Speed, precision, flexibility and innovation characterize the instruments manufactured by Analytik Jena | Life Science. We supply total automated as well as individual solutions for your lab application.

Made in Germany!
Convince yourself!

Instruments

Laboratory Notebook

Order your own laboratory notebook in Analytik Jena | Life Science Design.

Whether you are scientist or student, laboratory notebook is an essential part of each research project. With the laboratory notebook of Analytik Jena you are perfectly able to document your laboratory research and daily work results.

- High-quality Analytik Jena | Life Science design
- Table of content for your personal structure
- Including introduction and conversion table
- Size: 120 pages in A4 format (squared paper)

Order information

Order number	Quantity
844-MA205-2	1 piece

Instruments

Introduction

Thermal mixers are the basic equipment of every laboratory. We offer several high-end instruments making it easy to find the appropriate mixer for different applications. All instruments of the BioShake series are perfect for mixing small volumes in microplates as well as for daily routine using tubes or glass vials. As all thermal mixers offer a choice of several different blocks, every requirement can be met.

BioShake-Series

High-speed mixer and thermal mixer in compact design

The BioShake series puts the traditional way of thinking upside down and defines completely new the requirements of a laboratory mixer – a category which, in the light of downsizing of reaction volumes and upsizing of the well numbers in microplates, is faced permanent increasing demands.

The BioShake series meets exactly these new requirements: The instruments are mixing also smallest volumes in shortest time, offer a simple handling, outstanding comfort and a maximum of safety, advantages unknown by then. In contrast to that the required space is minimized.

Integrated 3D-Shake-Control and Anti-Vibration-Technology enable high-precise and effective shaking on even smallest benches. Time consuming centrifugation steps after mixing can be cut down. Annoying vibration and noise are things of the past.

3D-Shake-Control

Rapid and gentle mixing with 2 mm orbit and up to 3,000 rpm for optimal results of even sensitive samples and liquids.

Anti-Spill-Technology

Controlled planar mixing avoids wetting of lids, sample spillage and sample contamination with close-by samples.

Anti-Vibration-Technology

Outstanding smooth running conditions without any vibration and any noise.

BioShake iQ (High-Speed Thermal Mixer)

BioShake XP (High-Speed Mixer)

Effective mixing without sample loss

The adjustment of the optimal mixing frequency for microplates or reaction tubes should always be done depending on the basis of the well size and the filling volume. Only this way optimal results without loss of samples can be achieved highly reproducible and in shortest time.

Recommended mixing frequencies for reaction tubes

Recommended mixing frequencies [rpm] for tubes against filling volume [%] for aqueous substances

Filling volume	0.2 ml tubes	0.5 ml tubes	1.5 ml tubes	2.0 ml tubes
10 % - 50 %	1,400 – 1,800	1,200 – 1,600	1,000 – 1,300	1,000 – 1,300
50 % - 75 %	1,200 – 1,500	1,100 – 1,300	1,000 – 1,200	900 – 1,200
75 % - 100 %	1,000 – 1,300	1,000 – 1,200	900 – 1,100	900 – 1,100

Recommended mixing frequencies for microplates

Recommended mixing frequencies [rpm] for microplates against filling volume [%] for aqueous substances

Filling volume	96 well (standard)	384 well (standard)	384 well (small volumes)	1536 well (standard)
10 %	1,800 – 2,200	2,200 – 2,600	2,800 – 3,000	2,800 – 3,000
25 %	1,600 – 2,000	2,000 – 2,400	2,400 – 3,000	2,600 – 3,000
50 %	1,400 – 1,800	1,800 – 2,200	2,200 – 2,600	2,400 – 2,600
75 %	1,200 – 1,600	1,600 – 2,000	2,000 – 2,400	2,200 – 2,600

BioShake series | High-speed mixer and thermal mixer for small and very small volumes in microplates and reaction tubes

The **BioShake series** allows for the first time high precise and efficient mixing in the microliter scale for a wide range of applications. Assays in microplates or reaction vessels can be realized fast and safe with using adjustable speed of 200 up to 3,000 rpm. The BioShake mixing-technology is obviously more robust, vibration free and needs less maintenance compared to classical mixers.

- Fast shaking and mixing up to 3,000 rpm
- For microplates, PCR plates, deep well plates, tubes and glass vials
- Sample preparation for Next Generation sequencing (e.g. bead-technology)
- Customized adapters on request
- Vortex and Short-mix function
- 3D-Shake-Control: rapid and gentle mixing in orbits for sensitive samples
- Anti-Spill-Technology: controlled planar mixing
- Anti-Vibration-Technology: outstanding smooth running conditions without vibration and noise
- Compact and lightweight aluminum design

BioShake XP (High-Speed Mixer)

BioShake iQ (High-Speed Thermal Mixer)

Programming the BioShake XP and BioShake iQ works via direct touch buttons. In addition two buttons for start and storage of time and mixing modes enable the instrument to run complex applications. This opens new points of view on the daily laboratory work and optimizes routine application enormously.

The short mix button allows short and fast mixing in between.

The two line LCD display guarantees simultaneous and safe reading of all programmed and measured parameters as time, mixing frequency and for BioShake iQ additional temperature.

The BioShake iQ is the high end thermal mixer of the BioShake series. In addition to the technical specifications of the model BioShake XP, the BioShake iQ comes with an very accurate heating technology. This allows highly reproducible results. The temperature range from RT to 99 °C is adjustable in 0.1 °C steps.

The temperature accuracy is ±0.1 °C, the temperature uniformity through all samples is better than ±1 °C.

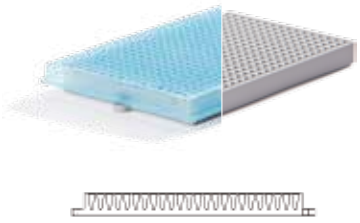
The BioShake series is characterized by minor space requirement.

The BioShake series comes with a variety of standardized and specific adapter plates. The adapters allow an optimal fit for standard tubes, lysis tubes, microplates, conical 15 and 50 ml tubes, glass vials and other sample vessels. An excellent temperature uniformity and homogeneity is guaranteed by using these adapters.

Customized adapters!
You need an adapter plate for specially shaped microplates, tubes or vials?
Please send us a sample and detailed information about manufacturer, description and article number.
You will receive your special formed adapter plate!

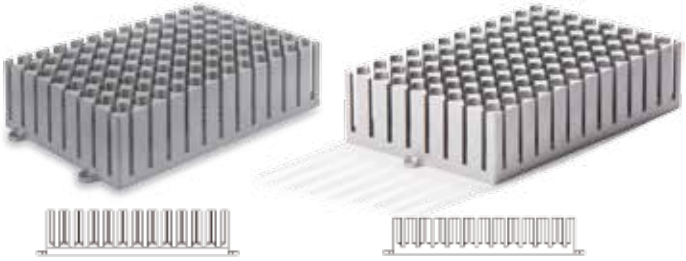
Adapters for microplates (MTP)

- Flat bottom, high base
- Flat bottom, high base
- 96 well round bottom, universal
- 96 well standard PCR plate



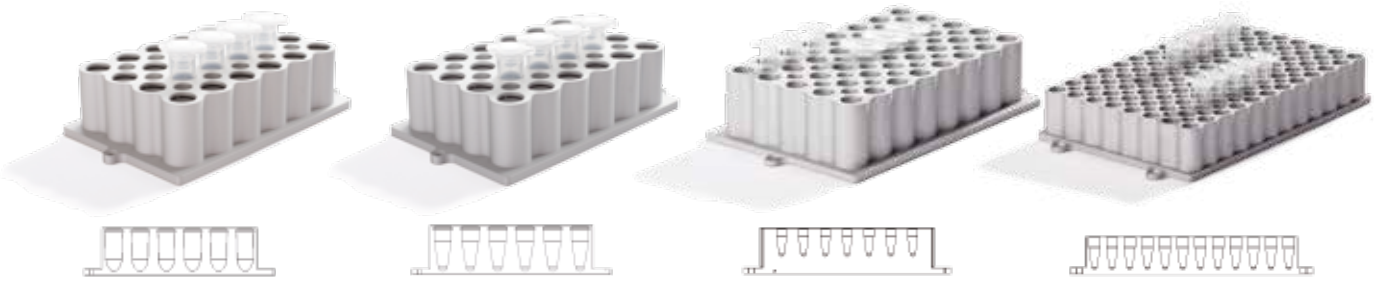
- 384 well standard PCR plate

Adapters for deep well plates



- 96 well, 1,000 µl (Eppendorf)
- 96 well, 500 µl (Eppendorf)

Adapters for tubes



- 24 × 2.0 ml and 15 × 0.5 ml
- 24 × 1.5 ml and 15 × 0.5 ml
- 40 × 0.5 ml and 28 × 0.2 ml
- 96 × 0.2 ml

- 35 × 2.0 ml and 24 × 0.5 ml
- 35 × 1.5 ml and 24 × 0.5 ml
- 35 × Lysis Tubes, 0.5 – 2.0 ml

Customized Adapters

- For individual reaction vessels

Adapters for glass vials

- 30 × 2.0 ml
- 20 × 4.0 ml
- 4 x 50 ml Falcon tubes
- 12 x 15 ml Falcon tubes

Technical data

	BioShake XP	BioShake iQ
Removable Adapter Plates		
Microplates	96-, 384- and 1536 well microplates, deep well plates and PCR plates	96-, 384- and 1536 well microplates, deep well plates and PCR plates
Tubes	0.2 up to 2.0 ml standard and lysis tubes (with skirt), 5 ml conical tubes	0.2 up to 2.0 ml standard and lysis tubes (with skirt), 5 ml conical tubes
Glass vials	2.0 and 4.0 ml glass vials	2.0 and 4.0 ml glass vials
Falcon tubes	15 ml and 50 ml Falcon	15 ml and 50 ml Falcon
Others	On request	On request
Tempering function		
Temperature regulation range	–	Ambient to 99 °C
Temperature setting	–	0,1 °C increments, adjustable from 0 °C to 99 °C
Temperature regulation accuracy	–	± 0.1 °C
Temperature uniformity	–	▪ ±0.5 °C up to 45 °C ▪ ±0.7 °C from 45°C to 75 °C ▪ ±1.0 °C from 75°C to 95 °C
Heat-up time	–	▪ Approx. 7 °C/min ▪ Approx. 10 min from ambient to 95 °C
Mixing function		
Microplates	200 up to 3,000 rpm	200 up to 3,000 rpm
Reaction tubes, glass vials	200 up to 1,800 rpm	200 up to 1,800 rpm
Falcon tubes	200 up to 1,000 rpm	200 up to 1,000 rpm
Mixing orbit	Constant 2 mm	Constant 2 mm
Speed setting resolution	50 rpm increments	50 rpm increments
Mixing regulation accuracy	± 25 rpm	± 25 rpm
Short-mix function	Yes	Yes
Timer function		
Timer setting	1 min to 99 h with automatic switch to stand-by	1 min to 99 h with automatic switch to stand-by
Timer setting resolution	1 minute steps	1 minute steps
Readabaility	Minutes, seconds	Minutes, seconds
Continous working	Yes	Yes
Audible alarm	Yes when program finished	Yes when program finished
Programming		
Programs stored	2	2
Definable buttons	P1, P2	P1, P2
Individual program capacity	3 steps	3 steps

	BioShake XP	BioShake iQ
Display		
Display	2-line LCD-Display	2-line LCD-Display
Set values and present values	Time and mixing frequency	Time, mixing frequency and temperature
Electrical parameters	XP	iQ
Controller	Micro controller	Micro controller
Power switch	Yes	Yes
Operating Voltages	24 V DC input,100 Watt	24 V DC input,100 Watt
Power Supply	External, 100 – 240 V AC (input), 50 – 60 Hz, 24 V DC (output)	External, 100 – 240 V AC (input), 50 – 60 Hz, 24 V DC (output)
Properties		
Housing material	Aluminum (anodized)	Aluminum (anodized)
Environment operating range	+5 °C to 45 °C (80 % max. relative humidity)	+5 °C to 45 °C (80 % max. relative humidity)
Dimensions (W × D × H)	142 × 170 × 80 mm	142 × 170 × 80 mm
Weight	2.7 kg	2.7 kg

Order information

Order No.	Description
848-1808-0505	**BioShake XP** (Europe power cable)
848-1808-0555	**BioShake XP** (USA power cable)
848-1808-0565	**BioShake XP** (Japan power cable)
848-1808-0506	**BioShake iQ** (Europe power cable)
848-1808-0556	**BioShake iQ** (USA power cable)
848-1808-0566	**BioShake iQ** (Japan power cable)

Accessories	
848-1808-1021	Adapter for microplates – flat bottom
848-1808-1022	Adapter for microplates – flat bottom, high base
848-1808-1031	Adapter for microplates – 96 well round bottom
848-1808-1041	Adapter for microplates – 96 well standard PCR plate
848-1808-1051	Adapter for microplates – 384 well standard PCR plate
848-1808-1061	Adapter – 24 × 2.0 ml tubes and 15 × 0.5 ml tubes
848-1808-1062	Adapter – 24 × 1.5 ml tubes and 15 × 0.5 ml tubes
848-1808-1063	Adapter – 40 × 0.5 ml tubes and 28 × 0.2 ml tubes
848-1808-1064	Adapter – 96 × 0.2 ml tubes
848-1808-1065	Adapter – 35 × 2.0 ml tubes and 24 × 0.5 ml tubes
848-1808-1066	Adapter – 35 × 1.5 ml tubes and 24 × 0.5 ml tubes
848-1808-1067	Adapter – 35 × lysis tubes 0,5 – 2.0 ml
848-1808-1071	Adapter – 30 × 2.0 ml glass vials (Ø = 12 mm)
848-1808-1072	Adapter – 20 × 4.0 ml glass vials (Ø = 15 mm)
848-1808-1093	Adapter for 4 x 50 ml Falcon tubes (also for straight frame) or 2 x 15 ml Falcon tubes
848-1808-1094	Adapter for 12 x 15 ml Falcon tubes (conical)
848-1808-1095	Adapter - 12 x 5 ml conical tubes
848-1808-1121	Adapter for deep well plates – 96 well, 1,000 µl (Eppendorf)
848-1808-1131	Adapter for deep well plates – 96 well, 500 µl (Eppendorf)
848-1808-1000	Customized adapters for specially shaped microplates, tubes or vials (on request)

Hybridization Ovens | Versatile instruments for all kind of common hybridization applications

Economical

The hybridization ovens OV 500, OV 1000, OV 2000 and OV 4000 utilize carousels for a variety of different bottle or tube sizes. The high capacity of the carousels allows incubation of several bottles or tubes in parallel. By adjusting the bottle positioning offset a continuous flow of buffer across the complete surface of the hybridization membranes is generated and the volume of hybridization solution can be decreased significantly.

Ease of handling

The large diameter of the bottle necks allows membranes to be easily inserted and removed. Bubble trapping or leaking using conventional hybridization bags is avoided. Nylon meshes allow each hybridization bottle to accommodate several membranes simultaneously or to incubate very large, overlapping membranes separated from each other. Therefore using the nylon meshes optimal utilization of the system is given and which helps to avoid unnecessary delays.

Safety

The interior of all models is made of easy to clean stainless steel. Moreover the ovens OV 1000, OV 2000 and OV 4000 additionally are equipped with a removable protective tray to allow easy cleanup of spilled liquids. The window on the door of the crosslinker in the hybridization oven OV 2000 blocks UV radiation to allow riskless viewing of processes.

- Broad portfolio of hybridization ovens
- Accurate temperature and rotation speed control
- Variable bottle sizes and offset bottle positioning
- Easy to clean interior made of stainless steel
- Two independent incubation chambers (OV 4000)

Crosslinker and oven

The model OV 2000 combines a hybridization oven and a UV crosslinker (254nm UV) in one unit. The oven and the crosslinker operate independently and provide the functionality for crosslinking of nucleic acids to membranes and subsequent hybridization. The crosslinker offers preset and manual controls for ultraviolet or time exposure.

Two ovens in one

The hybridization oven OV 4000 is designed with two separate incubation chambers that work as separate, independent units and can be used for a variety of applications. The two chambers allow simultaneously hybridization and blotting procedures requiring different sized bottles, motions or temperature settings. The upper chamber is equipped with a shaker tray that can be exchanged by an acrylic carousel or an orbital tray that are available as optional accessories. The hybridization oven OV 4000 therefore offers several motion functions like shaking, rolling, orbital rocking and rotating all in one unit. This unique workstation format lends itself to a wide variety of applications, for example:

- For high throughput purposes the upper incubation chamber can be equipped with an optionally available second sample carousel for the incubation of two different sets of hybridizations experiments at different temperatures.
- While using the lower chamber for hybridization experiments, the upper chamber can be used for temperature incubation of hybridization buffers.
- In situ hybridizations can be carried out in the lower chamber as gels are being destained in a tray on the shaking platform in the upper chamber. The OV 4000 accomplishes all these functions in a compact format and a small footprint.

Ovens	OV 500	OV 1000	OV 2000	OV 4000	
Order Number	849-30004-4 (115V)[1] 849-30004-2 (230V)[2] 849-30004-3 (230V)[3] 849-30004-5 (100V)[4]	849-30001-4 (115V)[1] 849-30001-2 (230V)[2] 849-30001-3 (230V)[3] 849-30001-5 (100V)[4]	849-30002-4 (115V)[1] 849-30002-2 (230V)[2] 849-30002-3 (230V)[3] 849-30002-5 (100V)[4]	849-30003-4 (115V)[1] 849-30003-2 (230V)[2] 849-30003-3 (230V)[3] 849-30003-5 (100V)[4]	
Number of Hybridisation chambers	1	1	1 plus crosslinker	2	
				Lower chamber	Upper chamber
Min. Temperature	10 °C above RT	10 °C above RT	10 °C above RT	10 °C above RT	10 °C above RT
Max. Temperature	80 °C	99.9 °C	99.9 °C	99.9 °C	80°C
Temperature Accuracy	± 0.5°C to 68°C	± 0.3°C to 68°C	± 0.3°C to 68°C	± 0.3°C to 68°C	± 0.3°C to 68°C
Temperature Uniformity	± 0.1°C to 68°C	± 0.1°C to 68°C	± 0.1°C to 68°C	± 0.1°C to 68°C	± 0.1°C to 68°C
Rotor Speed	12 rpm	10 - 15 rpm	10 - 15 rpm	10 - 18 rpm	12 - 20 rpm
Capacity					
Bottles (30 cm)	-	10	10	10	10
Bottles (15 cm)	4	20	20	20	20
50 ml tubes	8	-	-	-	-
15 ml tubes	8	-	-	-	-
Shaker tray	-	-	-	Yes, upper chamber	
Shaking speed	-	-	-	54-106 rpm	
Crosslinker	-	-	Yes 5 x 8W 254nm bulbs	-	
Footprint (W x D)	33 x 20 cm	40 cm x 38 cm	45 cm x 38 cm	45 cm x 38 cm	
Height / Weight	23 cm / 5.1 kg	45 cm / 19.5 kg	61 cm / 27.2 kg	72 cm / 34.0 kg	
Optional accessories					
	-	**Orbital tray**	**Orbital tray**	**Orbital tray**	
Rotation speed	-	30 rpm @ 2° angle	30 rpm @ 2° angle	30 rpm @ 2° angle	
Maxium load	-	1,36 kg	1,36 kg	1,36 kg	
	-	**Rocker tray**	**Rocker tray**	**Rocker tray**	
Shaking speed	-	7-14 rpm	7-14 rpm	7-14 rpm	
Shaking angle	-	12°	12°	12°	
	-	-	-	2nd Carousel	
	-	-	-	Reciprocating Shaker Tray	

Accessories

Order number	Product quantity
849-30080-0	Hybridization bottle large, 30 x 3.5 cm incl. cap, O-ring and PFTE seal
849-30081-0	Hybridization bottle medium, 15 x 3.5 cm incl. cap, O-ring and PFTE seal
849-30082-0	Hybridization bottle small, 10 x 3.5 cm incl. cap, O-ring and PFTE seal
849-30083-0	Bottle cap incl. O-ring and PFTE seal
849-30084-0	Nylon meshes 15 x 10 cm
849-30085-0	Nylon meshes 23 x 23 cm
849-30050-0	Rocker Tray (for OV 1000, OV 2000 and OV 4000)
849-30051-0	Orbital Tray (for OV 1000, OV 2000 and OV 4000)
849-30052-0	Reciprocating Shaker Tray (for OV 4000)
849-30057-0	Carousel, acrylic (for upper chamber OV 4000)

[1] US plug [2] UK plug [3] Euro and UK plug [4] US plug

UV Incubator | Incubation and UV sterilization in benchtop format

Reliability

The UV incubator UI 950 provides precise temperature control and uniformity for the incubation of biological assays, fungal, bacterial cultures, eggs and other samples up to 68°C. The instrument is equipped with a built-in overhead shortwave 254nm UV tube for sterilization of the incubation chamber between experiments. By utilizing the germicidal properties of UV light eliminating viable fungi, bacteria and yeast cross contamination between experiments is prevented.

- Minimal benchtop space
- Microprocessor controlled for high temperature uniformity
- Reliable sterilization by shortwave (254nm) UV light
- Shelves adjustable at three positions

Safety

For protection of the personnel the incubator door blocks UV light and will not allow UV radiation to pass through. The germicidal lamp will shut off if the door is opened. There is no risk of damage to unprotected eyes and skin by the powerful source of UV radiation. For safety the UV incubator UI 950 provides an automated process for the decontamination by high-intensive shortwave UV light. Furthermore the interior of the instrument is made of stainless steel and easy to clean by non-abrasive mild detergents.

Flexibility

The instrument is delivered with two shelves made of stainless steel that can be adjusted at three different positions. This flexibility can be used for simultaneously incubation of various samples of different heights.

Footprint

The small footprint of 44.5 x 37.5 x 45.7 cm (W x D x H) makes the UV incubator UI 950 fit into any laboratory and the ideal instrument for incubating low to medium sample numbers.

Technical data

Incubator	UI 950
Order number	849-30005-2, 230V, UK plug 849-30005-3, 230V, EU and UK plug 849-30005-4, 115V, US plug 849-30005-5, 100V, US plug
Controller	PI
Setpoint	Digital
Display	Digital LED
Temperature Range	Ambient +3 °C to 68 °C
Temperature Sensor	LM345 Integrated Temperature Sensor
Temperature Accuracy	+1°C
Temperature Uniformity	+0.5°C at 37°C
Interior volume	26.9 liters
Average Relative Humidity (Interior)	~ 80%
Interior	Stainless steel
Exterior	Aluminum powder coated
Door	Acrylic
Exterior W x H x D	44.5 x 43.2 x 35.6 cm
Interior W x H x D	35.6 x 27.2 x 27.7 cm
Dimensions shelves (W x D)	33.8 x 21.6 cm
Construction shelves	Formed stainless steel
Surface area shelves	729.35 cm^2
Heating Element	1,250 Watts 3,923.9628779 BTU/hr (115V, 10A) 4,265.1777 BTU/hr (230V, 10A)
Weight	21.3 kg
Max. Power Consumption	115V 60 Hz, 230V 60 Hz or 110V 50/60 Hz and 1150 W
Working conditions	5°C to 40°C, max. 2,000 m NN

Order information

Order Number	Optional Accessories
849-30200-0	Key, replacement
849-00015-0	Tube, 8-watt, 254nm shortwave germicidal
849-30201-0	Shelve, stainless steel ventilated
849-20602-0	Face Shield, UV blocking (UVC-803)
849-00011-0	UVX Radiometer
849-00012-0	UVX Sensor (UVX-25)

SpeedMill PLUS | Powerful and high efficient homogenizer

Homogenizer for various starting materials

The SpeedMill PLUS is a highly efficient homogenization system for various starting materials used for the subsequent isolation and purification of DNA, RNA or proteins.

