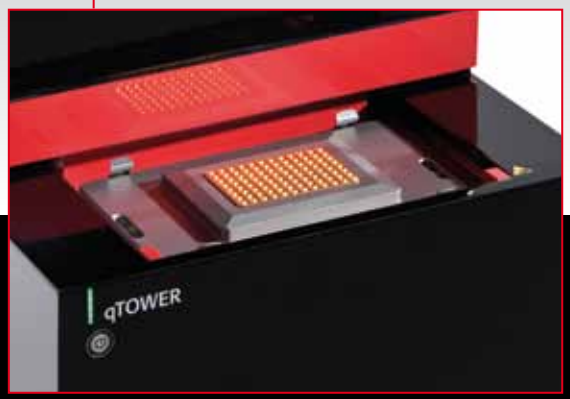
analytikjena

qTOWER | Quantitative real-time *rapid*PCR

- High speed, real-time PCR up to 10 times faster than conventional cyclers
- Patent pending, fiber-optic system achieves high signal intensities
- Enormous cost reduction – works with reaction volumes of just 5 µl

Licensed and authorized thermal cycler
PCR
For detailed license information consult manual

long-therm warranty
✶ 10 Years ✶
high end optical components



Life Science unlimited

qTOWER

Quantitative real-time *rapid*PCR

The real-time thermal cycler qTOWER sets new standards for speed on the qPCR market. Based on the established *rapid*PCR, the qTOWER is up to 10 times faster than commonly available systems, achieving heating rates of 12 °C/sec and cooling rates of 8 °C/sec.
Completely quantitative PCR runs can be performed in less than 25 min. The significant reduction of reaction volumes (down to 5 µl) is yet another highlight, as is the exceptional savings (up to 75 %) of expensive real-time reagents. Consumables have been optimized, making reaction volumes up to 20 µl possible and completely matching comparable instruments with its maximum capacity of 96 samples.

Features

- High speed, real-time PCR up to 10 times faster than conventional cyclers
- Patent pending, fiber-optic system achieves high signal intensities
- Enormous cost reduction – works with reaction volumes of just 5 µl
- Highly energy efficient and RoHS compliant
- Integrated, user-friendly control and analysis software
- Attractive high-gloss design

- qPCR with up to 96 samples in less than 25 minutes
- Adjustable ramping rates from 0.1 °C/sec up to 12 °C/sec
- Reaction volumes of 5 – 20 µl generate outstanding savings of expensive reagents

The integrated SPS (Sample-Protection-System) also provides optimum sample protection within the thermal block, which is cooled down to 20 °C while the lid heats up to 120 °C prior to starting the actual PCR. The adjustable lid temperature and high contact pressure results in nearly 100 % sample recovery. In addition, condensation effects can also be avoided for small reaction volumes.

