30/Combi	

For the respective availability and further models, please contact our Analytik Jena service.  
Email: [service@analytik-jena.com](mailto:service@analytik-jena.com)  
Phone: +49 3641 77 7444

## Company Headquarters

Analytik Jena GmbH+Co. KG  
Konrad-Zuse-Strasse 1  
07745 Jena · Germany

Phone: +49 3641 77 70  
Fax: +49 3641 77 9279  
[info@analytik-jena.com](mailto:info@analytik-jena.com)  
[www.analytik-jena.com](http://www.analytik-jena.com)

Images: Analytik Jena GmbH+Co. KG  
Subject to changes in design, scope of delivery, and technical developments.