The homogenization process is based on an innovative mechanical principle for which a patent has been filed. This new process allows users to operate the SpeedMill PLUS continuously if necessary. The high efficiency of energy input into the sample, based on a vertical movement, procures a homogeneous disruption of the sample without destroying the target molecules.

- Entire and reproducible homogenizing
- Efficient sample cooling during the whole preparation
- Flexible homogenizing system for various starting materials
- Broad portfolio of Lysis Tubes enables individual extensions of the homogenizing system
- Touch control panel and large display provide considerable operating convenience
- Pre-programed protocols or user-defined programing with freely selectable parameters
- Compact construction
- Can easily be operated continuously with
- No tools required to operate the instrumenty
- Homogenizing comparably low-noised

Efficient sample cooling: prior, during and after preparation

For the optimized sample holder, which is used inside the SpeedMill PLUS, different temperature ratings are freely selectable due to the storage down to –80 °C. According to this an efficient sample cooling during the whole homogenization process is warranted and the substantial sample warming that occurs with other homogenizers is prevented. The often problematic handling of liquid nitrogen or dry ice is thus a thing of the past. Additionally the considerably expense factor of this additives, which have to be loaded continuously, is not applicable. Besides the sample holder allows an easy transport of the sample tubes and a long term storage of starting or homogenized material at adequate temperatures.

Exchangeable sample adapters enable an easy sample handling

Guaranteed safety during homogenizing due to bayonet catch

A wide range of different kinds of Lysis Tubes with application specific beads for an effective homogenization

Modern preparation of samples: SpeedMill PLUS

The samples to be processed are rapidly and efficiently homogenized in Lysis Tubes that have been specially optimized for the system and, as such, contain different and/or application-specific beads. Using beads makes it possible to completely and reproducibly homogenize even the toughest starting materials, such as cartilage and chitin shells of insects or ticks within a very short time. 2.0 mL and 0.5 mL containers (Lysis Tubes) with different beads are available for sample preparation, allowing users to adapt sample processing to a diverse range of soft and hard starting materials. Operating processes, such as loading and removing of the sample tubes, are very simple and no tools are required. In addition user-defined protocols can be entered and saved as well as pre-installed programs are available. Homogenization parameters, like time and using cyclic routines are freely selectable.

innuSPEED Kits: optimized for DNA and RNA isolation including Lysis Tubes

Optimized extraction kits for the SpeedMill

The SpeedMill also accommodates kits for complete nucleic acid (DNA and RNA) isolation from various starting materials. All kits have been optimized for the SpeedMill for extremely fast and efficient nucleic acid isolation. The yields produced are impressively high and the quality of the isolated nucleic acids is outstanding. These kits contain special Lysis Tubes with application-specific beads as well as pre-made buffers.

They also contain all other components needed for isolating DNA or RNA from different starting materials. Optimized kits for sample processing with the SpeedMill results in extremely rapid and highly efficient nucleic acid isolation. Both the yield and quality of the nucleic acids are excellent. The standard isolation protocol requires only about 20 to 30 minutes.

Nucleic acid extraction principle

DNA isolation: Mechanical disruption of the starting material is followed by a proteolytic lysis step. The genomic DNA is adsorbed onto a Spin Filter, washed and then eluted. The yield and quality of the DNA are excellent.

RNA isolation: After the mechanical disruption and denaturation of the starting material, genomic DNA is removed by adsorbtion onto an initial Spin Filter. The RNA is then adsorped onto a second Spin Filter, followed by a wash step and finally by elution of the RNA.

Various sample holders for several fields of applications

Technical data

System parameters	
Homogenization time	30 sec to 4 min (depending on the starting material)
DNA/RNA purification time	20 – 30 min for standard protocols (complete nucleic acid purification)
Device handling	Stand-alone device, simple starting and handling of device by using modern touch sensors
Acceleration time	No acceleration
Deceleration time	No deceleration
Application parameters	
Homogenization routines	User-defined programming with user-defined parameters, as well as pre-programmed protocols
Sample handling	Simple sample tube loading and removal
Sample capacity	Up to 20 samples simultaneously
Sample cooling	Passive cooled sample holder; storage at temperatures down to –80 °C
Programming parameters	
Homogenization time range	1 sec to 4:59 min
Steps of adjusting time	1 sec
Pre-programmed protocols	Yes
User-defined protocols	Yes
Storable protocols	20
Number of cycles	1 – 99
Protocol steps	1 – 6
Accessories	
Lysis Tubes	Broad ranged portfolio of chooseable Lysis Tubes with various volumina and beads
Complete purification	innuSPEED Kits containing Lysis Tubes for standardized starting materials enable effective extraction of nucleic acids without previous homogenizing optimization
Other technical data	
Dimensions (W × H × D)	154 × 275 × 257 mm
Weight	12 kg
Power Supply	AC 220 V, 50 Hz/110 V, 60 Hz
Power consumption	150 W (max)
Warranty	2 years

Order information

Order No.	Description
845-00007-2	**SpeedMill PLUS** 220 V stand-alone instrument system, including Sample Holder P12 (passive cooling function, 12 positions, aluminium, black)
845-00008-2	**SpeedMill PLUS** 110 V stand-alone instrument system, including Sample Holder P12 (passive cooling function, 12 positions, aluminium, black)
845-60051-0	**Sample Holder P12**  Sample Holder in aluminium design (black) for up to 12 sample, passive cooling function and storage down to -80 °C
845-60053-0	**Sample Holder P20**  Sample Holder in aluminium design (black) for up to 20 sample, passive cooling function and storage down to -80 °C
845-60053-0	**Tube Fixation**  Lock to fix Lysis Tubes, optimized for usage of innuSPEED Lysis Tube Q (mandrel)

Order information on page 89 - 97 (innuSPEED Kits)
and page 98 - 102 (innuSPEED Lysis Tubes)

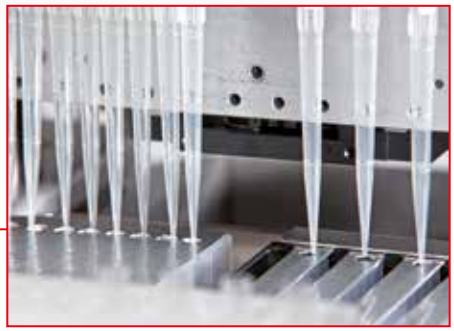
InnuPure® C16 | Magnetic particle based extraction system

Exceptionally fast walk-away principle

The InnuPure® C16 is a flexible and efficient extraction system for fully automated isolation and purification of nucleic acids. The system, which was developed and manufactured in Germany, is designed for small and medium sample throughput and can process a wide range of starting materials. The system combines a unique liquid handling method with an extremely fast walk-away principle.

Labor-intensive sample lysis steps are no longer necessary, as they are now incorporated into the automated extraction process in keeping with the starting material. The nucleic acids to be isolated are then adsorbed onto magnetic or paramagnetic particles whose surfaces have been specially adapted for this purpose. The required extraction chemistry has been optimized for the application at hand, allowing users to isolate high yields of very pure nucleic acids.

- Flexible and efficient extraction system
- Completely automated and compact
- Up to sixteen samples in parallel
- Isolation of very pure nucleic acids
- Suitable for a wide variety of starting materials, including forensic samples
- Pre-programed protocols
- Adsorption of the isolated material onto magnetic or paramagnetic particles
- Adjustable elution volumes
- Automatic transfer of eluates into Elution Tubes with caps
- Easy and convenient to use thanks to the portable HID-Pro 320 user interface
- No cross-contamination
- Highly reproducible
- Fast, reliable and efficient
- Optional available: UV lamp for easy decontamination of sample room



The fully automatic magnetic particle separation process is carried out in the wells of the plastic extraction vessels. After the starting material has been introduced into the isolation process, the necessary reagents are pipetted to the sample and then automatically removed by pipette tip.

Once the nucleic acids have been bound to magnetic particles, they collect at the bottom of the wells and, depending on the routine in use, are resolubilized by pipetting them in and out in an optimized process. Finally, the DNA is eluted into separate, capped Elution Tubes for direct storage or other applications. The extraction principle also efficiently prevents the cross contamination that often occurs in vacuum-based purification methods. In addition, the InnuPure® C16 is equipped with pre-installed application protocols in order to avoid time-consuming programming. The high flexibility of the system allows users to isolate DNA from up to 16 samples in parallel.

The smart Sample Tray and a wide selection of pre-filled reagent plastics allow a single and a multiple sample preparation.

HID-Pro 320 for fast and easy operation

Users operate the InnuPure® C16 from a flexible, portable HID-Pro 320 unit with the large 5.7" touchscreen. Because this PC-based system operates in a Windows CE environment, users have typical Windows functions and a clearly structured menu on the interface, making the entire system a stand-alone device.
The real-time display allows scientists to check the status of the current extraction and follow each routine clearly and continuously. In addition, the USB interface makes it easy to update software and upload new isolation protocols.

Highest user confidence due to the HID-Pro 320 and it's 5.7" colored touchscreen

Extremely easy handling thanks to optimized extraction kits

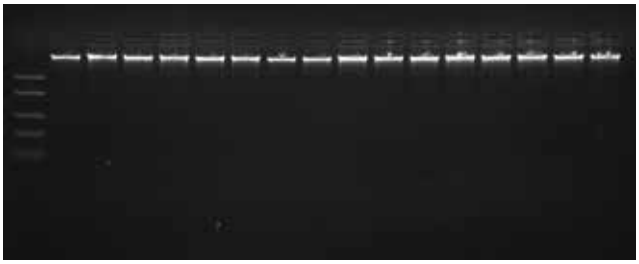
Extraction kits adapted to the InnuPure® C16 allow users to process forensic samples and isolate genomic DNA, and viral or bacterial nucleic acids. These kits are ideal automation tools for efficiently isolating high-quality nucleic acids with no contamination.
All purification kits are ready for use and have been optimized for different starting materials and quantities.

Fully pre-filled Reagent Strips and Plates minimize manual steps and save an impressive amount of time. In addition, the intelligent sample tray allows users to process individual samples. Therefore the positions of the deep-well Reagent Plates can be assembled with an additional adapter: a process that can be performed in just one easy step. This makes it possible to adapt up to 4 pre-filled Reagent Strips for individual sample handling and, as such, the InnuPure® C16 can be easily adapted to handle a quantity from 1 to 16 samples.

Easiest preparation of the Sample Tray with help of the Priming Station

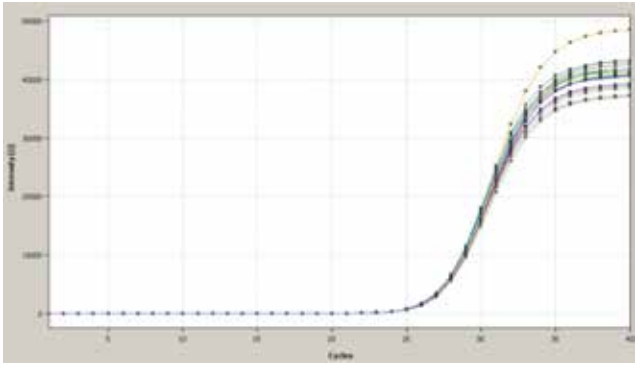
Sample application

Isolation of genomic DNA from 200 µL aliquots of whole blood (fresh, EDTA). The process encompasses full isolation (including automated lysis of the whole blood samples) with no need for manual intervention.

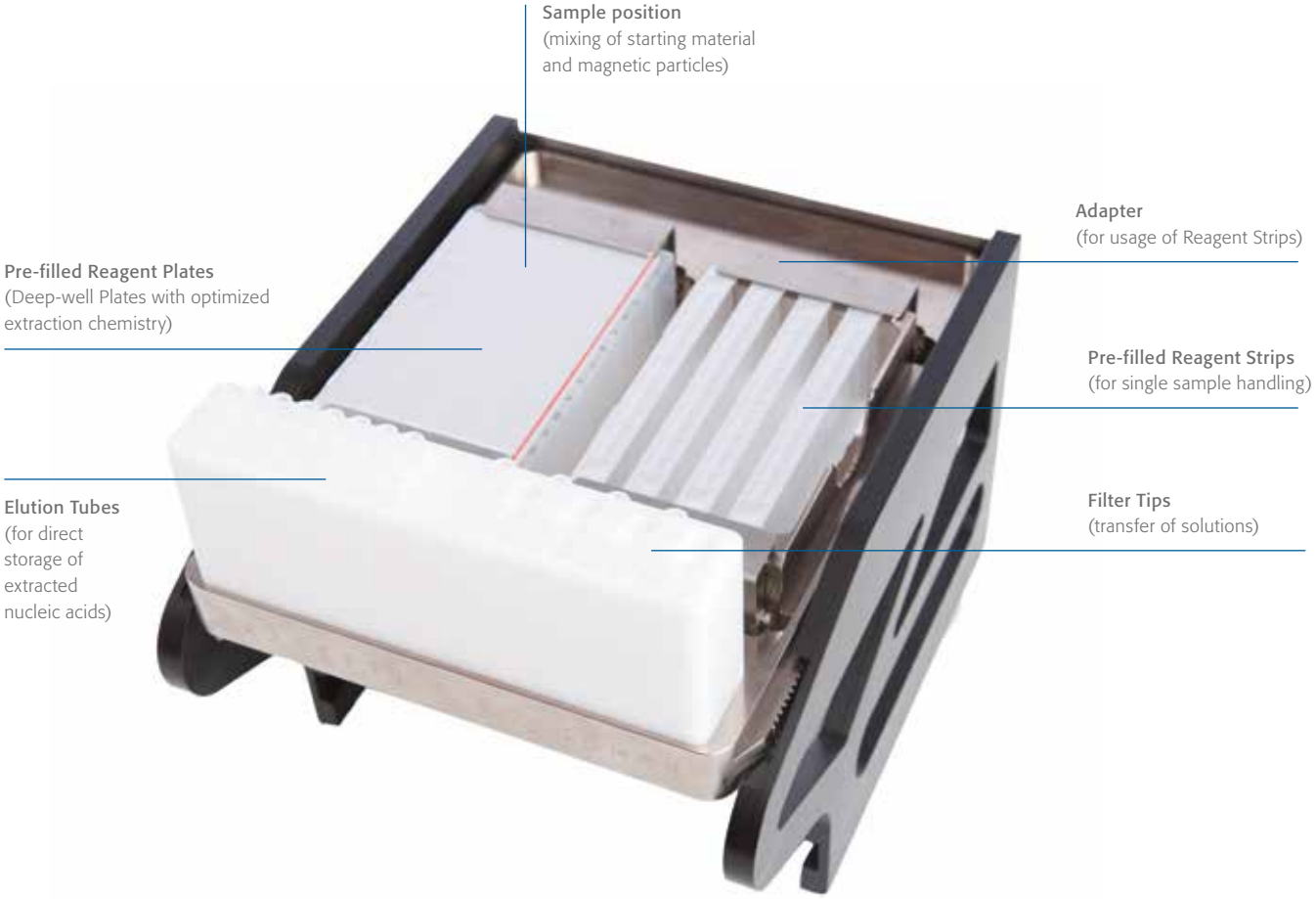


Lane 1: DNA ladder, **Lane 2 – 17:** gDNA from whole blood sample on a 1.5 % agarose gel

Use of genomic DNA (1 µl each) isolated from 200 µL whole blood samples for amplifying a human-specific target sequence in real-time. Amplification was performed in a qTOWER.



Amplification plots of GAPDH specific target sequence, after isolation of human gDNA from 16x 200 µl of whole blood



The system (including Sample Tray and extraction kits) is extremely fast and easy to use, allowing users to fully prep samples for nucleic acid isolation in just three steps.

Step 1: First, load the Sample Tray as shown with the appropriate accessories (You may wish to consult the kit user manual for details on how to position the Reagent Strips/Plates, elution vessels and Filter Tips.) The correct order for the prefilled, plastic reaction containers depends on the application. The number of elution vessels and Filter Tips depends on the number of samples to be processed.

Step 2: After loading the Sample Tray, position it in the InnuPure® C16 with the elution vessels in front. The Sample Tray will be drawn into the device automatically upon activation of the integrated soft-touch function.

Step 3: Finally, open the list with the pre-installed isolation protocols and the InnuPure® C16 will automatically run the extraction.

After the routine is finished, the Sample Tray containing the purified samples will automatically move out of the InnuPure® C16. The extraction process will take about 40–75 minutes depending on the application.

Please order the optimized extraction kits separately. For further information please have a look into the chapter »Reagents« on page 105 – 116

Technical data

System parameters	
Drive	5 quiet long-life servomotors
Operation	Stand-alone (HID-Pro 320 with 5.7" color touchscreen)
Maintenance	Maintenance-free due to the use of non-wearing stainless steel pistons
Cleaning	Easy access to the system components through the front door
Extraction time	Minimum 40 minutes (depending on starting material)
Number of samples	1 to 16
Tempering	Heated position up to 50 °C inside the sample

Application parameters	
Consumables	▪ Kit contains all consumables. ▪ Sealed, pre-filled Reagent Strips or Plates
Extraction routines	Pre-programed protocols (optimized for different starting materials)
Piercing function	Yes. No need to remove sealing foils from the Reagent Strips or Plates
Filter tip volume	Maximum 1000 µl

Other technical data	
Accessories	Sample Tray and Priming Station for up to 16 samples
Weight	Approx. 28 kg
Dimensions (W × H × D)	380 mm × 435 mm × 530 mm
Power supply	Internal power supply 110 – 230 V/50 – 60 Hz
Warranty	2 years

Order information

Order No.	Description
845-00002-2	**InnuPure® C16** Instrument system, incl. user interface HID-Pro 320, Priming Station and Sample Tray for up to 2 Reagent Plates
845-60004-0	Priming Station for InnuPure® C16
845-60005-0	Sample Tray for InnuPure® C16
845-60006-0	Adapter for 4 Reagent Strips
845-60007-0	Piercing Tool for InnuPure® C16 (for perforation of sealed consumables)
845-60008-0	UV lamp for InnuPure® C16

InnuPure® C96 | Fast and efficient high-throughput nucleic acid extraction

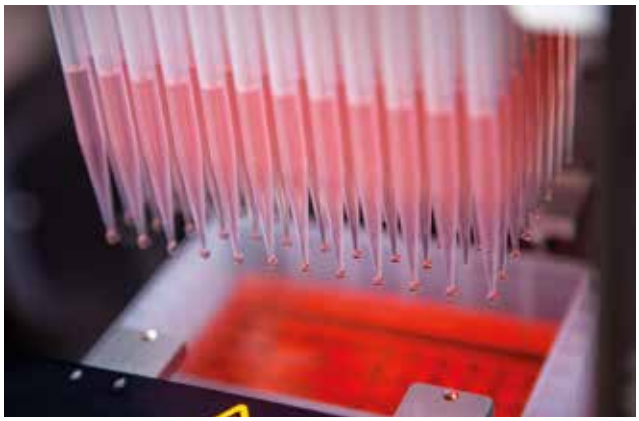
The InnuPure® C96 allows a fast and fully automated nucleic acid extraction from complex starting materials in 96 well standard format. The InnuPure® C96 extraction system is founded on the proven principles of liquid handling and purification based on magnetic particle separation. Therefore high yields and excellent purities are achieved. The purification of DNA and/or RNA is one of the most common methods for sample preparation and thus constitutes a standard in molecular biology and medical diagnostics. The built-in 96 well precision pipetting head with 96 simultaneously operating channels and an established tip sealing principle is well suited for complex purification processes with high sample throughput. It also ensures excellent and reproducible results.
The automated extraction process also allows a flexible time management which enables to plan and prepare subsequent experiments comprehensively.

- Fully automated nucleic acid extraction based on proven magnetic particle separation
- Preparation of up to 96 samples in parallel
- Preprogrammed extraction protocols for optimal reproducibility
- Adjustable elution volumes
- Ready-to-use purification kits for easy handling and for the extraction of high quality nucleic acids
- Minimum number of manual steps
- Tight desktop device for any lab bench
- Optimized lysis by using a heated position
- Minimized contamination and easy decontamination due to an optional UV lamp and HEPA filter
- Highly flexible system for a wide variety of starting materials and volumes

Fast preparation with minimal effort

Pre-filled and sealed Reagent Plates facilitate the preparation of the isolation routine enormously. Just the starting material has to be provided in 96 well format. The reagent plastics are opened manually by using an optimized piercing tool. Thus a peeling of the foil can be avoided easily. The subsequent purification process and the supply or discharge of the necessary reagents take place along a linear distance with 4 function positions. The plate transport system consisting of a two position wagon guarantees a high level of flexibility and speed.

The nucleic acids, bound to magnetic particles, are collected at the bottom of the wells and, depending on the protocol, resolubilized by up and down pipetting in an optimized process. Using an automated, tempered position necessary heating steps can be performed without any manual intervention. Therefore the lysis efficiency can be set optimally while reducing the lysis duration at the same time.



Integrated high precision pipetting head with 96 pistons working in parallel for filter tips up to 1000 µL

- Integrated lysis step (depending on the starting material)
- Isolation of high quality nucleic acids by binding them to magnetic or paramagnetic particles
- Variable elution into separate tubes for direct storage

In addition, the InnuPure® C96 provides maximum protection against possible contamination, which can be successfully prevented with the help of the innovative extraction principle. An optionally, retrofittable UV lamp and HEPA filter in combination with the closed working area make the contamination protection of the extraction system, the individual samples and the isolated nucleic acids complete.

High operating comfort for every routine application

High quality robot technology with a very user-friendly software make the InnuPure® C96 to an attractive extraction system, both in research institutions and for its use in routine applications. The effective and flexible software allows preprogrammed standard methods to be loaded, protocols to be configured easily and to be adjusted to customer-specific applications. The clear user interface ensures current experiments to be easily understood by providing schematic and graphical representations, detailed user instructions and displaying the active extraction step in real-time.

Automatic moevment of all plates due to the 3 position wagon and the stacker

Flexible, optimized kits for efficient nucleic acid purification

For the InnuPure® C96 a variety of different DNA extraction kits is available. Based on the proven separation of nucleic acids bound to magnetic particles, excellent results with high purity and yield are guaranteed. This ensures the final product to be free of proteins, nucleases and other contaminants and to be used immediately for subsequent applications. The whole system makes sure that time is saved significantly and manual interventions are reduced to an absolute minimum. Pipetting, mixing and heating steps including in the routine are all operated by the extraction automat.

Technical data

System parameters	
Device operation	PC control software
Decontamination	▪ Optional: UV lamp ▪ Optional: HEPA filter
Number of samples	Up to 96
Tips	96 each with 1000 µl
Liquid handling principle	96 channel precision pipetting head with proven tip sealing principle
Temperature control	Automated heating position
Plate transfer	▪ 4 function positions in the device ▪ Linear, movable 2 position wagon

Application parameters	
Extraction principle	Based on surface-functionalized magnetic or paramagnetic particles
Lysis step	Automated in the device (depending on the starting material)
Consumables	Fully included in the required kit
Extraction routines	Preinstalled protocols (optimized for a variety of starting materials)
Elution	▪ Adjustable volume (50 - 500 µl) ▪ Transfer of the nucleic acid into a separate plastic for direct storage or for further applications

Other technical data	
Dimensions (W x H x D)	690 mm x 810 mm x 400 mm
Power supply	Internal power supply 100 – 240 V/50 – 60 Hz
Warranty	2 years

Order information

Order number	Description
845-00003-2	**InnuPure® C96** Instrument system without PC, including PC operating software

ScanDrop® | Nano-volume spectrophotometer

New generation of spectrophotometer

The ScanDrop® combines easy measurement of microliter volumes down to 0.3 µl with a standard measuring position for 10 mm cuvettes. This feature results in an exceptionally versatile instrument for routine work. The modular system is available as a single instrument for small sample volumes, as a standard 10 mm position instrument or as a combination of both. Unlike other systems, no warm up time is necessary. The instrument is ready to use almost as soon as it is switched on thanks to a long-life xenon flash lamp. The lifetime of the lamp with 10^9 flashes (approx. 100,000 h) outperforms conventional ligth sources easily. Furthermore the Split-Beam-Technology provides high stable and reproducible measurement results. One additional highlight is the new portable HID-Pro 320 user interface with a 5.7" color touchscreen, which turns the ScanDrop® into a fully functional and space-saving stand-alone system.