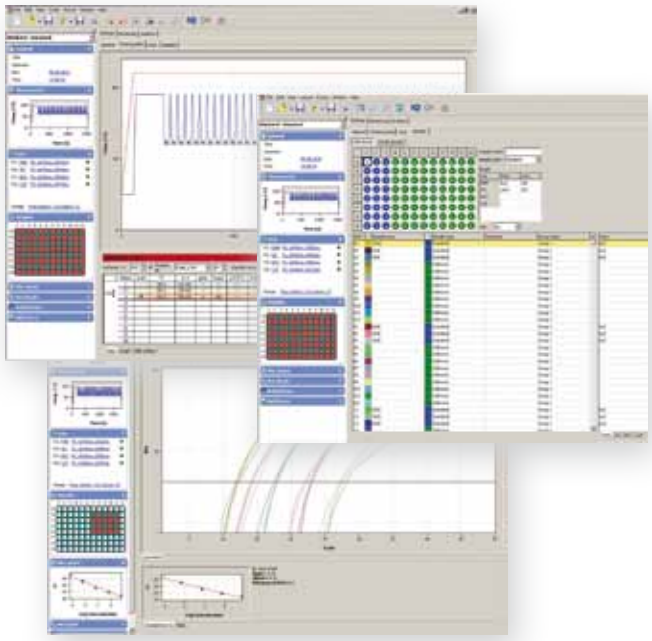
Impressive flexibility

The patented fiber-optic system at the heart of qTOWER guarantees detection of homogenous fluorescence signals across the whole microplate. The qTOWER can be equipped with up to four different measuring channels, which makes the device very flexible and adaptable for various applications. The user can choose from nine high-resolution qPCR excitation and emission filters (Color and FRET modules).
As a result, the qTOWER is capable of performing ambitious multiplex analyses and covers a broad range of commonly used fluorescence dyes. In addition, the exceptional scan speed of the plate is impressive, because one 96 well microplate will be read out in just four seconds, regardless of the number of colors measured.

- 9 different Color and FRET modules
- Open for future applications and adaptations
- Detects 96 samples in just four seconds

qPCRsoft – simple and intuitive

The integrated, intuitive qPCRsoft software serves as the foundation for the final analysis of real-time PCR curves. The program automatically generates different methods for evaluating measured fluorescence data. The program can determine PCR efficiencies and perform absolute and relative quantifications, as well as the delta-delta Ct method and allele discrimination (among other techniques). Researchers can use qPCRsoft to investigate reliable concentrations and precise allele conditions and to display exact expression ratios. Once defined, parameter sets can be applied as templates for future applications and be reused continuously.



qPCRsoft

- Highly diverse range of analysis methods
- Absolute and relative quantification
- PCR efficiency and delta-delta Ct method
- Discrimination of allelic conditions and expression ratios

Intuitive, exceptionally fast and easy-to-use qPCRsoft controls not only *rapid*PCR runs and detects fluorescence signals, it also uses various qPCR methods for evaluating the final data.

It follows that qTOWER and the corresponding software combine to form an excellent, highly flexible and exceptional fast real-time *rapid*PCR system that truly leaves nothing to be desired.

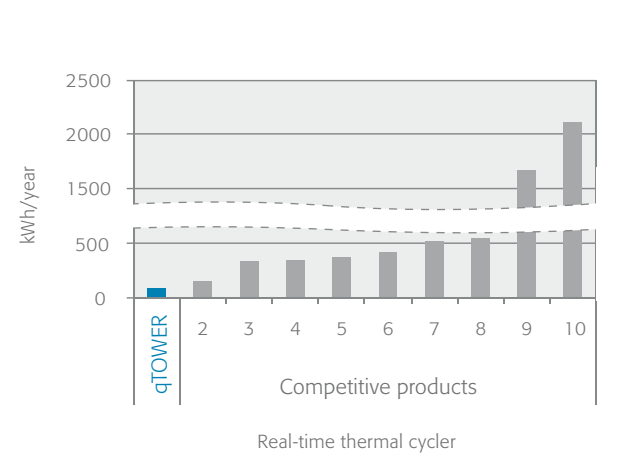
Initiative for energy efficiency

No environmentally hazardous substances, such as lead, mercury, cadmium, hexavalent chromium, PBB or PBDE, were used during the production of qTOWER.

The qTOWER also stays ahead of the pack in terms of energy consumption. Up to 23 times more efficient than competing models, the qTOWER can dramatically reduce both costs and CO_2 emissions.

Go green and earth friendly: qTOWER – quantitative real-time *rapid*PCR.

Energy consumption



Engery consumption

Real-time thermal cycler	qTOWER	2	3	4	5	6	7	8	9	10
kWh/year*	92.40	154.00	343.20	352.00	374.00	418.00	528.00	557.33	1,672.00	2,112.00
CO_2 emissions**	57.29	95.48	212.78	218.24	231.88	259.16	327.36	345.55	1,036.64	1,309.44

* Corresponds to 4 real-time PCR runs per day on 220 working days

** 1 kWh = 0.62 kg CO_2 (http://www.izu.bayern.de/download/xls/Berechnung_CO2_Emissionen_Stand_070530.xls [09.04.2010])

Technical data

Optical system			
Principle of measurement	Top-reading fluorescence detection via 8 optical light fibers with color modules for excitation and emission filters		
Light source	High-power, long-life LEDs		
Detector	CPM – channel photo multiplier | Highly sensitive | Decreased SNR		
Number of color modules	9 available | 6 positions inside device		
Parameters of the color modules			
Name	**Excitation**	**Emission**	**Dyes (examples)**
Color module 1	470 nm	520 nm	FAM, SYBR®Green, Alexa488
Color module 2	515 nm	545 nm	JOE, HEX, VIC, YakimaYellow
Color module 3	535 nm	580 nm	TAMRA, DFO, Alexa546, NED
Color module 4	565 nm	605 nm	ROX, TexasRed, Cy3.5
Color module 5	630 nm	670 nm	Cy5, Alexa633, Quasar670
FRET module 1	470 nm	580 nm	FAM (donor) / TAMRA (acceptor)
FRET module 2	470 nm	670 nm	FAM (donor) / Cy5 (acceptor)
FRET module 3	470 nm	705 nm	FAM (donor) / Cy5.5 (acceptor)
FRET module 4	515 nm	670 nm	JOE (donor) / Cy5 (acceptor)
Analytical parameters			
Sensitivity	1 nM FAM in minimal 15 µl sample volume (equivalent to 15 fmol FAM per well)		
Read-out time	4 sec for 96 wells, regardless of the number of spectral channels		
Microplate format	Ultrathin-walled 96 well microplate LP (low profile)		
Sample volumes | Sample capacity	5 – 20 µl | 96 in parallel		

System and application parameters of the thermal cycler	
Heating rate	12 °C/sec max, (0.1 to 12 °C/sec)
Cooling rate	8 °C/sec max, (0.1 to 8 °C/sec)
Block homogeneity	± 0.2 °C
Control accuracy	±0.2 °C
Sample block temperature	4 °C – 105 °C
Time inc/dec	± 0.1 to 1 sec/cycle
Temperature inc/dec	± 0.1 to 1 °C/cycle
Lid	▪ Heated lid up to 120 °C ▪ SPS technology
Contact pressure	60 kg/plate, automatic
Number of programs	Not limited on PC

Other technical data	
Weight	Approx. 10 kg
Dimensions (W x H x D)	240 × 430 × 255 mm
Power supply	100 – 240 V ± 15 % (47 – 63 Hz)
PC-interface	USB port
Software	▪ qPCRsoft | Control and evaluation software ▪ Absolute and relative quantification ▪ Delta-delta ct ▪ Allele discrimination | PCR efficiency
Warranty	▪ 10 years warranty on the components of the high power optics ▪ 2 years warranty on the device system and the thermal block

Order information

Order number	Description
844-00301-2	**qTOWER** | Instrument system, without PC, including qPCRsoft, thermal block and optical detection* for quantitative real-time *rapid*PCR
844-00320-0	**Color module 1** – FAM, SybrGreen, Alexa488
844-00321-0	**Color module 2** – JOE, HEX, VIC, Yakima Yellow
844-00322-0	**Color module 3** – TAMRA, DFO, Alexa546, NED
844-00323-0	**Color module 4** – ROX, TexasRed, Cy3,5
844-00324-0	**Color module 5** – Cy5, Alexa633, Quasar670
844-00325-0	**FRET 1**
844-00326-0	**FRET 2**
844-00327-0	**FRET 3**
844-00328-0	**FRET 4**

** Color modules or FRET modules for detection have to be ordered separately. The qTOWER can hold up to four modules.*

Real-Time PCR Disclaimer für Thermocycler
Practice of the patented polymerase chain reaction (PCR) process requires a license. The Biometra [or appropriate trademark] TOptical Thermal Cycler and Analytik Jena [or appropriate trademark] qTOWER Thermal Cycler are Authorized Thermal Cycler and may be used with PCR licenses available from Applied Biosystems.
Its use with Authorized Reagents also provides a limited PCR license in accordance with the label rights accompanying such reagents.
This is a Licensed Real-Time Thermal Cycler under Applera's United States Patent No. 6,814,934 and corresponding claims in non-U.S. counterparts thereof, for use in research and for all other applied fields except human in vitro diagnostics. No right is conveyed expressly, by implication or by estoppel under any other patent claim.

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