- Combination of two generations of spectrophotometer
- Measurement of microliter volumes down to 0.3 µl
- 16 channels per CHIPCUVETTE® with fully automated measuring of up to 32 positions at path lengths of 0.1 or 1.0 mm
- Automated sample positioning (CHIPCUVETTE®)
- Measuring position for 10 mm standard cuvettes
- Usage of TrayCell®: single measurements of small samples at path length of 0.2 mm or 1.0 mm
- Maintains best user and sample protection
- No evaporation
- No cross-contamination
- No carryover effects
- Easiest sample recovery
- Sample storable in the CHIPCUVETTE®
- Suitable for multi-channel pipettes
- Powered by SPECORD® technology
- High-precision optics with aberration-corrected grating

Reliable, versatile and robust

The ScanDrop® uses next to cuvettes in 10 mm standard format a unique patented CHIPCUVETTE®, which allows the user to easily measure sample volumes even as small as an impressive 0.3 µl. The CHIPCUVETTE® provides consistent measuring conditions, such as path lengths, which leads to enhanced reproducibility compared to other available "open drop" or "microliter" systems. It also provides optimum user and sample protection, utterly eliminating sample evaporation and the risk of cross-contamination or carryover effects. This new chip technology makes it easy to recover or simply store the sample after measurement.

The CHIPCUVETTE® provides 16 separate micro channels and is suitable for multichannel pipettes. Its technology ensures precise UV VIS absorption measurements between 190 nm and 720 nm.

Fully automated measurement

The CHIPCUVETTE® is convenient and easy to use thanks to fully automatic movement and measurement of predefined measuring positions. Up to 32 measurements can be performed during one run at which a double determination of one sample at two different pathlenght can be performed. This feature offers a matchless advantage especially if sample concentrations are unknown, because any dilution becomes unecessary.

High-precision optics – powered by SPECORD® technology

The polychromator system, designed to work without any movable components, is the heart of ScanDrop®. Its high-precision optics consist of an aberration-corrected grating, a mechanical slit and a diode array detector. Encased in a rugged titan-based spectrometer body, it is permanently adjusted, fixed and insensitive to external influences.

Measurement position for CHIPCUVETTE®

Measurement position for 10 mm standard cuvettes

The formula module

Mathematical functions such as:

- Addition
- Subtraction
- Multiplication
- Division
- Factor
- Square
- Square root
- Sine
- Cosine
- Logarithm ln
- Binomial theorems

Bio method module – wide selection

The following preprogrammed methods are available:

- Absorbance 260
- DNA purity (A_{260}/A_{280})
- ssDNA concentration (A_{260} × factor 33)
- RNA concentration (A_{260} × factor 40)
- DNA concentration (A_{260} × factor 50)
- Absorbance 280
- Absorbance 280, factor 1.38
- Kalb and Bernlohr
- Warburg-Christian formula for DNA
- Warburg-Christian formula for proteins
- Whitaker and Granum
- Kalckar and Shaffran
- and more...

PC controlled or stand alone

The ScanDrop® is controlled either by PC or by a new portable user interface with a touchscreen, and includes the corresponding measurement and analysis software. This software provides several modules meeting the needs of every user. The method module allows users to select any preprogrammed nucleic acid and protein analysis method.

The formula module allows users to compile, store and reuse customized computation formulas; the quantification module automatically calculates unknown concentrations by creating a calibration curve containing standard samples. A number of typical methods are preprogrammed. The formula module mathematically combines up to six fixed wavelengths and the quantification module chooses between different calibration curves.

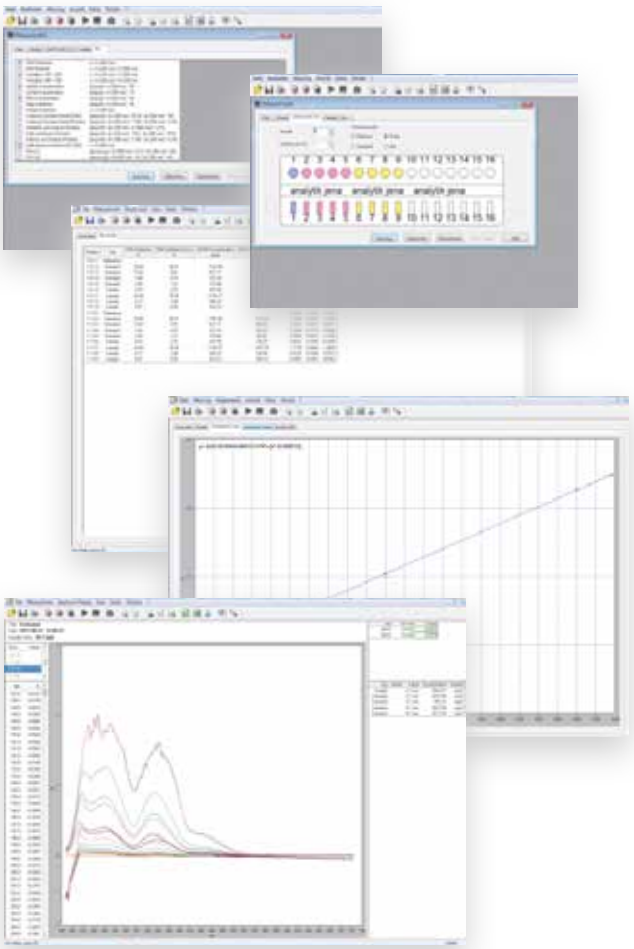
External user-interface HID-Pro 320

The new portable HID-Pro 320 user interface eliminates the need for a PC and makes the system exceptionally easy to operate. Its extra large 5.7" color touchscreen eliminates the need for a keyboard or mouse. The software, which is based on Windows CE, offers typical Windows functions and operating environment, as well as an intuitive menu bar.
The HID-Pro 320 consists of a LAN and USB port for optimum connectivity and is also compatible with other instruments from Analytik Jena | Life Science, such as the SpeedCycler² thermal cycler or InnuPure® C16 extraction automate.

Portable and versatile user-interface HID-Pro 320 with a 5.7" touchscreen, USB and LAN port

ScanDrop software

Methods can be stored individually and organized in user-defined directories. Users may also select a quick-start menu for frequently used methods. An USB and LAN port allows users to exchange methods to other systems and export analysis data. The operating language can be easily changed at the touch of a button.
If there is PC already available in the laboraty, ScanDrop® can be used as well by novel software FlashSoft Pro. FlashSoft Pro convinces by a comparable flexibility of the functional range and allows an intuitive handling as well as the automized analysis of the measuring results.



FlashSoftPro

Validation CHIPCUVETTE®

The Validation CHIPCUVETTE® is used for revising the following device parameters, particularly those affecting to the CHIPCUVETTE® measuring position:

- Zero transmission
- Baseline variation
- Baseline noise (RMS)
- Long-term stability
- VIS photometry
- Baseline accuracy

WG280 NG1 NG4 NG3 NG9 Holmium-oxide glass

The validation of VIS photometry is done with the aid of the neutral glass filters NG1, NG4, NG3 and NG9. A holmium oxide glass filter is also used for checking wavelength accuracy. WG_{280} glass is necessary as reference filter.

Validation CHIPCUVETTE® external certified by Hellma®

Technical data

System parameters	
Optical principle	Powerful diode array spectrophotometer for the UV VIS range
Optical system	Polychromator system
Light source	Xenon flash lamp
Wavelength range	190 – 720 nm (in steps of 0.5 nm)
Measuring time	Minimal 1 sec
Longterm stability	0,003 A/h
Sample temperature control	Approximately 4 – 90 °C optional
Control	HID-Pro 320 or PC
Software	ASpect Nano or FlashSoft Pro

Application parameters	
Scan application	Simultaneous, Split-Beam-Technology
Mode	Energy, absorbance, transmittance

Cuvettes	Standard cuvette	CHIPCUVETTE®			TrayCell®	
Pathlength	Up to 10 mm	0.1 mm	1.0 mm	Both	0.2 mm	1.0 mm
Sample volume	2 ml (min. 1.7 ml)	Min. 0.3 µl	Min. 2.0 µl	Min. 4.0 µl	0.7 - 4.0 µl	3.0 - 5.0 µl

Other technical data	
Instrument dimensions (W × H × D)	240 × 170 × 200 mm
Instrument weight	Approx. 5 kg
Electrical requirements	110 – 220 V ± 10 %, 50 – 60 Hz
Instrument operation	+ 15 °C to 35 °C, rel. humidity max. 90 % at 30 °C
PC interface	USB
Warranty	2 years

Order information

Order No.	Description
844-00200-2	**ScanDrop® 100** Instrument system BU, for 10 mm cuvettes, no PC, incl. FlashSoft Pro and two 10 mm cuvettes (glass and quartz)
844-00201-2	**ScanDrop® 200** Instrument system BU, for CHIPCUVETTE®, no PC, incl. FlashSoft Pro and 2 pieces of CHIPCUVETTE®
844-00202-2	**ScanDrop® 250** Instrument system BU, combination instrument for CHIPCUVETTE ® and 10 mm cuvettes, no PC, incl. FlashSoft Pro and two 10mm cuvettes (glass and quartz) as well as 2 pieces of CHIPCUVETTE®
844-00050-2	**HID-Pro 320** Portable and versatile user interface with 5.7" color touchscreen, LAN, USB, incl. ASpect Nano

Accessories/optional features

Order No.	Description
844-00210-0	**Cell holder, temperature-controlled, without stirrer** ▪ For cells with path lengths of up to 10 mm; external fluid thermostat for temperatures ranging from –10 °C up to 95 °C; ▪ 4 m tubing, tubing connector **Note:** ▪ Cells and thermostat have to be ordered separately! ▪ Only available for ScanDrop® 100 or 250
844-00211-0	**Cell holder, temperature-controlled, with stirrer (230 V)** ▪ For cells with path lengths of up to 10 mm; external fluid thermostat for temperatures ranging from – 10 °C up to 95 °C; ▪ Integrated magnetic stirrer ▪ 4 m tubing, tubing connector, 10 stirring magnets **Note:** ▪ Cells and thermostat have to be ordered separately! ▪ Only available for ScanDrop® 100 or 250
844-00212-0	**Peltier temperature-controlled cell holder** ▪ Temperature range 0 °C up to 95 °C (at room temperature 25 °C) ▪ For cells with path lengths of up to 10 mm ▪ Peltier temperature-controlled single cell holder, integrated magnetic stirrer ▪ Temperature accuracy ± 0.1 °C ▪ Including controller PTC 100 **Note:** ▪ Only for ScanDrop® 100 or 250 available
820-60145-0	**Bath thermostat A 106 T** ▪ Temperature range up to 100 °C ▪ Temperature stability ±0.05 °C ▪ Heating power 1.5 kW ▪ Bath volume 5 – 7 L ▪ Analog temperature display
820-60147-0	**Compact cooling thermostat 230 V** ▪ Temperature range – 10 °C up to 120 °C ▪ Temperature stability ±0.05 °C ▪ Heating power 1.5 kW ▪ Bath volume 3 – 4.5 L ▪ Digital temperature display

Order No.	Description
844-70200-0 844-70201-0	**CHIPCUVETTE®** – 5 pieces **CHIPCUVETTE®** – 25 pieces

The CHIPCUVETTE® is an automized UV VIS multi-channel measuring cell for smallest volumes, which can be used in ScanDrop® 200, as well as in ScanDrop® 250.

- Double determination of one sample at pathlenght of 0.1 mm and 1.0 mm
- Up to 32 measurements per run with fully automized sample positioning
- Sample volumes from 0,3 till 4,0 µl
- Independent of centre height
- Recovery of sample is possible
- Easy application

Due to the integrated measurement channels, the CHIPCUVETTE® can be loaded easy and fast by using commercial available pipettes. The 0.1 mm and 1.0 mm measuring spots offer defined pathlength in each measuring channel. In comparison to standard cuvettes with 10 mm pathlength a virtual dilution of 1:100 or 1:10 is achieved respectively. Because of fully automized positioning of CHIPCUVETTE® reproducible results are guaranteed without manual influence and effort.

844-70210-0	**Validation CHIPCUVETTE®**

844-70211-0	**Pipetting aid** for up to 4 CHIPCUVETTE®s

Order No.	Description
820-60242-0	**TrayCell®** The TrayCell® is a fibre-optic ultra-micro cell designed for UV VIS based micro volume analysis . The dimensions of the TrayCell® are equivalent to 10 mm standard cuvettes in order to work in ScanDrop® 100, as well as in ScanDrop® 250. ▪ Inclusive lids for pathlenght of 0.2 mm and 1.0 mm ▪ For uncomplicated single sample measurements ▪ Sample volumes from 0.7 till 4.0 µl and 3.0 till 5.0 µl ▪ Suitable for centre heigth of 8.5 mm, 15 mm and 20 mm ▪ Recovery of samples is possible ▪ Easy application and cleaning  Due to the integrated beam deflection and the use of fibre-optic cables it is possible to measure the sample directly on the surface of the optical window. The 0.2 mm or 1.0 mm lid create a measuring chamber with a defined optical light path. In comparison to standard cuvettes with 10 mm pathlength a virtual dilution of 1:50 or 1:10 is achieved respectively. During filling and cleaning stages, the cell remains inside the photometer. This guarantees a continuously identical position of the aperture in the light beam and no variation in comparison to the reference measurement.

Application list | Summary application reports ScanDrop®

Reference No.	Application
BS_SD_01_10_e	Determination of different lambda DNA Concentrations using ScanDrop® with CHIPCUVETTE®
BS_SD_01_11_e	Application of TrayCell® using ScanDrop® 100

GeneTheatre | Highly flexible liquid handling

Automated pipetting routines: simple and fast

The use of the GeneTheatre greatly simplifies all pending pipetting and dispensing tasks in a laboratory and allows for full automation. In addition to microplate handling, this highly flexible workstation also accommodates the use of strips, single vessels and glass slides. Users may choose from any of 12 desk positions in the standard-format 96 well SBS, making it easy to adjust the system to any conceivable application. The GeneTheatre is also perfectly suited for the use of thermal mixers, heating or cooling plates, and vacuum stations. In addition, the GeneTheatre can also be adapted to specific applications. Single and multiple channel pipettes with 8 channels are available. A simple mechanism allows users to change pipettes without tools – an effortless process requiring no technical expertise.

- Automated, highly fexible liquid handling desktop system
- Highly reproducible, precise pipetting and dispensing results
- Modern servomotors provide fast, quiet operation
- Capacity ranges from 0.5 µl to 1000 µl
- Interchangeable pipettes with 1 or 8 channels
- Free definable sample configuration within the 9 mm, 4.5 mm or 2.25 mm grid
- 12 freely selectable positions in 96 well SBS standard-format
- Users may select from different waste box systems for used tips
- Accommodates active and passive cooling
- Optional available UV lamp

Highly precise, fully variable workstation

Thanks to its various pipettes and tips, the volume capacity of the GeneTheatre ranges from 0.5 to 1000 µl. Pipetting results – even for complex liquid handling tasks – are highly consistent and precise. Users may also integrate new plastic products into the software in only a few steps, with the calibration wizard and modern servomotors simplifying the learning process of the robot and omitting the time-consuming process of entering coordinates.

A large range of different adapters and passive cooling blocks makes it possible to position the necessary consumables directly on the working desk of the device. The closed housing and two-piece, front sliding door all but eliminates potential contamination. In the event that contamination does arise, however, the optional available UV lamp allows users to decontaminate the unit quickly and easily.

- High precise pipetting, dispensing and mixing
- Closed, robust plexiglass housing with a front sliding door
- Accommodates use of external equipment, such as mixers, thermal mixers or vacuum chambers
- Piercing function
- Optional available UV lamp

The simple exchange of pipetting heads allows an easy adaption of the GeneTheatre to different liquid handling requirements.

Use in a great variety of application areas

Thanks to its many versatile features, the GeneTheatre can be used in virtually any application, such as:

- Preparing whole PCR and real-time PCR batches
- Reformatting microplates in the 96, 384 and 1536 format
- Dispensing or distributing reagents
- Running automated dilution series
- Hit-picking and sample pooling
- Running microarray applications with freely selectable spot layouts and dots (starting at 0.5 µl)
- Performing mother-daughter plate transfers and single-tube transfers (0.2 – 2.0 ml)

Different applications require different numbers of tips, which is why the GeneTheatre has an intelligent waste box system that allows the user to choose whether used tips are discarded into a box on the work desk or into a box outside the housing. This gives users the option of using up to minimum 600 tips (1000 µl) in a run with no difficulty.

Intuitive and clear software concept

The GeneTheatre operating system uses a clearly structured, easy-to-learn user interface. Predefined pipetting and dispensing parameters allow users to set up different liquid handling routines quickly. For more complicated runs, users may also adjust a number of different influencing factors such as velocity, correction capacity, and approach height. Saved procedures can always be used again and be adjusted to different sample throughput rates.

Technical data

Number of positions	12 in MTP – standard format (SBS), freely selectable

Tips	Size (µl)	Sterile/ not sterile	ART- filter (sterile)
	50	×	×
	250	×	×
	1000	×	×
Working capacity	0.5 - 25 µl, as well as 5 -250 µl and 100 -1000 µl		
Pipettes	1- channel pipette and 8- channel pipette		

Other technical data	
Interfaces	USB
Voltage	110 – 230 V
Power consumption	160 VA
Frequency	50/60 Hz
Operating system	At least windows XP
Processor	Pentium II
RAM	1 GB
Hard drive	20 MB
Dimension (W × D × H)	642 mm x 607 mm x 495 mm
Weight	Approx. 40 kg

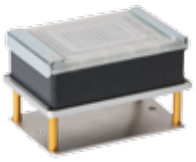
Warranty	
Basic unit	2 years
Pipette	2 years

Order information

Order No.	Description
844-00401-2	**GeneTheatre** Liquid Handling robot without pipette and without PC, incl. Software, Height Adapter and Waste Box I
	A number of different pipettes are available for GeneTheatre and these can be interchanged easily without any tools. The customer may choose between 1 and 8 channel pipettes for pipetting volumes of 0.5 – 25 µl, 5 – 250 µl and 100-1000 µl.
844-00410-0	1-channel pipette (0.5 - 25 µl)
844-00411-0	1-channel pipette (5 - 250 µl)
844-00412-0	1-channel pipette (100 - 1000 µl)
844-00413-0	8-channel pipette (0.5 - 25 µl)
844-00414-0	8-channel pipette (5 - 250 µl)
844-00415-0	8-channel pipette (100 - 1000 µl)

	GeneTheatre accessories include different kinds of adapters for tips and MTPs as well as passive cooling blocks for 0.2 – 2.0 ml tubes, strips or microplates. This makes the GeneTheatre suitable for a wide range of plastics, and even allows it to handle 384 well microplates.
844-00430-0	**Waste Box I (small)** Waste Box for GeneTheatre to be positioned on the work desk inside the device, autoclavable
844-00431-0	**Waste Box II (large)** Waste Box for GeneTheatre to be positioned outside the device, capacity to waste 600 x 1 ml tips.
844-00432-0	**UV lamp for GeneTheatre** UV lamp for GeneTheatre for decontamination of workdesk via UV light
844-00433-0	**Adapter standard 96 well** Adapter for 96 well microplates, autoclavable
844-00434-0	**Adapter standard 384 well** Adapter for 384 well microplates, autoclavable
844-00435-0	**Adapter 0.2 ml, passive cooling** Adapter for 96 well microplate 0.2 ml non skirted, half skirted, full skirted and 96 0.2 ml tubes with passive cooling function, including Height Adapter 40 mm

Order information

Order No.	Description	
844-00436-0	**Adapter 2.0 ml, passive cooling** Adapter for 24x 1.5 ml and 2.0 ml tubes with passive cooling function, including Height Adapter 40 mm	
844-00437-0	**Adapter kombi, passive cooling** Adapter for 8x 0.2 ml, 8x 0.5 ml, 8x 1.5/2.0 ml tubes with passive cooling function, including Height Adapter 40 mm	
844-00438-0	**Adapter 0.5 ml, passive cooling** Adapter for 24x 0.5 ml tubes with passive cooling function, including Height Adapter 40 mm	
844-00439-0	**Adapter 96 Well microplate LP, passive cooling** Adapter for 96 well microplate LP with passive cooling function, including Height Adapter 40 mm	
844-00440-0	**Adapter 384 Well microplate, passive cooling** Adapter for 384 well microplates with passive cooling function, including Height Adapter 40 mm	
844-00441-0	**Adapter 0.1 ml QIAGEN, passive cooling** Adapter for 24x6 0.1 ml tubes QIAGEN with passive cooling function, including Height Adapter	
844-00442-0	**Soft touch adapter** Adapter for optimal dry pipetting of small volumes	
844-00443-0	**Tip tray adapter 1000 µl** Adapter for hosting 1000 µl tip rack	
844-00444-0	**Tip tray Adapter for used tips** Adapter for collecting used tips on deck position, autoclavable	
844-00445-0	**Height Adapter 40 mm** Height Adapter 40 mm for 50 µl/ 250 µl Tip Box	

SELMA 96 / 384 | Automated pipetting system

Constantly moving your thumbs up and down to pipette solutions is the defining feature of day-to-day lab work - along with arm and joint pain. The SELMA 96 / 384 is a semi-automated pipetting system, which processes liquid handling steps fast, precise and with a high reproducibility. Equipped with 96 or 384 tips working in parallel, 96 and 384 well microplates can be filled in the twinkling of an eye. Making painful tendonitis a thing of the past.

All movements and processes, which are important for high precision as well as for reproducibility, are achieved by reliable motors. This ensures always excellent and constant results.

- 96- or 384-channel instrument with a minimal footprint
- A fast, precise tool for processing 96 and 384 samples (and/or 96 and 384 well microplates) and individual columns
- Available in various volume ranges from 0.5 µl up to 1000 µl
- For preparing dilution series
- TipTray technology: Proven tip sealing concept makes changing tips easy and secure
- Touchscreen for easy, intuitive operation
- Memory function and automatic parameter use
- External equipment such as mixers, heating and cooling adapters, vacuum chambers, etc. may be used
- Error-free, reproducible results with 96 or 384 parallel working pistons
- Automatic positioning to different heights
- Two working positions for microplates and reservoirs

The automated tip drawing feature avoids the complex process of mounting tips. Prepackaged tips can be used immediately with no time-consuming loading process. A special feature: The manual control of the correct fit of each single tip is not necessary anymore due to the automatic tightening of the tips and the tip sealing technology, that has been proven effective under high throughput conditions. Tips can be changed effortlessly within a few seconds, after which the SELMA 96 / 384 is ready for the next application.

The multi-position touchscreen of SELMA 96 / 384 allows a userfriendly handling while standing or sitting

The SELMA 96 / 384 is characterized through very easy handling without the need of a separate controlling by PC. Pipetting, dispensing and a lot of more modes are chooseable by the usage of a modern 3.5" touchscreen. That panel is used for entering desired parameters, as volume and pipetting speed for instance and for the start of the routine afterwards. All manual processing steps, like changing of microplates, are shown on the display. Thus a fast and precise handling of microplates is guaranteed.

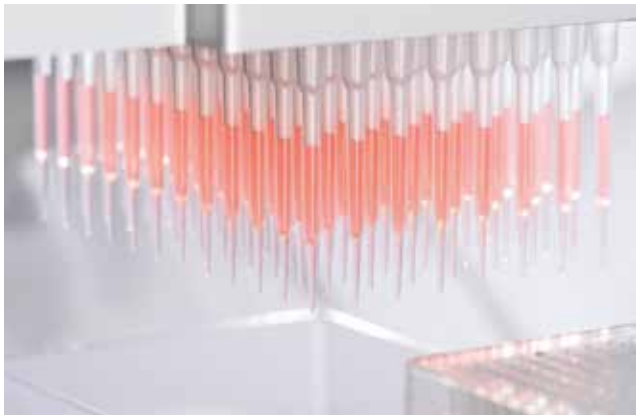
For SELMA 96 / 384 the usage of different types of microplates is a matter of course. To facilitate the best depth of dipping into the single wells, the pipetting head can be easily positioned in the right way, thanks to a rotary knob. For recurrent processes the chosen settings of pipetting height, volumes and dosing speed can be saved and reloaded at any times. Additionally two easy-to-load positions are available for microplates and reservoirs, eliminating the constant need to move filled plastic ware.

Exciting flexibility

The option of using many different accessories – such as reservoirs, trays for various inserts and a variety of TipTrays – allows users to perform an exceptionally wide variety of applications. Cleaning and replacing accessory equipment is easy, which allows operators to go back to work quickly. The open design of the SELMA 96 / 384 can be used with existing and/or external equipment, such as heating and cooling adapters, mixers and thermal mixers or vacuum chambers, etc. Special adjustment points allow for correct positioning.

Positioning of the pipetting head and setting the right height – very easy due to the integrated rotary knob.

Single rows (e.g. to produce seriel dilutions) can be pipetted easily due to 8 channel magazine



Small, fast and extremely effective – the 96-channel head of the SELMA 96

Possible applications for SELMA 96 or 384

- Plate Replication
- Plate Reformatting
- Adding of medium (cell biology)
- ELISA
- Reagent adding
- Plate coating
- Plate dilution, serial dilution

Reproducible, comparable results every time

The 96 or 384 channels of the SELMA 96 / 384 allow users to transfer 96 or 384 samples safely, with no mistakes and in a single step without confusing samples or forgetting individual wells – problems that used to plague day-to-day work. The high-quality tips and tip sealing concept have been tested under high-throughput conditions over the course of several years and always provide precise, reproducible results. A silicone mat perfectly and uniformly seals tips along the front. The pistons are controlled by a motor to produce extremely homogeneous movements which, in turn, ensure that the results will always be reproducible and precise with no differences in pipetting technique. In addition, different versions of the system are also available, each delivering precise results for maximum volumes of 25 µL, 60 µL, 250 µL and 1000 µL, respectively. The compact design means that the SELMA 96 / 384 can be used in a clean bench, thereby preventing any potential cross-contamination.

In short, this is a pipettor for everyone.

Technical data

Liquid handling parameters	
Channels	▪ 96 or 384 channels in parallel ▪ Processing column by column possible
Pipetting head	Motorized motion in z-direction
Number of positions	Two, in MTP standard format (SBS)
Microplate formats	▪ 96 well, 384 well ▪ Shallow and Deep Well
Tips*	High precision tips; standard; sterile; sterile PCR; sterile PCR Filter
Functions	▪ Pipetting, reverse pipetting ▪ Dispensing ▪ Dilutions and dilution series ▪ Mixing

SELMA 96

Device	Volume	Precision (CV)	Tips
SELMA 96 (25 µl)	0,5 – 25 µl	2 – 5 µl ≤ 2 % > 5 - 25 µl ≤ 1 %	SW: 10 µl, 25 µl DW: 60 µl
SELMA 96 (60 µl)	1 – 60 µl	3 – 5 µl ≤ 2 % > 5 - 60 µl ≤ 1 %	SW: 10 µl, 25 µl DW: 60 µl
SELMA 96 (250 µl)	5 – 250 µl	10 – 25 µl ≤ 2 % > 25 - 250 µl ≤ 1 %	SW: 250 µl DW: 250 µl
SELMA 96 (1000 µl)	10 – 1000 µl	25 – 100 µl ≤ 2 % > 100 - 1000 µl ≤ 1 %	SW: - DW: 1000 µl

SELMA 384

Device	Volume	Precision (CV)	Tips
SELMA 384 (25 µl)	0,5 – 25 µl	2 – 5 µl ≤ 2 % > 5 - 25 µl ≤ 1 %	SW: 10 µl, 25 µl DW: 60 µl
SELMA 384 (60 µl)	1 – 60 µl	3 – 5 µl ≤ 2 % > 5 - 60 µl ≤ 1 %	SW: 10 µl, 25 µl DW: 60 µl

System parameters	
Stand alone device	Yes, with 3.5" touch screen (colored)
Software	▪ Integrated ▪ Function for saving and automatically re-use of parameters ▪ Automatically moving to pre-saved heights in different routines
Memory capacity	> 10 parameter sets per pipetting mode

Additional technical data	
Dimensions (W x D x H)	307 mm x 480 (520**) mm x 325 mm
Weight	Approx. 15 kg (20 kg**)
Warranty	12 month

** SELMA 96 (1000 µl)

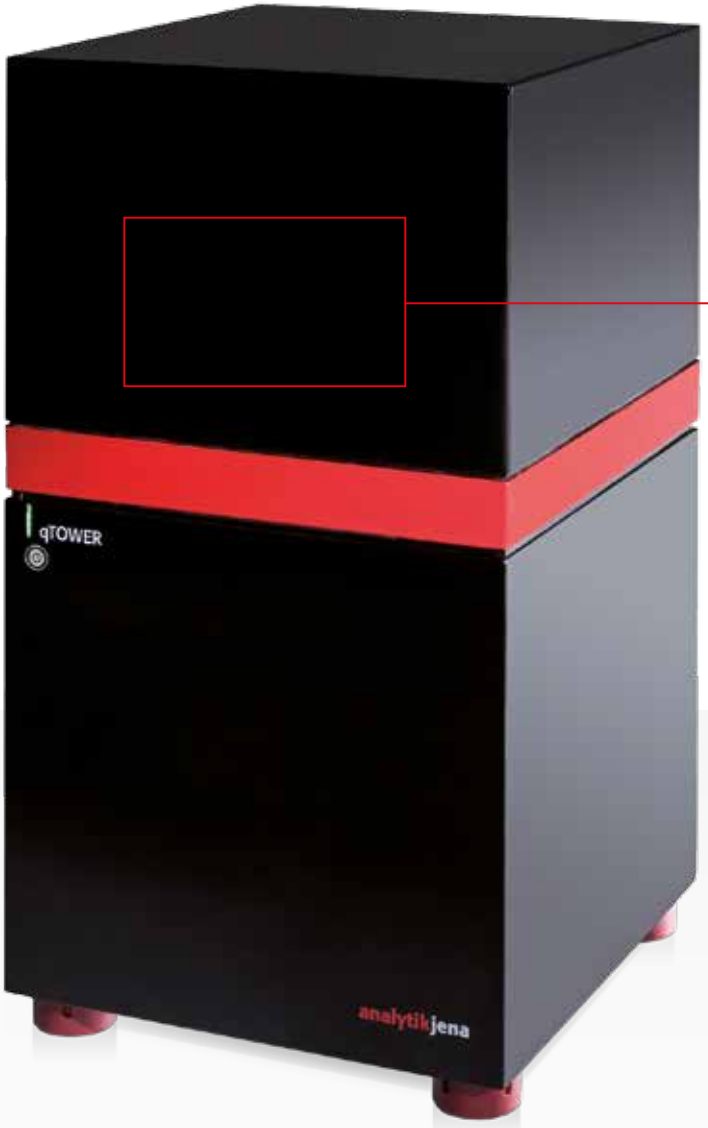
Order information

Order number	Description
844-00180-2	**SELMA 96** (25 µl) Semi-automated, stand-alone pipetting station; includes 96-channel pipette head (0.5 to 25 µL) and 2 work positions for 96-well plates
844-00184-2	**SELMA 96** (60 µl) Semi-automated, stand-alone pipetting station; includes 96-channel pipette head (1 to 60 µL) and 2 work positions for 96-well plates
844-00181-2	**SELMA 96** (250 µl) Semi-automated, stand-alone pipetting station; includes 96-channel pipette head (5 to 250 µL) and 2 work positions for 96-well plates
844-00185-2	**SELMA 96** (1000 µl) Semi-automated, stand-alone pipetting station; includes 96-channel pipette head (10 to 1000 µL) and 2 work positions for 96-well plates
844-00186-2	**SELMA 384** (25 µl) Semi-automated, stand-alone pipetting station; includes 384-channel pipette head (0.5 to 25 µL) and 2 work positions for 96-well plates
844-00187-2	**SELMA 384** (60 µl) Semi-automated, stand-alone pipetting station; includes 384-channel pipette head (1 to 60 µL) and 2 work positions for 96-well plates
844-00182-2	**8-channel magazine for the SELMA 96** (250 µl) Magazine accommodating 8 tips for the SELMA 96 (250 µl)
844-00188-2	**8-channel magazine for the SELMA 96** (25 µl or 60 µl) Magazine accommodating 8 tips for the SELMA 96 (25 µl or 60 µl)
844-00189-2	**8-channel magazine for the SELMA 96** (1000 µl) Magazine accommodating 8 tips for the SELMA 96 (1000 µl)
844-00190-2	**Tip magazine for SELMA 96** (1000 µl) Magazine for accomodating 96x 1 ml tips for SELMA 96 (1000 µl), metal
844-00191-2	**Tip transfer tool for SELMA 96** (1000 µl) Tool for easy fill up of tip magazine for SELMA 96 (1000 µl) standard, pre-streilized and filter; teflon coated metal
844-00192-2	**Table for extra-high vessels** Special table with 2 work positions for processing extra-high vessels, filter blocks, vacuum stations etc; vessels height up to 80 mm
844-00198-0	**MTP Adapter 384 Well, enhanced** Adapter for processing of 384 well microplates using SELMA 96

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.

- 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



high end optical components

✶ 10 Years ✶

long-term warranty

✶ MIQE compliant ✶

low sample consumption, energy-saving, lower environmental impact
Green qPCR

- 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 25 °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.

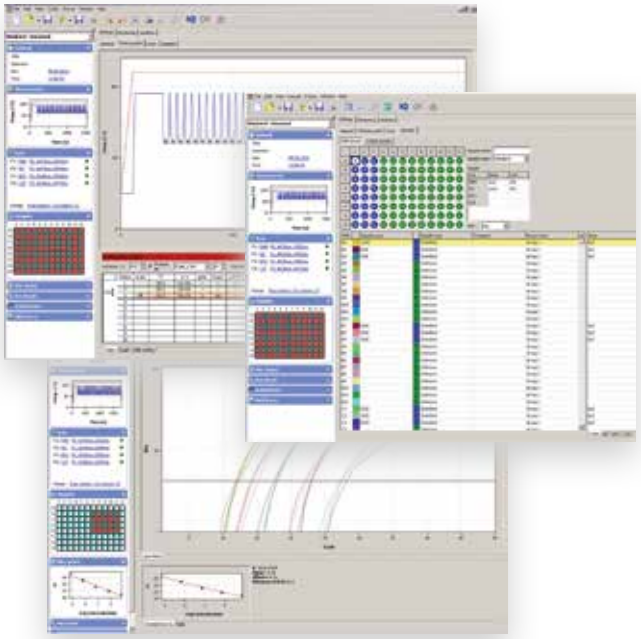
Impressive flexibility

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 independent from the number of dyes

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. 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
- MIQE compliant

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.

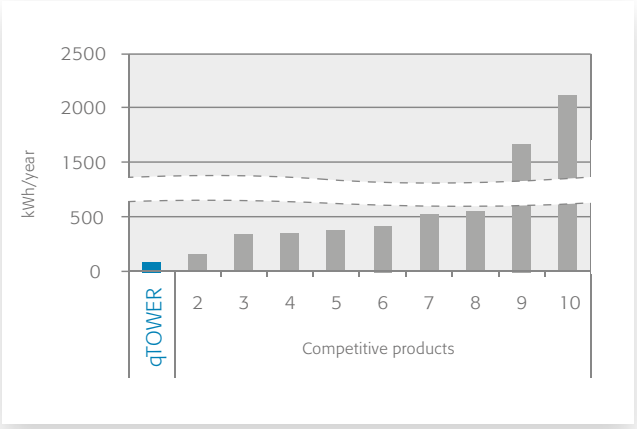
Initiative for energy efficiency

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



Energy consumption of different real-time devices

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 ▪ Increased SNR
Number of color modules	▪ 11 available ▪ 4 positions inside device

Parameters: 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 1	470 nm	580 nm	FAM™ (donor)/TAMRA™ (acceptor)
FRET 2	470 nm	670 nm	FAM™ (donor)/Cy5® (acceptor)
FRET 3	470 nm	705 nm	FAM™ (donor)/Cy5.5® (acceptor)
FRET 4	515 nm	670 nm	JOE™ (donor)/Cy5® (acceptor)
FRET 5	470 nm	470 nm	FAM™ (Donor)/ROX™ (Akzeptor)
Color modul Protein 1	490 nm	580 nm	SYPRO® Orange

Analytical parameters	
Sensitivity	1 nM FAM™ in minimal 15 µL PCR buffer (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 volume	5 – 20 µL
Sample capacity	96 in parallel

System and *rapid*PCR application parameters	
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
Block temperature	4 °C – 105 °C
Time incr./decr.	±0.1 to 1 sec/cycle
Temperature incr./decr.	±0.1 to 1 °C/cycle
Contact pressure	60 kg/plate, automatic
No. of programs	Not limited on PC
Run time	Down to < 25 min (depending on application)
Temperature control mode	▪ Block Control ▪ (Simulated) Tube Control
Lid	▪ Sliding lid can be heated to up to 120 °C (motorized opening/closing) ▪ SPS technology

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Technical data

Other technical data	
Weight	Approx. 10 kg
Dimensions (W × H × D)	240 mm × 430 mm × 255 mm
Power supply	100 – 240 V ± 15 % (47 – 63 Hz)
Power consumption	420 W (max.)
PC-interface	USB port
Software	▪ qPCRsoft ▪ Control and evaluation software ▪ Absolute and relative quantification ▪ Delta-delta ct ▪ Allele discrimination ▪ PCR efficiency ▪ Melting curve analysis ▪ MIQE compliant
Warranty	▪ 10 years warranty on the components of the high power optics ▪ 2 years warranty on the device system and the thermal block

Application list | Summary application reports qTOWER

Reference No.	Application
BS_qTOWER_01_11_e	Determination of different Hepatitis B Virus (HBV) concentrations using qTOWER
BS_qTower_07_12_en	Determination of uniformity and sensitivity using “qTOWER Demokit”
BS_qTOWER_10_11_en	Determination of different Hepatitis C Virus (HCV) concentrations using qTOWER

Order information

Order No.	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™, Sybr®Green, 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 – FAM™ (donor)/TAMRA™ (acceptor)
844-00326-0	FRET 2 – FAM™ (donor)/Cy5® (acceptor)
844-00327-0	FRET 3 – FAM™ (donor)/Cy5.5® (acceptor)
844-00328-0	FRET 4 – JOE™ (donor)/Cy5® (acceptor)
844-00329-0	FRET 5 – FAM™ (Donor)/ROX™ (Akzeptor)
844-00330-0	Color module Protein 1 – SYPRO® Orange

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

Consumables

Order number	Description	Properties	Quantity
844-70050-0	96 well Microplate LP	transparent	25 pieces
844-70051-0	96 well Microplate LP	transparent	100 pieces
844-70052-0	96 well Microplate LP	transparent	250 pieces
848-MX-1000100	Demokit qTOWER		100 reactions

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qTOWER 2.0 / 2.2 | Standard real-time PCR with striking design

Now, in addition to the qTOWER for rapid qPCR, the product family includes the standard real-time thermal cycler qTOWER 2.0. Featuring a striking, modern design, this system allows quantitative PCR in an established 96 well SBS standard format. The qTOWER 2.0 offers an open platform for any kind of real-time PCR plastic materials, such as 0.2 ml single tubes, 8 well strips or 96 well microplates.
The high quality silver block of the qTOWER 2.0 ensures an outstanding level of temperature homogeneity of 0.2 °C along the whole block and is therefore ideally suited for all real-time PCR applications. In combination with the optional gradient function, different assays can be optimized with minimum effort. The qTOWER 2.0 is equipped with a patented, fiber-optic shuttle system for the best possible excitation and detection of a variety of known fluorescence dyes.

- Quantitative real-time PCR in proven 96 well SBS standard format
- State-of-the-art ramping rates of up to 5.5 °C/sec
- For usage of different optical plastic ware: 0.2 ml Tubes, 8 well strips or 96 well microplates
- Optimized for volumes of 10 – 60 µl
- Available with or without gradient function (max. temperature range of 40 °C)
- Patented high performance optical system with a long-term warranty of 10 years
- Individual configuration with up to 6 different measurement channels
- Selection out of 12 high-resolution, retrofittable color or FRET modules
- High-speed scan: 6 sec. for a 96 well microplate (independent of the number of dyes to be measured)
- Multilingual intuitive control and evaluation software
- Wide variety of different evaluation methods

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

✶ MIQE compliant ✶

qTOWER 2.0 with gold-coated 96 well silver thermal block

Silver block technology

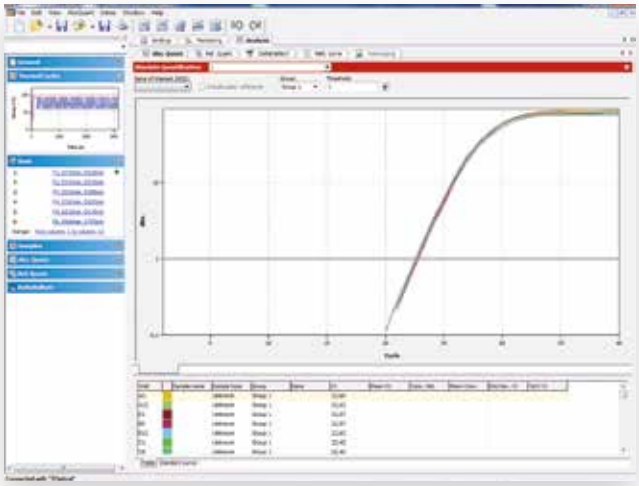
The 96 well block of the qTOWER 2.0 is the basis for performing quantitative real-time PCR. The thermal block is made of gold-coated silver to achieve the best possible performance and maximum thermal conductivity. The resulting outstanding homogeneity and uniformity of temperature combined with state-of-the-art heating rates of up to 5.5 °C/sec and cooling rates of up to 4.0 °C/sec make the instrument the first choice for standard real-time PCR. Optionally, the qTOWER 2.2 with gradient function is available. The maximum gradient temperature range of 40 °C across 12 columns optimally prepares the instrument to establish new primer pairs. Thereby a special feature is the possibility of programming linear gradients, which not only significantly simplifies the evaluation of results, but also optimizes the whole adaptation process.

- Quantitative real-time PCR in proven 96 standard SBS format
- Flexible use of different optical plastic materials: 0.2 ml tubes, 8 well strips or 96 well microplates
- State-of-the-art ramping rates of up to 5.5 °C/sec
- High performance gradient function across 12 columns with a range of 40 °C

To avoid potential condensation and to prevent possible sample loss the qTOWER 2.0 is equipped with a heated lid. It is adjustable up to 110 °C and guarantees optimum contact pressure on the sample tubes or plates during the complete run, independent of the used consumables.

Patented fiber optical shuttle system

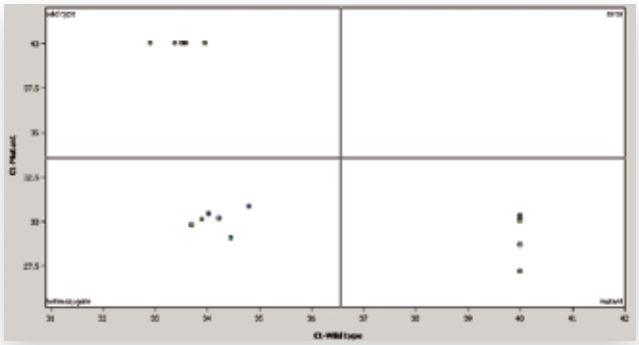
The qTOWER 2.0 works with 3 independent, blue, white and red, long-term stable LEDs to optimally excite the different applicable fluorescence dyes in a wide spectral range. It ensures the highest possible quantum yield to be achieved in each real-time PCR experiment. The qTOWER 2.0 can process sophisticated multiplex experiments with up to 6 different fluorescence-labelled probes – ranging from blue to the far-red spectral range – without any difficulty. Moreover, the patented optical system consists of a shuttle with 8 high performance fibers, which guarantee a read-out of the 96-well block within only 6 seconds – independent of the number of dyes to be measured.



Result display and analysis using qPCRsoft

- Patented high performance optical system with 8 optical fibers and 3 LEDs
- Optimum homogenous excitation and detection for each well
- Read-out of a 96 well microplate within only 6 seconds - independent from the number of dyes

Each component of the high performance fiber optical system has a 10-year long-term warranty.



Example of an allelic discrimination presented in a scatter plot

Maximum flexibility

The qTOWER 2.0 can be freely configured with the available Color and FRET modules. Depending on the application it can be adapted to either intercalating or DNA binding dyes, hydrolysis probes or even to hybridization probes (FRET probes). The system can easily be retrofitted for future use with additional so-called Color or FRET modules. This keeps the field of applications of the qTOWER 2.0 extremely flexible and easily expandable.

- Mounting of up to 6 different Color or FRET modules
- Use of intercalating or DNA binding dyes, hydrolysis probes and hybridization probes
- Freely configurable color filter selection

The evaluation and control software qPCRsoft also offers the highest level of flexibility and ease of use. The logical arrangement of all tools, intuitive handling and, last but not least, the parameter-orientated memory and programming concept make the software easy to use and clear. While a cycle is in progress, the operator can easily evaluate the data of previous experiments in parallel. Based on the Ct value determination via manually or automatically adapted thresholds, the samples can be quantified absolutely or relatively and the efficiency of the PCR can be determined. In addition, the delta-delta Ct method (with or without relation to PCR efficiency) and a method for allelic discrimination, e.g. for the detection of point mutations, are available.

- qPCRsoft: easy to use and clearly structured
- Integrated evaluation algorithms, e.g. absolute and relative quantification, delta-delta Ct method, PCR efficiency, allelic discrimination
- Parameter-orientated program guides
- User management with 3 authorization levels
- MIQE compliant

The qTOWER 2.0 or 2.2 convinces in every aspect and is the ideal instrument for quantitative standard real-time PCR.

Technical data

Optical system	
Principle of measurement	Top-reading fluorescence detection via 8 optical fibers with color modules for excitation and emission filters
Light source	High-power, long-life LEDs
Detector	▪ CPM – channel photo multiplier ▪ Highly sensitive ▪ Increased SNR
Number of color modules	▪ 12 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™
Color module 6	660 nm	705 nm	Cy5.5®, LightCycler Red®
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)
FRET module 5	470 nm	605 nm	FAM™ (Donor)/ROX™ (acceptor)
Color modul Protein 1	490 nm	580 nm	SYPRO® Orange

Analytical parameters	
Sensitivity	1 nM FAM™ in minimal 30 µl sample volume
Read-out time	6 seconds for 96 wells independent of the number of dyes to be measured
Block capacity	96 wells for 96 well microplates, 8 well strips or individual tubes
Sample volumes	10 – 60 µl
System and application parameters of the thermal cycler	
Heating rate	5.5 °C/sec max
Cooling rate	4.0 °C/sec max.
Block homogeneity	± 0.2 °C
Control accuracy	± 0.1 °C
Sample block temperature	3 °C – 99 °C
Time inc/dec	± 0.1 to 1 sec/cycle
Temperature inc/dec	± 0.1 to 1 °C/cycle
Contact pressure	10 kg/plate, automatically
Number of programs	Not limited
Gradient	Max. 40 °C across 12 columns
Lid	▪ Heated lid up to 110 °C ▪ SPS technology

* Yakima Yellow is registered trademark of Epoch Biosciences, Inc. Cy is a trademark of GE Healthcare. FAM, HEX, JOE, VIC, TAMRA, NED and ROX are trademarks of Applera Corporation or its subsidiaries in the US and/or certain other countries. SYBR, Alexa Fluor, SYPRO and Texas Red are registered trademarks of Molecular Probes, Inc. TaqMan and LightCycler are registered trademarks of Roche Group, Inc. Quasar Dyes are trademarks of Biosearch Technologies Inc. DFO™ is a trademark of Eurogentec S.A. Windows and Excel are trademarks of Microsoft Corporation.

Technical data

Other technical data	
Weight	Approx. 20 kg
Dimensions (W x H x D)	275 mm x 585 mm x 275 mm
Power supply	100 – 240 V
PC interface	USB
Software	▪ qPCRsoft ▪ Control and evaluation software ▪ Absolute and relative quantification ▪ Delta-delta Ct method ▪ Allelic discrimination ▪ PCR efficiency ▪ Melting curve analysis ▪ MIQE compliant
Warranty	▪ 2 years ▪ 10 years warranty on the components of the high performance optical system

Application list | Summary application reports qTOWER 2.0 / 2.2

Reference No.	Application
BS_qTower2_03_12_en	Comparison of SybrGreen / EvaGreen Kits
BS_qTower2_08_12_en	Comparison of white and clear plates

Order information

Order number	Description
844-00501-2	**qTOWER 2.0** Instrument system for 220 V, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00501-4	**qTOWER 2.0** Instrument system for 115 V, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00501-5	**qTOWER 2.0** Instrument system for 110 V, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00502-2	**qTOWER 2.2** Instrument system for 220 V with gradient function, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00502-4	**qTOWER 2.2** Instrument system for 115 V with gradient function, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00502-5	**qTOWER 2.2** Instrument system for 110 V with gradient function, without PC, including qPCRsoft, thermal block and detection module* for the performance of quantitative real-time PCR
844-00520-0	Color module 1 - FAM™, Sybr®Green, Alexa488®
844-00521-0	Color module 2 - JOE™, HEX™, VIC®, Yakima Yellow™
844-00522-0	Color module 3 - TAMRA™, DFO™, Alexa546®, NED™
844-00523-0	Color module 4 - ROX™, TexasRed®, Cy3,5®
844-00524-0	Color module 5 - Cy5®, Alexa633®, Quasar670™
844-00525-0	Color module 6 - Cy5.5®, LightCycler Red®
844-00526-0	FRET module 1 - FAM™ / TAMRA™
844-00527-0	FRET module 2 - FAM™ / Cy5®
844-00528-0	FRET module 3 - FAM™ / Cy5.5®
844-00529-0	FRET module 4 - JOE™ / Cy5®
844-00531-0	FRET module 5 - FAM™ / ROX™
844-00530-0	Color module 1 - SYPRO® Orange

* The Color or FRET modules can be ordered separately. The qTOWER 2.0 or 2.2 can be equipped with up to 6 modules.

Consumables

Order number	Description	Properties	Quantity
846-050-258	Optical sealing foil	self-adhesive	100 pieces
846-050-259	96 well microplate	white	50 pieces
846-050-260	96 well microplate	black frame, white wells	50 pieces
848-MX-1001100	Demokit qTOWER 2.0/2.2		100 reactions

Ultrafast DNA amplification with *rapid*PCR

The demands on the polymerase chain reaction (PCR) for speed, efficiency and quality of results have grown with the increasing number and variety of applications of this key technology. The rapid cycle PCR technology, which is introduced here, offers substantial advances while honoring the increased demands on PCR.
In addition to a description of the technical foundations, the properties of the *rapid*PCR system will be clarified through examples of use.

Since the development of the PCR method in 1985 by Kary Mullis [1] [2] and coworkers, continual innovation has contributed to the fact, that PCR has developed into a key technology for biological research and routine diagnostics. Among the principles employed for heating and cooling the blocks (heating lamps, electrical resistance heating, water cooling, etc), today almost all thermal cyclers use peltier elements since this technology allows a robust and compact apparatus construction.

A disadvantage of those instruments are the slow heating and cooling rates within the sample (1 – 2 °C/sec) that is a function of the large volume of the metal blocks and the relatively thick walls of the plastic sample wells (200 – 300 µm). Because of this, cycle times of 3 – 8 minutes and a total time of one and a half to three hours is needed for a typical PCR experiment.

[1] Saiki, R.K. et al., Science 230 (1985), 1350 ff
[2] Mullis, K.B., Scientific American (1990), 56 ff

*rapid*PCR

Because control of the temperature cycles plays a central role in the polymerase chain reaction, alternatives were soon being sought that would lead to a more rapid process execution. The experimental experience with commercially available system led to the definition of the ultrafast PCR as: "rapid cycle PCR" – by means of 30 amplification cycles in less than 30 minutes. [3]

Aside from shortening the PCR experiments, a further advantage of the *rapid*PCR is the improved quality of the PCR products. Through the quicker cooling rates and shorter annealing times, more precise primer-template pairing occurs that, hence, leads to a higher specificity of the amplicon.

[3] Wittwer, C.T. et al., in Mullis, K. et al. (Eds.), The polymerase chain reaction. Birkhauser, Boston (1994), 174 – 181

Fast control algorithms activate the peltier elements that almost instantaneously regulate the temperature of the rapid block. The transfer of the energy into the sample solution, that is so crucial for the PCR experiment, occurs very effectively through the thin-well walls. The sum of the effects described here is, that the *rapid*PCR technology reaches a very high thermal effectiveness. Heating and cooling rates of clearly more than 12 °C/sec make cycle times of 20 seconds possible and, hence, the realization of PCR protocols with 30 cycles in 8 – 15 minutes.

In addition to the comparatively high ramp rates of the rapid thermal cycler, the very short, necessary holding times of the three temperature phases of PCR (denaturation, annealing, elongation) also determine the duration of the rapid protocols. Whereas in the standard peltier thermal cycler, a large part of the time is needed for changing the temperature of the metal block and the plastic walls of the sample container, the time during the temperature steps in the *rapid*PCR system can be almost completely used for the chemical (denaturation of the DNA double strand) or biochemical (DNA synthesis) processes.

High speed and specificity

The practical value of the thermal cycler system is determined by not just the physical performance parameters such as heating and cooling rates or thermal efficiency. The characteristic features of the molecular biological experiment such, as the duration of a PCR protocol and the yield and quality of the PCR products are more important. Particularly in medical diagnostics and forensic applications, PCR is often still the rate-determining step in a series of analytical methods. A high specificity of the amplified DNA is especially desirable for the further use in cloning or sequencing.

For preparing the *rapid*PCR reactions, standard enzymes, components and buffers in normal commercial quality and from different manufacturers were employed. The final concentrations of the components in the *rapid*PCR master mix also corresponded to that of normal PCR reactions.

Conclusions

The *rapid*PCR devices, which applies rapid cycle technology, was developed as a joint research project of Analytik Jena | Life Science and the Hans-Knöll-Institut für Naturstoff Forschung. With this apparatus the ultrafast amplification of DNA fragments of different lengths and origin with a clearly higher PCR product specificity is possible. The advantages of the *rapid*PCR system presented here result from the combination of the peltier technology and the use of a microplate as the sample carrier.

*rapid*PCR Thermal Cycler | *rapid*PCR without chemical additives

With the *rapid*PCR Thermal Cycler, Analytik Jena | Life Science has completely re-defined the standard for speed and flexibility of thermal cyclers. Different (rapid) cycler-systems are available to fit to the respective demand of PCR applications. True heating and cooling rates of up to 15 °C/sec and 10 °C/sec, respectively, are realized. Thus the rapid thermal cyclers are enormous fast due to its technique and do not necessarily require special chemical additives.

The choice of *rapid*PCR systems of blocks running with standard PCR consumables as well as blocks running with special patented, ultrathin-walled low-profile microplates.

Standard-Profile-Rapid (SPR) systems – *rapid*PCR under standard conditions

Equipped with the latest generation of peltier elements the Standard-Profile-Rapid (SPR) systems provide unrivaled heating and cooling speed even at use of 0.2 ml standard consumables. The SPR block achieves so far unattained heating and cooling rates of 12 °C/sec and 8 °C/sec accompanied by excellent temperature uniformity. Unlike other available thermal cyclers these specifications are not unreachable "top values" but parameters a user really can rely on. Thus all SPR blocks provide precise reaction conditions and enormous short run times.

- SPR systems for 0.2 ml sample volume
- Heating and cooling rates up to 12 °C/sec and up to 8 °C/sec

Low-Profile-Rapid (LPR) systems – best performance at lowest sample consumption

Special patented, low-profile and ultrathin-walled microplates contribute to a never before achieved thermal efficiency. Through SAC (Self-Adapting-Container) technology, the thermoelastic walls of the sample container adapt to the shape of the sample block like a second skin and thus, ensure rapid heat transfer into the samples.

An unsurpassed thermal efficiency of over 90 percent is achieved. Through this innovative technology, applications using so-called "touch and go" protocols can be performed in exceptionally short times. PCR programs can be carried out in even less than 8 minutes.

These low-profile microplates has been optimized for very small sample consumption and the use of inexpensive standard PCR reagents. The need of costly and often limiting chemical additives is consciously avoided.

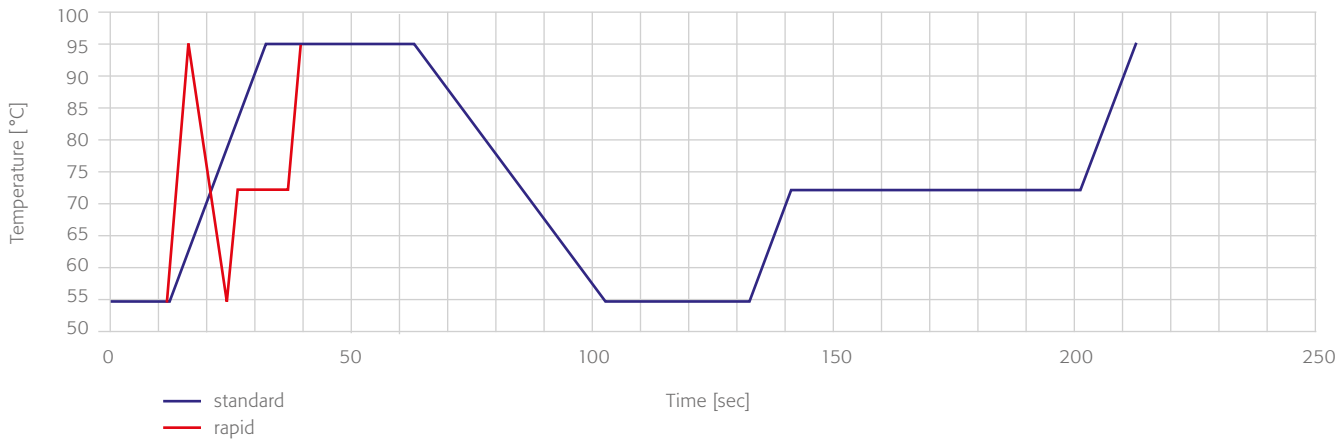
- LPR systems for 2 – 20 µl with heating and cooling rates up to 15 °C/sec and up to 10 °C/sec
- Rapid heat transfer through SAC technology
- Optimized for low reagent consumption

Excellent results

In addition to the duration of the PCR program, quality and yield are decisive criteria. These, among other factors, are dependent on the correctness of the set temperature as well as the accuracy of the temperature control. Employing the latest generation of high-performance peltier elements completely prevents the occurrence of temperature inaccuracies within the sample blocks of conventional peltier thermal cyclers and results in outstanding temperature homogeneity throughout the block.

Primer mismatching during annealing is effectively prevented through the combination of extremely rapid temperature ramp rates and optimal temperature control accuracy. This, in turn, results in more specific amplification products.

- Higher quality results
- Reduced primer mismatching
- More specific amplification products
- Exceptional temperature homogeneity – no edge effects



Comparison of standard and *rapid*PCR referring to the cycle time

SpeedCycler² | Ultra high-performance thermal cycler

Ultra high-performance thermal cycler

With the SpeedCycler², Analytik Jena has launched the second generation of the original SpeedCycler technology with an instrument even faster than its predecessor and delivering extraordinary high heating and cooling rates of up to 15 °C/sec and 10 °C/sec, respectively. That makes the SpeedCycler² the fastest available thermal cycler in the world.

A smaller footprint, the modular design, the external control panel and, last but not least, ultra high-performance distinguishes the SpeedCycler² from other available instruments. The system is ideal as space-saving thermal cycler and is available in 4 different versions to meet each individual need - the choise is yours.

- *rapid*PCR in less than 8 minutes
- Heating and cooling rates of up to 15 °C/sec and 10 °C/sec, respectively
- SAC (Self-Adapting-Container) technology delivers outstanding heat transfer
- Low-Profile-Rapid (LPR) blocks for 20 µL
- Standard-Profile-Rapid (SPR) blocks for 0.2 mL standard consumables
- Optimized for low reagent consumption and reduced running costs
- Small footprint satellite system
- Four different blocks available
- Thermal blocks made of massive sterling silver with a gold layer
- Portable user-interface HID-Pro 320
- Reduced primer mismatching

It grows with the requirements of its user.
The SpeedCylcer² is available in four different versions, comprising:

- Standard-Profile-Rapid (SPR) block
- Standard-Profile (SP) block
- Low-Profile-Rapid (LPR) block
- Low-Profile (LP) block

This means that standard PCR consumables can be used as well as low-profile PCR consumables.

The LPR format, in particular, has been optimized for low sample consumption and maximizes performance. Sample loss and condensation are effectively prevented by the enormously high lid contact pressure, even for volumes as small as 2 µL.

Low-Profile-Rapid (LPR) blocks use specially patented, ultrathin-walled microplates or strips based on the SBS standard format, which contributes greater thermal efficiency than ever before.

SAC (Self-Adapting Container) technology allows the thermoelastic walls of the sample containers to adapt to the shape of the sample block like a second skin, thus, ensuring rapid heat transfer into the samples and achieving unsurpassed thermal efficiency of over 90 percent. *rapid*PCR is the only technology suitable for applications using what are known as "touch and go" protocols. A whole experiment can be carried out in less than 8 minutes.

SpeedCycler² without HID-Pro 320

The SpeedCycler² has been optimized for very small sample consumption and for the use of inexpensive standard PCR reagents. Costly and often limiting chemical additives can be consciously avoided and are not necessary for *rapid*PCR amplification. Furthermore, the higher cooling rate significantly improves specificity of the PCR products compared to those from standard thermal cyclers.

The HID-Pro 320 external user interface

The new portable HID-Pro 320 user interface eliminates the need for a PC and makes the system exceptionally easy to operate. Its extra large 5.7" color touchscreen eliminates the need for a keyboard or mouse.

The software, which is based on Windows CE, offers typical Windows functions and operating environment, as well as an intuitive menu bar. Programs can be stored individually and organized in user-defined directories. An USB and LAN port allows users to exchange programs to other cyclers, export data from executed PCR runs, and connect the cycler directly to other basic units.

Users can easily change the operating language by clicking a button. The HID-Pro 320 is also compatible with other instruments from Analytik Jena, such as the ScanDrop® microliter spectrophotometer. The built-in power failure function restarts the cycler automatically. The software restarts with the denaturing step of the last active cycle to eliminate any possible unspecific annealing

- Software based on Windows CE
- USB and LAN port for uncomplicated data exchange
- Power failure function
- Multilingual software (English, German, Greek, Russian and Spanish; others to come)
- Reduced primer mismatching

Portable and versatile HID-Pro 320 user-interface with 5.7"color touchscreen

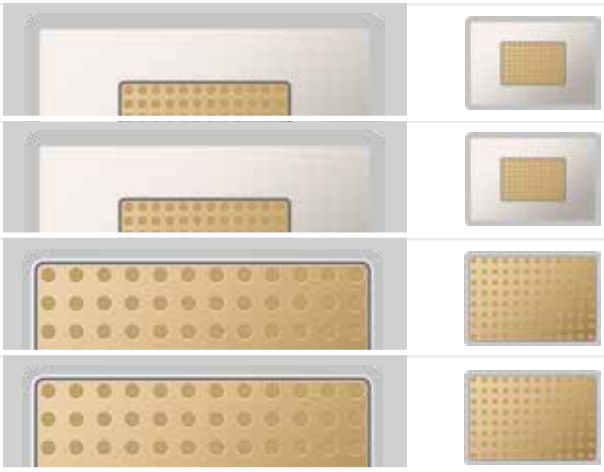
SpeedCycler² with gold-coated silver rapid sample block in standard format

96 LPR block; 96 × 20 µL
For 96 × 20 µL Microplate LP or 8 well Strips LP
HR 15 °C/sec; CR 10 °C/sec

96 LP block; 96 x 20 µL
For 96 x 20 µL Microplate LP or 8 well Strips LP
HR: 15 °C/sec; CR: 10 °C/sec

96 SPR block; 96 × 0.2 ml
For 96 × 0.2 ml standard tubes, 8 well strips or PCR plates
HR 8 °C/sec; CR 6 °C/sec

96 SP block; 96 × 0.2 ml
For 96 × 0.2 ml standard tubes, 8 well strips or PCR plates
HR 5.5 °C/sec; CR 4 °C/sec



Schematic drawing of thermal blocks

Consumables

Technical data

Sample capacity			
SpeedCycler² 96 LPR	▪ 96 x 20 µL		
SpeedCycler² 96 LP	▪ 96 x 20 µL		
SpeedCycler² 96 SPR	▪ 96 x 0.2 mL		
SpeedCycler² 96 SP	▪ 96 x 0.2 mL		

Heating and cooling rates			
SpeedCycler² 96 LPR	Heating rate	15 °C/sec max.	Gold-coated silver
	Cooling rate	10 °C/sec max.	
SpeedCycler² 96 LP	Heating rate	15 °C/sec max.	Aluminum alloy
	Cooling rate	10 °C/sec max.	
SpeedCycler² 96 SPR	Heating rate	8 °C/sec max.	Gold-coated silver
	Cooling rate	6 °C/sec max.	
SpeedCycler² 96 SP	Heating rate	5.5 °C/sec max.	Aluminum alloy
	Cooling rate	4 °C/sec max.	

General Data	
Temperature control mode	▪ Block Control ▪ (Simulated) Tube Control
Sample block temperature range	4 °C – 105 °C
Control accuracy	< ± 0.2 °C at 72 °C
Block homogeneity	< ± 0.3 °C at 72 °C
Lid	▪ Can be heated up to 120 °C ▪ Adjustable contact pressure
User interface	▪ PC via included software ▪ Alternative via HID-Pro 320
Number of programs	Nearly unlimited; 500 on HID-Pro 320

Other technical data	
Dimensions (W x H x D)	280 × 290 × 250 mm
Weight	12 kg
Power supply	100 – 240 V ± 15 % (47 – 63 Hz)
Power consumption	800 W

Warranty	
Basic unit	2 years
Thermal blocks	2 years

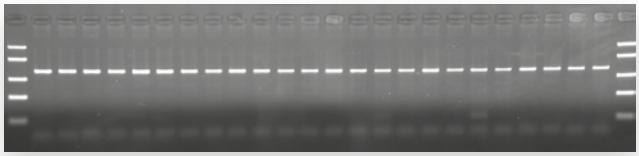
Order information

Order No.	Description
844-00050-2	**HID-Pro 320,** Portable and versatile user interface with 5.7" touch screen, LAN, USB
844-00041-2	**SpeedCycler² 96 LPR,** 96 x 20 µl
844-00042-2	**SpeedCycler² 96 SPR,** 96 x 0.2 ml
844-00043-2	**SpeedCycler² 96 SP,** 96 x 0.2 ml
844-00044-2	**SpeedCycler² 96 LP,** 96 x 20 µl

SpeedCycler | Application Note

*rapid*PCR in 8 minutes from heating the lid until cool down to standby temperature

The SpeedCycler makes it possible to amplify a 536 bp ß-globin-specific fragment (human genomic DNA) in less than 8 minutes. The PCR was performed using Analytik Jena's thermostable Hot Start enzyme (innuTaq HOT-A DNA Polymerase) and an ultra-rapid 2-step protocol with an initial 30-second denaturation step at 96 °C followed by 25 cycles with a 0-second denaturation step at 96 °C and a 0-second combined annealing/elongation step at 60 °C. The yield of specific PCR products is nevertheless high, which is due to the sharp characteristic temperature curve of the device and to the ultra thin-walled SpeedCycler microplate.

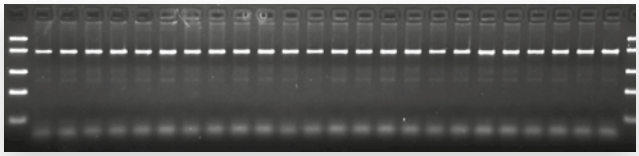


Ultra*rapid* amplification of a 536 bp ß-globin fragment from human genomic DNA: outstanding uniformity in less than 8 minutes. Markers are 1500 bp, 850 bp, 400 bp, 200 bp and 50 bp long.

Excellent block homogeneity, even for extremely short time protocols

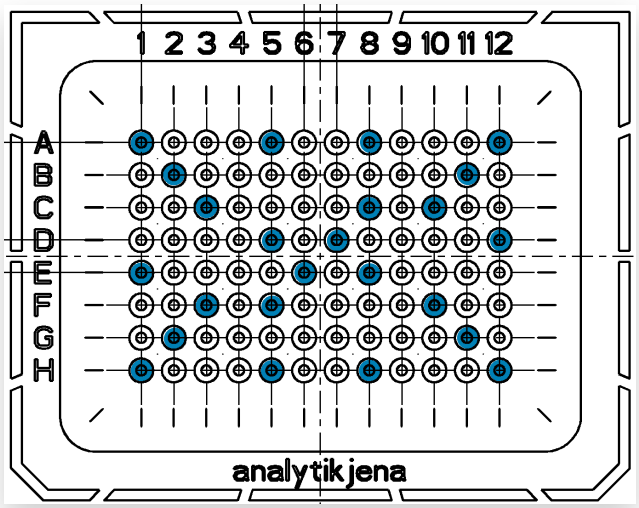
Outstanding temperature uniformity over the entire sample block (and thus within the sample) results in excellent block homogeneity and no edge effects. Amplification of a 793 bp specific fragment of the p53 gene from human genomic DNA served as an example for the precise and specific functionality of the SpeedCycler *rapid*PCR. p53, also known as tumor protein 53, is a transcription factor that regulates the cell cycle and hence functions as a tumor suppressor. [1]

These 793 bp can be amplified in 9 min and 30 sec. using a 3-step time protocol with 28 cycles of 0-second denaturation at 95 °C followed by a 0-second annealing step at 60 °C and finished with a 1-sec elongation step at 72 °C

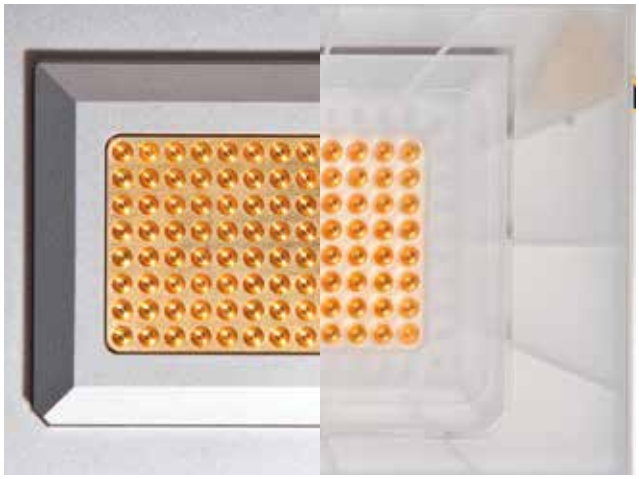


Rapid amplification of a 793 bp p53 fragment from human genomic DNA: outstanding uniformity in less than 9 minutes. Markers are 1500 bp, 850 bp, 400 bp, 200 bp and 50 bp long.

[1] http://en.wikipedia.org/wiki/P53 [02.07.2007]



Sample layout of the used 96 well Microplate LP



96 LPR format for 96 well Microplate LP

Application list | Summary of application reports for *rapid*PCR

Low-Profile-Rapid (LPR) block

Reference No.	Application
BS_PCR_01_04_e	Amplification of microbial strains from soil isolates
BS_PCR_02_04_e	Long Range PCR: SpeedCycler amplification of a 24 kb fragment from human genomic DNA (placenta DNA)
BS_PCR_01_05_e	One Step RT-PCR using the SuperScriptTM III System with Platinum Taq DNA Polymerase (Invitrogen)
BS_PCR_02_05_e	Amplification of a beta globin fragment (210 bp) with BD TitaniumTM Taq DNA Polymerase (BD Biosciences)
BS_PCR_01_06_e	Amplification of a beta globin fragment (538 bp) from human genomic DNA
BS_PCR_02_06_e	Amplification of a 430 – 750 bp fragment, a tandem repeat at chromosome 1 (The D1S80 – system)
BS_PCR_03_06_e	Amplification of ITS2 (part of 45S rDNA) from plant Brachycome dichromosomatica
BS_PCR_04_06_e	Amplification of a *E. coli* specific 536 bp target sequence within 8 minutes
BS_PCR_06_06_e	Multiple (STR) PCR using Applied Biosystem AmpFl STR® SGM Plus® with SpeedCycler
BS_PCR_07_06_e	PCR amplification of a 123 bp fragment from the insertion element IS6110 of Mycobacterium tuberculosis
BS_PCR_08_06_e	Reliable detection of clinically relevant Staphylococci using the hyplex StaphyloResist® test system
BS_PCR_09_06_e	Amplification of a 129 bp HB Virus specific sequence for Hepatitis B determination by using *rapid*PCR
BS_PCR_10_06_e	Quantitative cPCR considered on the example of Porphyromonas gingivalis wildtype (488 bp) and competitor (276 bp) amplification
BS_PCR_11_06_e	PCR amplification of an Actinobacillus actinomycetem-comitans wild type (547 bp) and competitor (274 bp) specific fragment as optimization to accomplish cPCR
BS_PCR_12_06_e	Optimization of PCR conditions to amplify a specific Treponema denticola wildtyp and competitor sequence to accomplish cPCR
BS_PCR_13_06_e	STR Typing by using Promega's PowerPlex® 16 System combined with SpeedCycler
BS_PCR_14_06_e	Amplification of a 641 bp specific Bacteroides forsythus sequence by using *rapid*PCR with SpeedCycler
BS_PCR_15_06_e	The enteric Helicobacter bilis as target for rapid amplification with SpeedCycler
BS_PCR_16_06_e	Validation for SNP diagnostics of the Factor V Leiden mutation – Amplification of the relevant sequence with SpeedCycler
BS_PCR_01_07_e	Detection of genetically modified – Roundup Ready® – soybeans by using *rapid*PCR with SpeedCycler
BS_PCR_02_07_e	Detection of transgenic Maize by rapid polymerase chain reaction with SpeedCycler
BS_PCR_03_07_e	Determination of Neisseria gonorrhoeae by using *rapid*PCR with SpeedCycler and two different polymerases

Standard-Profile-Rapid (SPR) block

Reference No.	Application
BS_PCR_05_06_e	Amplification of alleles of the HLA-DRB1 gene, optimized for 50 µl-assays
BS_PCR_04_07_e	Detection of a human-specific Alu insertion using a PV92 primer mix with SpeedCycler
BS_PCR_01_08_e	Detection of 3 different human-specific beta-globin fragments using 4 different primers and the AlphaSC®
BS_PCR_01_09_e	Amplification of a 1 kb DNA fragment from the bacteriophage lambda using the SPR 48 block of AlphaSC®

FlexCycler² | The new standard PCR Thermal cycler

The FlexCycler² is a modern thermal cycler with large graphical display and exceptional design. The instrument offers state-of-the-art heating and cooling rates in combination with high control accuracy. Thanks to the excellent temperature uniformity over the complete temperature range the system consistently ensures reproducible conditions.

By the Quick-X-Change block exchange system the FlexCycler² can be flexibly adapted to different requirements. In combination with the user friendly software concept and extensive software options the FlexCycler² is the perfect system for PCR applications.

- Quick-X-Change block exchange system
- Automatic block recognition
- 96 well and 48 well twin-block optionally with gradient function
- Twin-blocks independently controllable
- Multiblock start- and stop-function
- Large ¼ VGA display
- High Performance Smart Lid (HPSL) for always optimal contact pressure
- USB A and USB B port
- Comfortable user administration
- GLP compliant documentation of PCR runs
- Comprehensive additional software functions

Housing

The housing of the FlexCycler² attracts by its distinctive design with clear layout of the line and functionality. Due to the high quality of workmanship, the unit is designed for continuous use in the routine. For example, the airstream inside the instrument is optimized to dissipate excess heat as effectively as possible. This keeps the energy consumption low and the block temperature uniformity at any time in the optimum range. In addition, the FlexCycler² by its compact design occupies a minimum of space in the laboratory. The display and keyboard are arranged in an ergonomically angle, allowing the comfortable operation of the instrument and also preventing unwanted light reflections in the display from the surroundings.

Block exchange system

By Quick-X-Change technology the FlexCycler² block modules can be exchanged within seconds. The built-in fast block exchange system makes the use of additional tools or the time-consuming loosening of block fittings unnecessary. Simply raise the block exchange lever, remove the block to be replaced, insert the new block and connect it to the base unit by lowering the block exchange lever. The new block is automatically detected and installed by the instrument. The block exchange function of the FlexCycler² provides the flexibility to adapt the configuration of the instrument in seconds. Besides single block modules also twin block modules are available which are equipped with two independently controllable blocks and heated lids. The twin block modules offer the possibility to run two different protocols at the same time, thereby increasing the flexibility for the user. Optionally blocks can also be equipped with gradient function which allows the quick and easy optimization of new PCR assays.

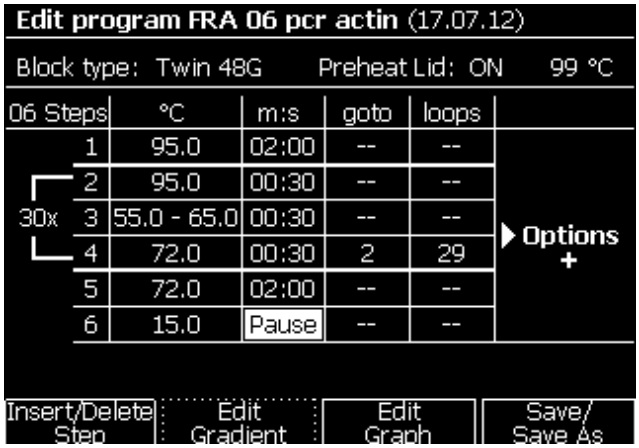
Heated Lid

The heated lid of the FlexCycler² is equipped with High Performance Smart Lid (HPSL) technology that ensures the formation of a homogenous tempered air cushion between the samples. The instrument therefore provides excellent temperature uniformity over the entire block and reproducible PCR conditions regardless of the positioning of the samples. Additionally, by the integrated clutch mechanism, it is ensured that always the same pressure is applied, regardless of the height and shape of the used plastic ware. The even distribution of pressure on all tubes/wells serves for a secure closure during the PCR and optimal temperature transition between the block and the reaction mix, simultaneously evaporation and condensation effects are avoided. After pressing the push button on the front the heated lid it automatically swings up and can subsequently be closed by gentle pressure.

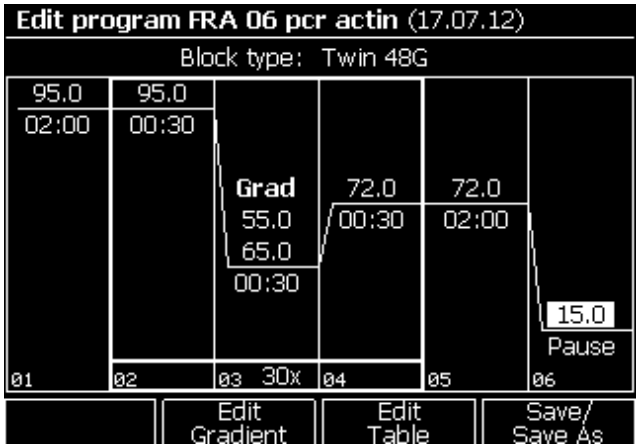
User Interface

The FlexCycler² user interface provides the convenience of a user-specific choice of operating language and allows the programming of temperature programs in clearly arranged table format (Easy Spreadsheet Programming (ESP). All parameters can be set in one single screen, it is not necessary to open sub-windows to set variables for special program functions and to toggle forth and back between different windows. Simply press the “graph” button and the temperature profile can also be displayed graphically and parameters edited. The FlexCycler² offers a total memory capacity for more then 300 programs.

In addition to the programming of temperature protocols the software offers useful functions like extended self test, display of run-logfiles or the creation of service info files. After start of the extended self test, the FlexCycler² checks itself summarizes the results in a well arranged protocol. If the test should not be passed the user receives a corresponding message. In run-logfiles important information und events for the last run are summarized. Run-logfiles therefore are ideal to control and monitor PCR runs. In service cases service info files allow a remote diagnosis of the instruments status by the service department.



Tabular programming...



or graphical programming

User administration

The FlexCycler² can manage up to 30 different user directories which can be optionally protected by a PIN code. PCR protocols in protected directories can not be modified or deleted by other users. In addition to the normal users the supervisor (administrator) has additional privileges. The supervisor has its own menu to manage the system and can for example delete user directories (also protected directories). Moreover, the supervisor can set the boot language of the system.

User-specific quick start of protocols

The FlexCycler² logs user specific the five most recently used or modified protocols. By a simple keypress on "block" the user currently logged-in to the instrument gets a list of protocols that can be started directly. The comfortable quick start option eliminates the need to search for the right protocol in the user directory.

USB functions

By a USB stick temperature programs can be exchanged easily between different FlexCycler² instruments. Moreover for GLP compliant documentation of PCR runs run-logfiles and in service cases service info files can be saved. For this purpose standard USB sticks can be connected to the USB A port on the front side of the instrument. By the USB B port on the backside of the FlexCycler² software updates can be uploaded from a connected computer and installed conveniently.

Technical specifications

Order number	844-00062-x 844-00063-x	844-00060-x 844-00061-x	844-00064-x	844-0065-x
	FlexCycler² twin 48 FlexCycler² twin 48G	FlexCycler² 96 FlexCycler² 96G	FlexCycler2 twin 30	FlexCycler2 twin combi
Capacity	2 x 48 x 0.2 ml tubes, 2 x 6 x 8er stripes 0.2 ml or 2 x 48 well microplates	96 x 0.2 ml tubes, 6 x 8er stripes 0.2 ml or 96 well microplates	2 x 30 x 0.5 ml tubes	2 x 48 x 0,2 ml tubes, 2 x 6 strips of 8 or 2 x 48 well microplates, 2 x 18 x 0.5 ml tubes
Block material	Aluminum	Aluminum	Aluminium	Aluminium
Block surface coating	Silver-coloured anodised	Silver-coloured anodised	Silver-coloured anodised	Silver-coloured anodised
Block exchange	Quick-X-change	Quick-X-change	Quick-X-change	Quick-X-change
Time block exchange	Less than 10 s	Less than 10 s	Less than 10 s	Less than 10 s
Maximum heating rate*	4.5 °C/s	4.0 °C/s	4.0 °C/s	3.0 °C/s
Maximum cooling rate*	4.5 °C/s	4.0 °C/s	4.0 °C/s	3.0 °C/s
Average heating rate*	4.5 °C/s	3.0 °C/s	3.3 °C/s	2.4 °C/s
Average cooling rate*	4.5 °C/s	3.0 °C/s	3.3 °C/s	2.4 °C/s
Gradient**	20°C	30°C	-	-
Temperature uniformity	< ± 0.4 °C at 70 °C after 15 s			
Temperature uniformity	3 °C to 99 °C			
Temperature range**	20 °C to 99 °C			
Control accuracy	± 0,1 °C			
Software	Quick start of the 5 latest programs, program preview, toggle between easy spreadsheet and graphical programming mode, graphical display of gradients, multiblock start- and stop-function, variable heating and cooling rates, extended self test, service info file for remote diagnosis, versatile USB-functions like storage of programs, run-logfiles or SINF-files			
Programming modes	Spreadsheet or graphical			
Program memory	350 programs in 30 user directories with optional PIN-code protection			
Display	¼ VGA screen, 320 x 240 pixel			
Autorestart function	Yes			
Smart Lid technology	Yes			
Lid temperature range	30 to 99 °C			
Max. power consumption	600 Watt			
Operation voltage	100, 115, 230 Volt, 50-60 Hz			
Weight	15 kg			
Dimensions (Width x Height x Depth)	26.4 cm x 28.9 cm x 40.0 cm 26.4 cm x 47.9 cm x 40.0 cm with lid opened			
Noise emission	Very low			
Interfaces	USB A, USB B			
Working conditions	15 °C to 35 °C, 70 % humidity, max 2.000 m above sea level			

* measured inside the block

** Only for gradient enabled models

Order information

Order number	Description
844-00060-2	FlexCycler² 96, 230V, English manual
844-00060-4	FlexCycler² 96, 115V, English manual
844-00060-5	FlexCycler² 96, 100V, English manual
844-00061-2	FlexCycler² 96G, 230V, English manual
844-00061-4	FlexCycler² 96G, 115V, English manual
844-00061-5	FlexCycler² 96G, 100V, English manual
844-00062-2	FlexCycler² twin 48, 230V, English manual
844-00062-4	FlexCycler² twin 48, 115V, English manual
844-00062-5	FlexCycler² twin 48, 100V, English manual
844-00063-2	FlexCycler² twin 48G, 230V, English manual
844-00063-4	FlexCycler² twin 48G, 115V, English manual
844-00063-5	FlexCycler² twin 48G, 100V, English manual
844-00064-2	FlexCycler² twin 30, 230V, English manual
844-00064-4	FlexCycler² twin 30, 115V, English manual
844-00064-5	FlexCycler² twin 30, 100V, English manual
844-00065-2	FlexCycler² twin combi, 230V, English manual
844-00065-4	FlexCycler² twin combi, 115V, English manual
844-00065-5	FlexCycler² twin combi, 100V, English manual
844-60060-0	FlexCycler² block 96
844-60061-0	FlexCycler² block 96G
844-60062-0	FlexCycler² block twin 48
844-60063-0	FlexCycler² block twin48G
844-60064-0	FlexCycler² block twin 30
844-60065-0	FlexCycler² block twin combi
844-00069-2	FlexCycler² base unit

Introduction | A choice of systems for different needs

The whole range of Analytik Jena gel imaging systems is suited for the documentation of agarose and polyacrylamide gels with fluorescent and visible colored stains.

The most typcial stains for these applications are ethidium bromide, SYBR® Green, SYBR® Gold, SYBR® Safe, GelStar®, SYPRO® Orange, SYPRO® Ruby, Oriole™, SYPRO® Red, WesternDot™ 625 with Qdot®-nano crystals, and silver and Coomassie Blue.

For all of these stains the adequate bandpass filters and transilluminators are available. Visible stains on membranes and also radiographs can be documented, additionally.

Laboratories with a very limited bench space will enjoy the systems GelTower and UVsolo. The extraordinary compact systems are designed for fast saving and printing of gels. No separate computer is necessary.

The computer driven systems of the GelStudio line offer an advanced comfort and include a versatile software for analysing gel and blot images as standard delivery. Two different versions are available. They mainly differ in the type of camera included.

Users who prefer an advanced imaging system without a separate computer will enjoy the stand-alone system GelStudio SA. A large touch screen allows for a self-explanatory image acquisition.

System	Type of camera
GelTower, GelStudio digital	Digital single lens reflex camera for color and black & white images
UVsolo, GelStudio live, GelStudio SA	Monochrome, scientific grade CCD camera for black & white images

Decision guidance – which is the most appropriate system?

Requirement	Especial recommended system
Primarily saving and printing of images	UVsolo
Limited bench space	GelTower, UVsolo, GelStudio digital compact, GelStudio live compact
Colored images	GelTower, GelStudio digital
Especial light-sensitive system	GelStudio live, GelStudio SA, UVsolo
Documentation of small gels with maximum zoom	UVsolo, GelStudio live, GelStudio SA
Documentation and analysis of large gels	GelStudio digital
Quantification of samples	GelStudio live, GelStudio SA

Technische Daten



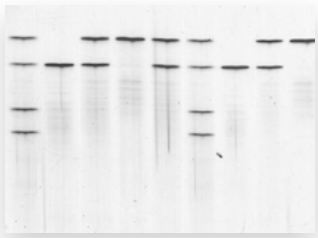


GelStudio Systems

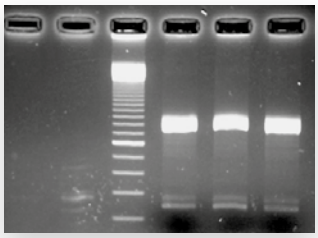
	UVsolo	GelTower	GelStudio digital	GelStudio live	GelStudio SA
System					
Type	Stand-alone	Computer-controlled	Computer-controlled	Computer-controlled	Stand-alone
Camera					
Resolution	1.3 MP	12.2 MP *	12.2 MP *	2.0 MP, exentable to 6.0 MP	2.0 MP, exentable to 6.0 MP
Sensor	monochrome	color	color	monochrome	monochrome
Sensor size	½''	22.2 mm x 17.4 mm	22.2 mm x 14.7 mm	½''	½''
Data depth	8 bit (16 bit file)	8 bit (gray scales) 24 bit (color)	8 bit (gray scales) 24 bit (color)	12 bit (16 bit file)	12 bit (16 bit file)
Light-sensitivity	++	+	+	++	++
Darkhood					
Filter changer	Filter drawer	5-position filter wheel	GelStudio Box: 4-position filter wheel	GelStudio Box: 4-position filter wheel	5-position filter wheel
Illumination					
White light from above	+	+	with GelStudio Box	with GelStudio Box	+
UV transilluminator	fixed	pull-out	BDA Hood: separate GelStudio Box: pull-out	BDA Hood: separate GelStudio Box: pull-out	pull-out
UV light from above	-	-	GelStudio Box 2	GelStudio Box 2	optional
Software					
Image acquisition software	+	+	+	+	+
Gel analysis	optional	+	+	+	+ (for separate computer)

* Please check homepage for current resolution

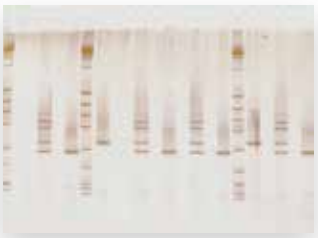
A detailed description of each system is given on the following pages.



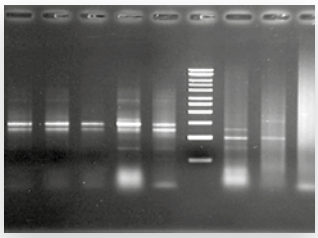
Silver stained polyacrylamide gel (white light, black & white photo)



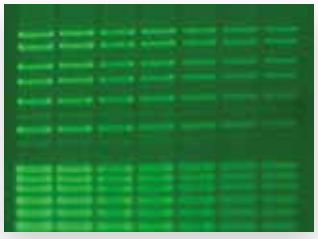
Ethidium bromide stained agarose gel (UV light, black & white photo)



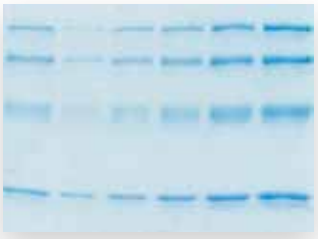
Silver stained polyacryamide gel (white light, color photo)



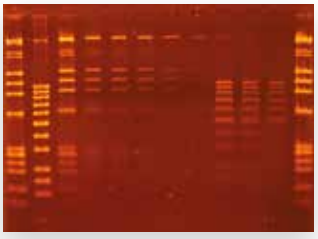
Ethidium bromide stained agarose gel (UV light, black & white photo)



SYBR® Green stained agarose gel (UV light, color photo)



Coomassie Blue stained polyacryamide gel (white light, color photo)



Ethidium bromide stained agarose gel (UV light, color photo)

UVsolo | Stand-alone gel docmentation system

UVsolo is an extra compact system for gel documentation without the need for a personal computer. The system is designed to acquire gel images very easily and without any need for training.

- Self-explanatory stand-alone system
- Light-sensitive 1.3 MP CCD camera
- Touch screen for simple handling
- Ideal for multi-user laboratories

Converter plate

The system

The UVsolo system comes with a light-sensitive black & white CCD camera with a high resolution of 1.3 megapixels. An also light-sensitive zoom lens provides for images of high contrast. The system is controlled by a touch screen with an intuitive to use image acquisition software.

With live view all changes of the camera's integration time, the lens aperture setting or of the zoom area are displayed in real-time on the 8 inch screen. Saturation monitoring allows the easy capture of fully quantifiable images.

The gel images are saved in the universal file formats tif, jpg, or gif on USB storage device, the internal computer memory or via network connection on a network computer. For prints a printer with USB interface can be connected to the UVsolo.

With a software print button printing is directly started. Recommended printer is a high-resolution thermal printer which creates brilliant prints on high-glossy paper.

The transilluminator

Two different sizes are available: 20 cm x 20 cm UV filter size for small to middle sized gels or 25 cm x 26 cm filter size for larger gels. It is possible to control the UV intensity in 3 levels: Image acquisition should always be done with maximum UV intensity with switch setting "High". For cutting samples out of gels it is recommended to reduce the UV intensity to avoid a damage of the samples. This can be done with switch settings "Medium" and "Low".

UV protection

Users of the UVsolo are savely protected against UV radiation: Opening the front door automatically switches off the UV light. A direct and safe view to the fluorescent gel under UV illumination is possible through the gel viewing window in the front door. For cutting gels under UV illumination two side-access doors are included. When somebody prefers to cut out of the fluorescent gel with open front door this can also be done: The UV override switch allows to turn on UV light with open door. Closing the door automatically re-activates the UV protection switch. This ensures a save operation for subsequent users.

Documentation of colored gels

The image acquisition of non-fluorescent gels, e.g. silver or Coomassie Blue stained polyacrylamide gels can be done with the optional available **converter plates**. Such plates are directly placed on top of the UV transilluminator. The plate converts the UV light to visible light, similar to the light of a white light table.

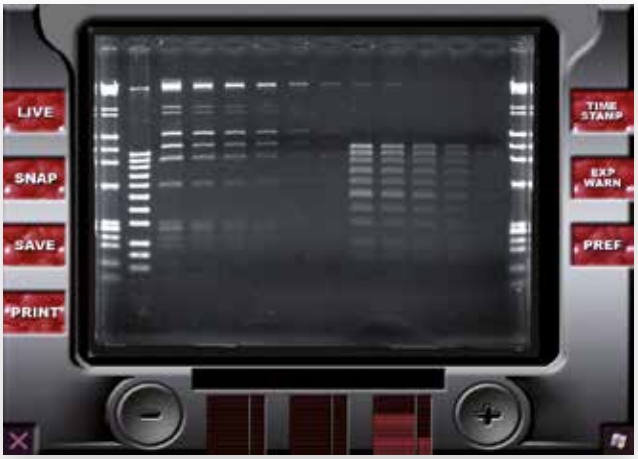
Analysis of gel images

Main application of the UVsolo typically is saving and printing of gel images. But it is also possible to analyse gels with the optional gel analysis software. It is the same analysis software that is included as a standard in the computer-controlled systems „GelTower" and „GelStudio". Users of the UVsolo install the optional VisionWorksLS software on a separate personal computer. Gel images in tif or jpg file format can be imported into the VisionWorksLS analysis software.
The calculation of fragment sizes or a quantification of sample material is easily done in a few steps. For details please see section „VisionWorksLS".

Further converter plates

For blue-light illumination of fluorescent dyes one of the UV-to-blue light converter plates can be applied.
Furthermore a UV-to-UV converter plate is available which converts 302 nm UV to 365 nm UV. This is excellent for preparation and gel excision work.

Features	Benefit
Touch screen with image acquisition software	Easy to use, simple to clean
Saving of images on USB stick, computer or by network	High flexibility, perfect for groups with many users
Filter drawer for bandpass filters	Easy change of filter for use of different fluorescent staining dyes
Self-explanatory operation and maximum UV protection for users	Well-suited for laboratories with varying users and for practical courses
Compact system with footprint size of a transilluminator	Requires minimum of bench space



Order information

Order number		Item
849-00500-2 849-00500-4	230 V 115 V	**UVsolo**: Monochrome, digital ½'' CCD camera, resolution 1280 (H) x 1024 (V), manual zoom lens 8 – 48 mm, bandpass filter for e.g. EtBr, darkhood with 8'' LCD touch screen with tilt capability, USB port for USB stick, network connectivity, safety interlocking door, UV override switch, gel viewing window, side access doors for gel cutting, UV transilluminator (302 nm, 20 cm x 20 cm filter size, UV intensity switch), overhead LED white light, USB 2.0 ports for connecting e.g. a printer. English manual. Dimensions with camera: 78.0 x 36.1 x 33.8 (H x W x D, cm)
849-000501-2 849-000501-4	230 V 115 V	**UVsolo 2**: see UVsolo, but transilluminator with filter size 25 cm x 26 cm

Accessories

Order number	Item
849-00401-0	**Bandpass filter for SYBR® Green** stains, for UVsolo filter drawer
849-00402-0	**Bandpass filter for SYBR® Gold** stains, for UVsolo filter drawer
849-20100-0	**Digital thermal printer Mitsubishi P95DE**, high resolution (325 dpi), USB 2.0 port, dimensions: 8.5 x 15.4 x 23.9 (H x B x T, cm)
849-20111-0	**Thermal paper KP65HM**, matt, high-contrast, 4 rolls à 20 m
849-20110-0	**Thermal paper K95HG**, high-glossy, high-contrast, 5 rolls à 18 m
849-20510-0	**Converter plate**, UV-to-white, 21 cm x 26 cm filter size
849-20511-0	**Converter plate**, UV-to-white, 25 cm x 26 cm filter size
849-20520-0	Converter plate, UV-to-blue "Visi-Blue", 21 cm x 26 cm filter size, 460 nm - 470 nm
849-20521-0	Converter plate, UV-to-blue "Visi-Blue", 25 cm x 26 cm filter size, 460 nm - 470 nm
849-20523-0	**Converter plate**, UV302-to-UV365, 25 cm x 26 cm filter size
846-057-012	UV transparent acrylic tray for preparative tasks on a transilluminator, 29 cm x 23 cm
846-057-013	UV transparent gel scoop, scoop size 14 cm x 15 cm
846-057-002	UV bulb 8 W, 302 nm, for UV table
846-055-001	UV light face protection shield

Software

849-00202-0	**VisionWorksLS:** analysis software for gel images in tif, jpg, bmp, gif or png format. Single use license.
849-00203-0	**VisionWorksLS software:** as above, but five user license

GelTower | Simplify and maximize precast and mini gel imaging

- Brilliant color or grayscale publication-quality images with 12.2 MP resolution
- Perfect for precast and mini gels up to 11.5 x 16 cm
- Illuminate nucleic acid and protein gels with interchangeable transillumination sources: white, blue, midrange and longwave UV
- Analyze results using simple workflow-focused software
- Reduces lab space requirements with its compact design – footprint is smaller than 330 mm x 330 mm

The small imager GelTower is perfect for small gels up to 11.5 to 16 cm size. The computer-controlled imager comes with a digital single lens reflex camera and provides for high-resolution images in color and gray scales. Simply place the gels on the transillumination plate, then capture brilliant color images. The streamlined software interface guides through the image capture process with automated pre-set capture buttons. Alternatively, individual settings can be defined for quick, personalized image capture. Analysis of gels is done with the user-friendly VisionWorksLS software. The use of this compact imager doesn't require any training.

The GelTower utilizes a built-in midrange 302 nm UV transilluminator. The imaging capabilities can be maximized by adding interchangeable sample plates to view a wide range of fluorophore and colorimetric stains. The modular design enables easy placement of sample plates to illuminate precast or mini gels with sizes up to 11.5 x 16 cm.

Selection of optional sample plates that convert 302 nm UV:

- Visi-Blue™ Light Plate: Converts UV to 460/470 nm for viewing stains such as SYBR® Green, GelRed™ and GelGreen™.
- White Light Plate: Converts UV to white light for viewing Coomassie Blue and silver stained gels.
- Longwave UV Plate: Converts 302 nm UV to 365nm UV, which reduces photonicking of samples.

A Black Sample Plate is included with the GelTower for placement of samples not requiring transillumination lighting. A Sample Plate Holder is available for storage of the plates.

Easily accessible controls

The control panel enables easy selection of emission filters and lighting. The emission filter selector controls the five-position filter tray, located on the side of the darkroom, which includes an ethidium bromide filter. Add additional filters as required for other types of stains. The lighting selector controls choice of epi white light or transillumination lighting. A safety switch automatically shuts the transillumination lighting off when the transilluminator is opened or after ten minutes.

Simple software interface

The software interface features pre-set, one-touch preview and capture buttons to simplify image acquisition. The capture buttons control the camera and lighting settings. Or, define and save specific settings as templates which can easily be accessed for repeat experiments. Images are publication-ready and highly quantifiable. They are clear and ready for analysis. Easily perform image enhancements and 1D analysis with the VisionWorksLS software. Calibrate using Molecular Weight (MW) standards from the software library or add your own standards. Create, document and print detailed and customizable reports of analysis data.

Order information

Order number		Item
220 V	115 V	
849-00510-2	849-00510-4	GelTower Imager: DSLR camera with 12.2 MP resolution, 302 nm UV transilluminator with 11.5 cm x 16 cm filter size, epi-white light, 5-position filter-wheel, emission filter for e.g. EtBr, black sample plate, VisionWorksLS acquisition and analysis software. Dimensions 39.4 x 32.5 x 33.0 (H x W x D, cm)
		Accessories
849-00520-0		Visi-Blue™ Sample Plate, converts 302 nm UV to 460 - 470 nm for viewing stains such as SYBR® Green, SYBR® Safe and GelGreen™
849-00521-0		White Light Sample Plate, converts 302 nm UV to white light for viewing Coomassie Blue and silver stained gels
849-00522-0		Longwave UV Sample Plate, converts 302 nm UV to 365 nm UV, which reduces photonicking of samples
849-00523-0		Sample Plate Holder
849-00401-0		Emission filter, 50 mm square, with transmission range 510 - 560 nm, for e.g. SYBR® Green
849-00402-0		Emission filter, 50 mm square, with transmission range 520 - 620 nm, for e.g. SYBR® Gold
849-20100-0		Thermal printer Mitsubishi P95DE, high resolution (325 dpi), USB2.0 interface, dimensions 8.5 x 15.4 x 23.9 (H x W x D, cm)
849-20111-0		Thermal printer paper KP65HM, high contrast, 4 rolls à 20 m
846-20110-0		Thermal printer paper K95HG, high glossy, 4 rolls à 18 m
840-90000-2		Personal computer for GelTower, fully installed, with 19'' TFT monitor

GelStudio Systems | Advanced imaging systems with separate computer or as stand-alone version

GelStudio imaging systems are computer based systems and are designed to provide high functionality with easy-to-use operating interfaces. The GelStudio line also offers an instrument with integrated computer: The GelStudio SA comes with a large touchscreen and doesn't require a separate computer. Depending on the camera type a specific image acquisition software is included to attain optimal results and user comfort. The GelStudio system with digital single lens reflex camera is referred to as GelStudio digital, the systems with monochrome CCD camera are named GelStudio live, resp. GelStudio SA for the stand-alone version. The VisionWorksLS gel analysis software is included in all GelStudio systems. It is an up-to-date software for fast and versatile analysis of gels and blots.

GelStudio digital | GelStudio with digital single lens reflex color camera

Note: System with Gelstudio Box is available from spring 2014. Please check www.bio.analytik-jena.com.

GelStudio digital provides state-of-the-art digital photography. Heart of the system is a digital single lens reflex camera with amazing high resolution and autofocus.

- High-class digital camera with 12.2 megapixels*
- Specifically developed software
- Powerful VisionWorksLS gel analysis software
- Choice of small darkhood or advanced GelStudio Box

The camera is widely software-controlled and provides versatile functions for fast and easy image acquisition.The software offers many tools for image capture, image enhancement and reporting and supports compliance with 21 CFR Part 11. The gel files can be reliably analysed by self-explanatory VisionWorksLS software routines (For details please see section "VisionWorksLS Analysis Software"). The high resolution images are particularly useful for the detection of close banded gels and for band quantification.The combination of zoom lens with high resolution of the sensor makes the system ideal for acquisition of extra large gels.

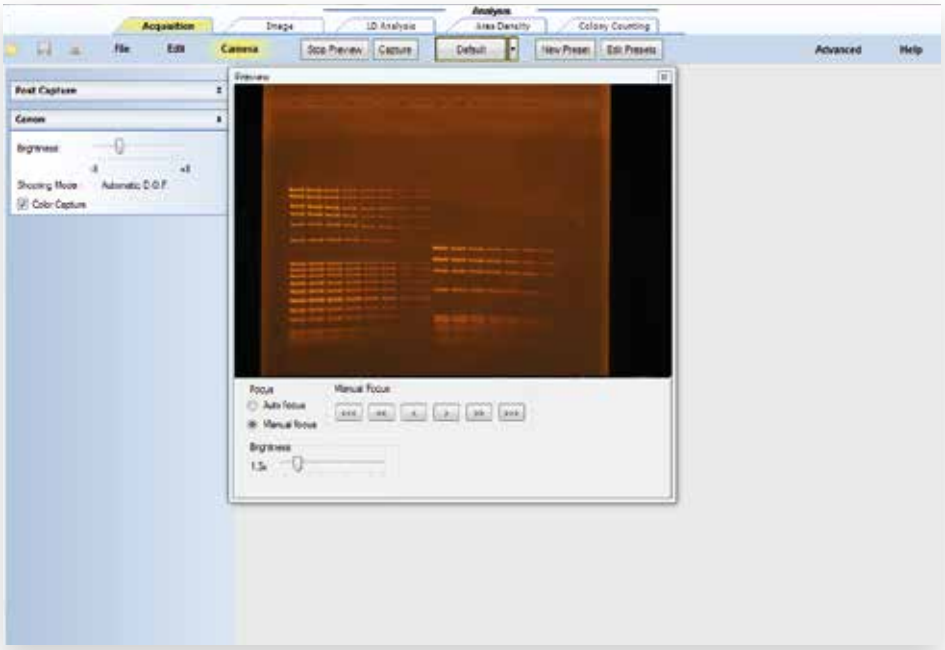


Image acquisition software

for control of

- Acquisition mode (auto, manual)
- Automatic and manual focus
- User-defined and default settings and templates
- Color and gray scales
- Image enhancement
- Live preview
- Loading and saving files (tif, jpg,bmp)
- Printing

* Please refer to the Analytik Jena homepage for latest camera resolution.

Darkhoods

The modular design offers the choice between the cost-effective GelStudio digital compact with small darkhood or GelStudio digital systems with the advanced darkhood GelStudio Box.

The small darkhood of GelStudio digital compact is placed on top of a UV transilluminator. Together with a UV converter plate GelStudio is ready for documentation and analysis of fluorescent and colored gels and blots.

Application of the GelStudio Box is the perfect choice for all users looking for a bright overhead white light and for a pullout transilluminator. For details of GelStudio Box please refer to section "GelStudio Darkhood".

Transilluminators

GelStudio digital systems are equipped with a UV transilluminator out of the wide range of the benchUV line. For details please see section "Transilluminators".

Features	Benefit
High-resolution images in color or in gray scales	High versatility
Real-time image preview	Exact gel positioning prior to UV exposure
Individual profiles with camera settings	Only one click for an image
Manual focussing possible	Even samples with diffuse bands can be photographed perfectly
Ingenious camera anti-theft mounting	No risk of camera theft
Independent use of camera possible	Camera can also be used for other laboratory tasks and microscopy photography
Small darkhood available	High-quality gel documentation with cost-effective and space-saving "compact" set

For details of transilluminators please see section 8.3 "Transilluminators" on page 370.

For ordering information please see page 357.

GelStudio digital system

GelStudio digital compact and benchUV transilluminator

Effective anti-theft protection of the camera

GelStudio live | GelStudio with digital monochrome CCD camera

Available from spring 2014. Please check www.bio.analytik-jena.com.

- Light-sensitive scientific-grade CCD camera
- High resolution camera of 2.0 MP and high-quality motorized or manual zoom lens
- Extended dynamic range of 12 bit for 4096 gray levels
- Auto-exposure enables the perfect image exposure of gels below the saturation level
- Powerful VisionWorksLS analysis software

GelStudio is the system of choice for professional gel documentation. A digital CCD camera with light-sensitive lens provides for brilliant gel images. The camera comes with 2.0 megapixel resolution and can be extended to 6.0 MP. The data depth of 12 bit makes it ideal for precise band detection and accurate sample quantification. A manual zoom lens as well a motorized zoom lens are available. The intuitive image acquisition software allows the creation of high-contrast images in a few steps.

Image acquisition software

for control of

- Automatic or manual exposure
- Brightness
- Contrast
- Gamma correction
- Signal enhancement
- Motorized zoom lens
- Gel rotation
- Live view
- Inverting
- Saturation monitoring
- Creation of image sections
- Loading and saving files (16 bit tif, 8 bit tif, jpg, bmp, gif, png)
- Printing

Features	Benefit
Advanced camera specifications	Perfect performance for documentation, quantification and publication
Live image	Exact gel positioning before exposure to UV
Image acquisition software with optimisation tools like signal enhancement	Clear documentation of faint fluorescent samples for maximum results
Robust and easy to use	Perfect for practical courses and routine applications
Different darkhoods with similar mounting of camera	Upgrade from simple hood to advanced darkhood possible

GelStudio live is available as complete system including darkhood GelStudio Box, transilluminator, thermal printer, installed up to date computer and converter plate or it can be composed of GelStudio live core set including camera and software plus further required components.

GelStudio system

An especial space and budget-saving version of GelStudio live is the GelStudio live compact set. The set consists of the core set with camera, bandpass filter, image acquisition and analysis software plus small darkhood "GelStudio Hood". This hood is directly placed on top of the transilluminator. A small sliding door allows an easy aligning of the gel on the UV table.

The images can be directly analysed with the VisionWorks LS software. The analysis software offers the convenience of an automatic or semi-automatic band detection with subsequent size and mass calibration on the basis of custom markers.

For details of software features please see next page.

For details of darkhood GelStudio Box please see page 353

For details of transilluminators please refer to section 8.3 "Transilluminators" see page 370.

GelStudio live compact and benchUV transilluminator

For ordering information please see page 357.

VisionWorksLS Analysis Software | Gel analysis in a few steps

- 1D quantitation, area density analysis and colony counting
- User defined master templates for selecting and saving settings for repeat experiments
- Report generation and export of data to Excel
- Support for 21 CFR Part 11 compliance
- Included in GelTower and GelStudio systems
- Optional component for UVsolo

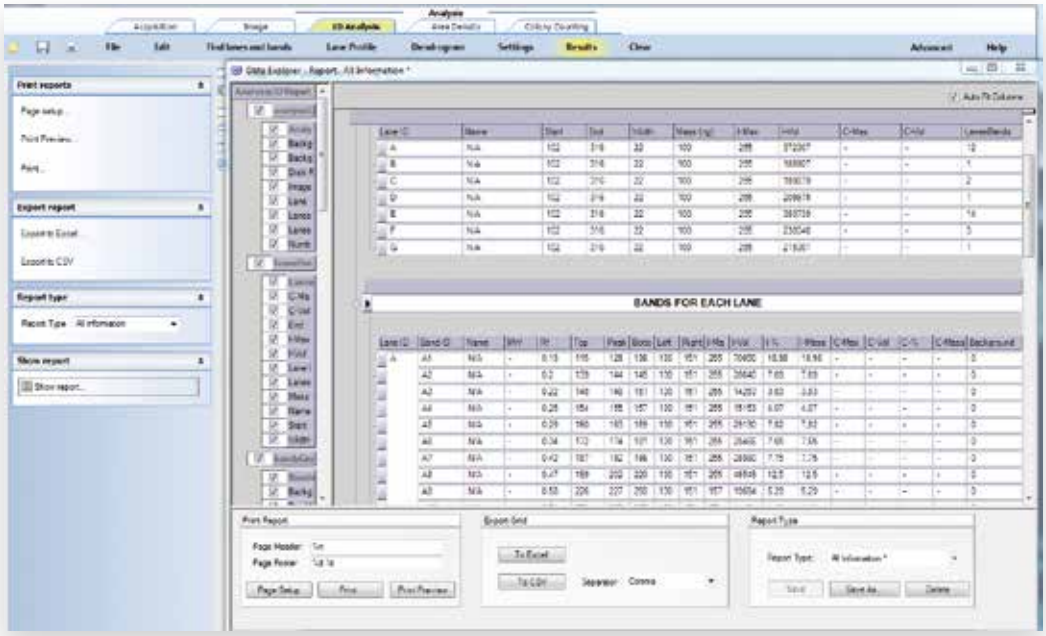
The VisionWorksLS software is a powerful package of imaging and analysis software supporting different camera models. The software provides sample analysis of electrophoresis gels and blots with best results in a minimum amount of time. The software can be used for fluorescent, colorimetric and chemiluminescent applications and accepts typical file formats like JPG, TIF, and BMP. Gel images can be analysed. Also files generated with other acquisition sources can be imported. The user-friendly interface provides for efficient analysis and generates precise band size calculations.

The analysis software convinces with its self-explanatory design and can be easily used without extensive training.

The software offers many non-destructive process filters, enhancement features and annotation tools that can be applied to images for visualization and publication. Annotations tools include text, lines and highlights. Filter tools include align, rotate, emboss, sharpen, resize and background correction. Researchers can personalize workspace preferences and save profiles by user name. Also, user accounts can easily be set up with passwords to save and protect user data. Master templates are great time savers and allow users to set and save camera settings for quick, easy capture of samples. Reports are created showing extensive analysis results including Molecular Weight (MW), Rf, band intensities and area density calculations. Data can be exported to Excel. The image history is tracked with change logs and supports 21 CFR Part 11 compliance.

Features

- Automatic lane and band recognition
- Add, delete and separate lanes and bands
- Optimisation of detection parameters
- Different choices for background adjustment
- Automatic calculation for size/MW, mass, RF
- Result sheet
- Compensation of gel smiling and distortions
- Zoom, invert and pseudocolor functions
- Add annotations and arrows
- Generate lane profile graphs
- Perform dendrogram analysis
- Colony counting
- Support for 21 CFR Part 11 compliance
- One-touch automated macros
- Define user-profiles and preferences
- Generate extensive reports and export data
- Multiple user network license available



GelStudio Darkhood | GelStudio Box – the ultimate darkhood

- Dedicated to imaging of fluorescent and colored gels and blots
- Premium user convenience
- Integrated UV protection
- 2 different configurations

The GelStudio Box is designed for daily use in the laboratory. The robust construction provides high functionality and excellent ergonomics over years.

Features	Benefit
Compact size and small footprint	▪ Saves valuable bench space
Smooth surfaces and inside coated with black protective varnish	▪ Easy to clean ▪ Long-term resistent against ionic buffers and UV light ▪ Reflexion free
Comfort sliding door	▪ Light-tight cabinet ▪ Free access to the imaging area with one fingertip ▪ Space-saving opening proper for narrow laboratory corridors ▪ Gels can be placed directly in front of the hood for easy gel transfer to the UV table
Integrated UV protection shield	▪ Protects the user from UV exposure also during sliding out the UV table ▪ Freely adjustable according to individual needs ▪ Applicable for cutting gels without the need for additional protection equipment
Bright overhead white light	▪ Supports sample positioning and is suitable for acquisition of colored blots
Panel with liquid protected switches for UV and white-light	▪ Clearly arranged and designed for intensive use
Easy access to lamps and filters and other replacement parts	▪ Absolute service friendly

Selection of darkhood configurations

Tailored to different budgets and application requirements four different darkhood versions are available: The GelStudio Box comes with an ingenious “all-in-one” camera mounting to be compatible with all supplied GelStudio box and GelStudio hood systems. Using an individual adapter, all different cameras can be mounted. This provides the possibility for users to adapt their existing hood to other camera types when application requirements are changing.

	Darkhood version	
Feature	GelStudio Box Standard version	GelStudio Box 2 Advanced version
Epi-white light	+	+
UV protection shield	+	+
Mounting of UV bandpass filter	4-position filter wheel	4-position filter wheel
Transilluminator	Pull-out	Pull-out
Epi-UV light	–	+

UV Transilluminators

The GelStudio can be equipped with one of the different UV table versions of benchUV. Important characteristics of benchUV are the excellent illumination uniformity and the low background signal. For documentation of gels with colorimetric dyes or radiographs a UV converter plate is supplied. The plate is directly placed on top of the UV table and thus extends the application range from documentation of fluorescent samples to all visible signals. A more detailed description of transilluminators and converter plates is given in section “Transilluminators“.

There is the choice between:

Filter size	▪ 15 cm x 15 cm ▪ 20 cm x 20 cm ▪ 21 cm x 26 cm ▪ 25 cm x 26 cm
UV wavelength	▪ 254 nm ▪ 302 nm ▪ 365 nm ▪ 302/365 nm ▪ 254/302/365 nm
Intensity setting	▪ Switch for variable intensity in steps “high, medium, low“

Blue light transilluminators

Alternatively to a UV transilluminator a blue light table can be used. Blue light illumination is applicable for fluorescent stains with an excitation range around 470 nm. This is true for e.g. SYBR® Green, GelGreen™, SYBR® Safe, SYBR® Gold or SYPRO® Ruby.

Overhead UV illumination

Some applications require a UV excitation from above: membrane blots with UV fluorescent stains. Even for gels showing a high background signal it can be advisable to excite the sample fluorescence from above. This will enhance the sample signal against the gel background noise.
GelStudio Box 2 is available with epi-UV of 254 nm and 365 nm. Alternative 302 nm UV is supplied on request.

Overhead white light in GelStudio Box

Overhead white light and overhead UV light in GelStudio Box 2

For details of the blue light transilluminators please see section “Transilluminators“ on page 372.

Filter wheel for bandpass filters

The acquisition of UV fluorescent images requires a specific bandpass filter in front of the camera lens.

There are different possibilities to place the filter in front of the camera lens:

Filter mounting	Application	Darkhood
Filter is directly screwed to the camera lens	▪ Cost-saving version for laboratories who mainly apply a certain stain, different stains with similar emission wavelengths or the bandpass filter with wide bandpass	GelStudio Hood of "GelStudio compact"
With 4-position filter wheel	▪ High flexibility for use of staining dyes with different filter requirements ▪ Accepts all filters with 58 mm diameter standard screw socket	GelStudio Box, GelStudio Box 2

Filter wheel

Slider for easy inserting of new filters

Emission filters for GelStudio with GelStudio Hood or GelStudio Box | High-grade filters for different dyes

For the documentation of UV fluorescent images an emission filter has to be attached in front of the camera lens. The filter has to be choosen in respect to the applied sample staining. The most commonly used filter has a transmission maximum of 590 nm and fits e.g. to ethidium bromide, Oriole™, SYPRO® Orange and SYPRO® Ruby staining. An alternative filter is available for fluorescent dyes with emission wavelengths between 500 and 580 nm, e.g. for SYBR® Green, SYBR® Gold, SYBR® Safe and GelStar®.

Optimal results with every dye are always achieved with the respective dedicated filter. Nevertheless it is possible to apply an emission filter with a wider bandpass which covers several dyes with different emission maxima. This might be helpful when a stand or a darkhood without filter wheel is used. Analytik Jena offers such an emission filter with wide bandpass: filter BP590/200.

UV fluorescent dye examples and compatible emission filters

Order number	Filter transmission range	Compatible dye	Excitation maximum	Emission maximum
849-00600-0	**BP590** **565 – 615 nm** 	**For nucleic acids:**		
		▪ Ethidium bromide	312 nm, 518 nm	595 nm
		▪ GelRed™	315 nm, 520 nm	605 nm
		For proteins:		
		▪ Oriole™	270 nm	604 nm
		▪ SYPRO® Orange	300 nm, 470 nm	570 nm
		▪ SYPRO® Ruby	280 nm, 450 nm	610 nm
849-00601-0	**BP540/80** **500 – 580 nm** 	**For nucleic acids:**		
		▪ GelGreen™	270 nm, 510 nm	525 nm
		▪ GelStar®	300 nm, 493 nm	527 nm (RNA: 532 nm)
		▪ SYBR® Gold	284 nm, 382 nm, 494 nm	537 nm
		▪ SYBR® Green I	254 nm, 497 nm	521 nm
		▪ SYBR® Green II (for RNA)		521 nm
		▪ SYBR® Safe	280 nm, 502 nm	530 nm
849-00602-0 resp. 849-00603-0*	**BP590/200** **490 – 690 nm** 	**For nucleic acids and proteins:** All dyes compatible with filter 849-00600-0 and 849-00601-0, see above, and additionally:		
		For proteins:		
		▪ SYPRO® Red	300 nm, 550 nm	630 nm
		For proteins, on Western Blots:		
		▪ WesternDot™ 625 with Qdot® nanocrystals	254 nm, 488 nm	625 nm

* Application of emission filter BP590/200

With GelStudio Box, in filter wheel	Insert 849-00603-0 (= filter 849-00602-0 + adapter ring + sealing ring) directly in the filter wheel.
With GelStudio Hood or with stand	**With GelStudio live compact:** Screw filter 849-00602-0 directly to the camera zoom lens. **With GelStudio digital compact**: Screw filter 849-00602-0 with adapter ring 846-034-019 (58 – 55 mm) to the lens.

GelStudio systems with computer-control | Order information

Note: Systems with Gelstudio Box and GelStudio live compact are available from spring 2014. Please check www.bio.analytik-jena.de.

Order number		Item
230 V	110/115 V	**GelStudio digital**[b]
849-00530-2	849-00530-4	**GelStudio digital core set**: Digital SLR camera[a] with USB2.0 interface, camera power supply, VisionWorksLS software for image acquisition and gel analysis. English manual.
849-00531-2	849-00531-4	**GelStudio compact**: GelStudio digital core set, small darkhood GelStudio Hood
		GelStudio live[b]
849-00540-2	849-00540-4	**GelStudio live core set**: Digital monochrome ½´´ CCD camera with USB2.0 interface, resolution 1600 x 1200 pixels, manual zoom lens 8 – 48 mm (F1.0 – F1.2), VisionWorksLS software for image acquisition and gel analysis
849-00541-2	849-00541-4	**GelStudio live Plus core set**: Digital monochrome 1/2" CCD camera, USB2.0 interface, resolution 1600 x 1200 pixels, motorized zoom lens, motor zoom controller, VisionWorksLS software for image acquisition and gel analysis.
849-00542-2	849-00542-4	**GelStudio live compact:** GelStudio live core set (with manual zoom lens), small darkhood GelStudio Hood
		Darkhoods (Transilluminator not included. Please refer to section „Transilluminators".)
849-00533-2[c] 849-00544-2[d]	849-00533-4[c] 849-00544-4[d]	**GelStudio Box**: Darkhood (52 cm x 54 cm x 51 cm, H x W x D), overhead white light, 4-position filter wheel, UV protection shield, drawer for transilluminator (for one of benchUV models)
849-00534-2[c] 849-00545-2[d]	849-00533-4[c] 849-00544-4[d]	**GelStudio Box 2**: dto., plus overhead UV light (245 nm, 365 nm)

Order number	Emission filters and related accessories
849-00600-0	BP590, emission filter for ethidium bromide stains, 58 mm Ø
849-00601-0	BP540/80 emission filter with transmission range of 500 to 580 nm, e.g. for SYBR® Green stains, 58 mm Ø
849-00602-0	BP590/200 emission filter with wide emission, transmission range of 490 – 690 nm for different dyes, e.g. ethidium bromide and SYBR® Green, 55 mm Ø
849-00603-0	dto., but plus adapter ring for filter wheel of GelStudio Box
849-00604-0	Amber filter for use with UV-to-blue converter plate or a blue light transilluminator in computer-controlled GelStudio systems, 58 mm Ø

[a] Please check our homepage www.bio.analytik-jena.com for the current camera resolution.
[b] Emission filter is not included. Please choose one of the list below according to used staining dye.
[c] including anti-theft adapter for GelStudio digital camera
[d] including adapter for GelStudio live camera
[e] Without a GelStudio Box please order adapter ring 846-035-027 additionally for mounting the emission filter directly at the camera lens.

Order number	Item
	Accessories
849-20100-0	**Thermal printer Mitsubishi P95DE,** high resolution (325 dpi), USB2.0 interface, dimensions 8.5 x 15.4 x 23.9 (H x W x D, cm)
849-20111-0	Thermal printer paper KP65HM, high contrast, 4 rolls à 20 m
849-20110-0	Thermal printer paper K95HG, high glossy, high contrast, 5 rolls à 18 m, only compatible with printer P95DE!
849-20510-0	Converter plate UV-to-white, 21 cm x 26 cm filter size
849-20511-0	Converter plate UV-to-white, 25 cm x 26 cm filter size
849-20520-0	Converter plate UV-to-blue "Visi-Blue", 21 cm x 26 cm filter size, 460 nm - 470 nm
849-20521-0	Converter plate UV-to-blue "Visi-Blue", 25 cm x 26 cm filter size, 460 nm - 470 nm
849-20523-0	Converter plate UV302-to-UV365, 25 cm x 26 cm filter size
849-20605-0	UV transparent acrylic tray for preparative tasks on a transilluminator, 29 cm x 23 cm
846-057-013	UV transparent gel scoop, scoop area 14 cm x 15 cm
	Computer
840-90000-2	Personal computer, plus TFT monitor, completely installed
	Software
849-00202-0	**VisionWorksLS software (already included in GelTower and all GelStudio systems)**: Analysis software for gel images in tif, jpg, bmp, gif or png format. Single user license.
849-00203-0	VisionWorksLS software, see above. 5 user license.

GelStudio SA | Advanced stand-alone imaging system with touch screen

- Scientific-grade monochrome CCD camera with motorized zoom lens
- Brilliant images of fluorescence and colorimetric applications
- Large 15.6'' touch screen for self-explanatory image acquisition
- Compact darkroom with slide-out transilluminator

The introduction of the new GelStudio SA Imaging System marks a new generation of simplicity and imaging control for researchers. This imager successfully combines a powerful computer, integrated touch screen and software interface into an easy-to-use plug and play unit. A light-sensitive CCD camera provides for high-resolution images with 2.0 MP and 12 bit data depth. The image capture functions are presented in a straightforward and efficient workflow format. Users can be assured of quick and simple image capture with a touch of the screen!
The built-in computer creates a networkable stand-alone system. Users can easily capture images and save to a flash drive. Or transfer the images to a separate computer via wired or wireless network for further documentation or analysis. For high-resolution prints a digital thermal printer is recommended.

Touch Screen

Researchers can perform simplified imaging with the integrated image capture software and touch screen interface.

- Ease of use: The straightforward interface guides users through live preview, capture and save functions. When a function is active, the software clearly highlights the status for ease of workflow and navigation.

- Touch screen: Users can easily control settings with the user-intuitive touch screen interface.

The function control panel lets users fine tune exposure, aperture, zoom and focus functions which can be adjusted with a touch of the screen. All current settings are clearly displayed on the main screen. Additional software functions are a click away with the conveniently located buttons:

- Saturation warning: A colored overlay shows oversaturated areas of an image, alerting users to adjust the exposure and/or aperture settings.
- Auto Adjust: This efficient tool automatically adjusts the image histogram to generate ideal imaging results.
- Lighting and filters: This menu allows selection of epi and trans-illumination lighting and emission filters.
- Preferences: The user preferences window allows adjustment of default system settings such as location for saving captured images.
- Selection of language: English is the standard language format of the software. Users can alternatively select from German, Chinese (simplified), Turkish, Japanese, Spanish, Korean and Russian for all screen text and buttons.

The **compact, light-tight darkroom** is ideal for multiple users and multiple applications.

Emission filters are placed in the easy access five-position filter tray. An ethidium bromide filter is standard, additional filters are available.

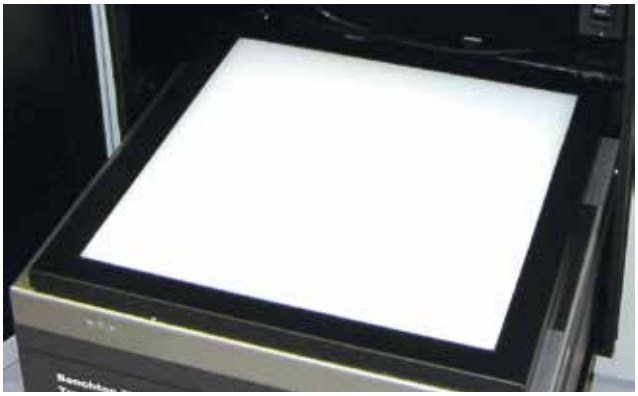
The **transilluminator** is placed on the easy access roll-out tray. A wide choice of transilluminators with different filter sizes and UV wavelengths are available.

A **gel viewing window** in the front door blocks UV while allowing visualization of samples without opening the cabinet door.

Five-position filter wheel

Researchers performing colorimetric visible light imaging can use a **converter plate** or can add the optional **LED white light plate**. This plate supplies uniform white light transillumination. The Visi-Blue Plate converts the transilluminator's UV to 460 – 470 nm for imaging e.g. SYBR® Green, GelGreen™ and other stains requiring blue light. For multiplex imaging researchers can add the **eLite MultiSpectral Light Source** for epi-excitation of a wide range of fluorophores.

Add filters to meet specific wavelength requirements. **Epi white lights** are built into the darkroom for lighting and focusing purposes. For UV excitation from above optional **UV modules** are available. The modules can be removed for handheld use. There is the choice between longwave (365 nm), shortwave (254 nm) or combination 254/365 nm lamp modules. USB and SD Ports are located on the side of the cabinet for saving images.



LED white light plate

Order information

Order No.		Description
230 V	115 V	
849-00550-2	849-00550-4	GelStudio SA: Digital monochrome ½'' CCD camera, resolution 1600 x 1200 pixels (2.0 MP, extentable to 6.0 MP), motorized zoom lens (12.5 – 75 mm, F1.2), 12 bit data depth, 16 bit file depth (65,536 grayscales), emission filter (580 – 630 nm) for e.g. EtBr, five position filter wheel, 15.6'' touch screen, integrated computer, with access port for optional eLite source, epi-white light, pull-out tray for transilluminator, USB flash drive, keyboard, mouse, VisionWorksLS software for image acquisition and analysis. Dimensions: 85.1 x 44.4 x 36.8 (H x W x D, cm). The transilluminator is not included and has to be choosen from section "Transilluminators"!
		Emission filters
849-00401-0		Emission filter, 50 mm square, with transmission range 510 - 560 nm, for e.g. SYBR® Green
849-00402-0		Emission filter, 50 mm square, with transmission range 520 - 620 nm, for e.g. SYBR® Gold
		Converter plates
849-20510-0		Converter plate UV-to-white, 21 cm x 26 cm filter size
849-20511-0		Converter plate UV-to-white, 25 cm x 26 cm filter size
849-20520-0		Converter plate UV-to-blue "Visi-Blue", 21 cm x 26 cm filter size, 460 nm - 470 nm
849-20521-0		Converter plate UV-to-blue "Visi-Blue", 25 cm x 26 cm filter size, 460 nm - 470 nm
849-20523-0		Converter plate UV302-to-UV365, 25 cm x 26 cm filter size
849-20500-0		LED white light plate
		Epi UV modules
849-20700-0		UV module UVGL-25 (254/365 nm). Two are recommended.
849-20701-0		UV module UVL-21 (365 nm). Two are recommended.
849-20702-0		UV module UVG-11 (254 nm). Two are recommended.
		Software
849-00202-0		VisionWorksLS software (already included in GelStudio SA): Analysis software for gel images in tif, jpg, bmp, gif or png format. Single user license.
849-00203-0		VisionWorksLS software, see above. 5 user license.
		Further accessories
849-20100-0		Thermal printer Mitsubishi P95DE, high resolution (325 dpi), USB2.0 interface, dimensions 8.5 x 15.4 x 23.9 (H x W x D, cm)
849-20111-0		Thermal printer paper KP65HM, high contrast, 4 rolls à 20 m
846-20110-0		Thermal printer paper K95HG, high glossy, 4 rolls à 18 m

ChemStudio product line | Highly sensitive chemiluminescence systems

The ChemStudio product line has been designed for a wide range of imaging applications. Depending on system configuration, usages range from simple gel and chemiluminescent documentation to advanced, multispectral and multifunctional imaging. Significant applications include high-resolution detection of chemiluminescence, fluorescence and colorimetric samples. ChemStudio can be used to meet countless BioImaging needs, both in the fields of proteomics and genomics. When operated with VisionWorksLS software, automated image acquisition and analysis can be realized.
In addition to comprehensive image acquisition features, the software provides extensive and detailed image analysis tools, including 1D, area density and colony counting capabilities.

- Imager for chemiluminescence, fluorescence and colorimetry, upgradeable for NIR/multiplexing imaging applications
- Selection of highly sensitive, cooled CCD cameras with fixed focal length or zoom lenses (motorized or manual)
- Light-tight darkrooms with large front door and unique UV-safe gel viewer window
- Available either as a PC-operated unit or as a stand-alone instrument with integrated color touchscreen
- Easy-to-access filter wheel with to up to five positions
- Integrated overhead (epi) white light for optimum illumination and focusing
- Chemi tray for sample placement on the black, non-reflective surface
- Telescoping transilluminator tray provides easy access to the UV transilluminators
- Upgrade options with versatile accessories such as multispectral light sources, overhead UV light sources, LED white light plates and much more
- VisionWorksLS Software with comprehensive features

ChemStudio	ChemStudio SA	ChemStudio PLUS
▪ Simple, efficient darkroom configuration	▪ Stand-alone system with integrated PC and 15.6" color touchscreen	▪ High-end darkroom for a variety of imaging applications
▪ Cost-effective alternative to other chemiluminescence systems	▪ Simple, intuitive software user interface ▪ USB ports as well as wired and wireless networking capabilities for saving images	▪ Motorized or manual platform lift available
▪ 4-position emission filter wheel	▪ 5-position emission filter wheel	▪ 5-position emission filter wheel
▪ Manually controlled illumination and emission filter wheel ▪ Camera and lens controlled manually or via software	▪ Fully automatic control: illumination, camera, lens and emission filter wheel	▪ Fully automatic control: illumination, camera, lens and emission filter wheel
▪ VisionWorksLS software: image acquisition and analysis	▪ Stand-alone software: acquisition, multilingual ▪ VisionWorksLS software: image analysis (requires external computer)	▪ VisionWorksLS software: image acquisition and analysis

Multifunctional darkrooms

All ChemStudio darkrooms are absolutely light tight and extraordinarily user friendly. The large front door and unique gel viewer window provide easy access to the instrument interior for optimal control of blot and gel images. The overhead white light further supports sample positioning and focusing. Especially for chemiluminescence image capture, the integrated chemi tray offers an ideal, non-reflective black background. Additionally, the filter wheel can be equipped with up to five different emission filters to support a variety of applications (e.g. for EtBr).

- Chemiluminescence, fluorescence and colorimetry
- Expandable to IR/NIR multiplex applications
- Designed with simplicity and ease-of-use in mind
- Extensive standard equipment

A winning combination: CCD-Cameras and lenses

In order to meet the requirements for recording different types of signals, a set of scientific-grade, cooled CCD-Cameras with resolutions of up to 8.1 MP is available. The cameras are combined with a variety of high-quality lenses, either with fixed focal length or zoom capabilities. Moreover, the integrated Peltier cooling is essential for detection of low light chemiluminescence signals, e.g. for Northern, Western and Southern Blots. When compared directly to other detection methods, cooled CCD-Cameras are superior in terms of sensitivity, accuracy, dynamic range, speed and ease of handling.

Analytik Jena's BioImaging products eliminate the need for film and accordant processing chemicals. Thus, the ChemStudio line supports eco-friendly, imaging practices.

Application	CCD-Camera 810	CCD-Camera 610	CCD-Camera 510
Chemiluminescence	+++	+++	++
Fluorescence	+++	++	++
Colorimetry	+++	++	++
NIR	++	+++	+
Multiplex	++	+++	+

Specifications	CCD-Camera 810	CCD-Camera 610*	CCD-Camera 510
Greyscale	65,536	65,536	65,536
Bit depth	16 Bit	16 Bit	16 Bit
Pixel resolution	3296 x 2472	2184 x 1472	2336 x 1752
Megapixels	8.1 (may be expanded to 16.2*)	3.2 (may be expanded to 9.6*)	2.1 (may be expanded to 7.4*)
Cooling	Room temp - 35 °C Peltier cooling	Room temp - 50 °C Peltier cooling	Room temp - 35 °C Peltier cooling
Binning	1 x 1 up to 8 x 8	1 x 1 up to 10 x 10	1 x 1 up to 8 x 8
Quantum eff. Peak / 425 nm	50 % and 42 %	86 % and 53 %	50 % and 42 %
Lenses	50 mm f/1,2 30 mm f/1,4	50 mm f/1,2 30 mm f/1,4	12,5 – 75 mm f/1,2 Zoom lens

* Only for ChemStudio and ChemStudio PLUS

Image acquisition and analysis: Simple and intuitive VisionWorksLS software

Chemiluminescence imaging and subsequent analysis are greatly significantly simplified using a combination of ChemStudio systems and VisionWorksLS software. VisionWorksLS is a modern software package with an extensive array of features to simplify the imaging of chemiluminescence, fluorescence and colorimetric gels, blots, colonies and membranes.
Once positioned on the imaging platform, the sample is focused and the picture is captured.
The full dynamic range can be acquired with the use of dynamic and sequential integration capabilities. High sensitivity and superior resolution cameras guarantee excellent, publication quality and quantifiable results.

- Extensive imaging capabilities
- Image enhancement functions
- User-defined master templates for simple, 1-click image capture
- Support for 21 CFR Part 11 compliance
- Reporting and data export to Excel

Most combinations of camera and lens allow imaging settings to be automatically controlled. The VisionWorksLS software menu provides a variety of features to ensure high quality, repeatable image acquisition.

- Integration: On-chip, sequential or dynamic
- Binning
- Saturation preview
- Automatic exposure

Furthermore, the software offers a substantial range of tools for detailed image analysis. These features, which are easy to use and intuitive to apply, provide the capability to automate all experiments with precise quantification. Creation of profile graphs with intensity histograms, concentration curves and much more are available with VisionWorksLS.

- 1D lane analysis
- Area density analysis
- Colony counting analysis
- Plant imaging
- Molecular weight standards
- Protein quantification
- Quantitative analysis of PCR experiments
- Western Blot densitometry
- GFP expression tracking
- Multiplexing and more

Flexibility and modularity: Accessories for convenient system expansion

All chemiluminescence systems can be combined with a selection of transilluminators for ethidium bromide or differently stained gels. Models are available with a single excitation wavelength of 302 nm or with multiple excitation wavelengths in the UV range. Additionally, white light converter plates and LED white light plates allow for visualization of colorimetric gels, colony plates, autoradiograms or other samples being excited by white light. Furthermore, Visi-Blue™ converter plates enable blue light excitation of samples containing GelGreen, SYBR Green and other “safe” stains. Analytik Jena also offers overhead (epi) UV modules for an optimum image presentation of thin-layer chromatography plates.
Multiplex and fluorescence Western Blot imaging are accomplished with the eLITE multi spectral light sources. The fiber optic cables are directly connected within the darkroom to provide a brilliant, highly intense excitation of the samples. All light sources use specialized filters to meet the wavelength requirements of different dyes such as GFP, RFP, CY and IR-dyes.

- Transilluminators and overhead (epi) UV modules
- Multiple excitation and emission filters are available
- White light converter plates and LED white light plates
- Visi-Blue™ converter plates
- Multispectral light sources

Technical data

	ChemStudio	ChemStudio SA	ChemStudio PLUS
Darkroom	Simple, efficient darkroom configuration	Stand-alone system with integrated PC and 15.6" color touchscreen	High-end darkroom for a variety of imaging applications
Emission filter wheel	4 positions	5 positions	5 positions
Lighting	White overhead (epi) lighting	White overhead (epi) lighting	White, blue and 365 nm UV overhead (epi) lighting
Control of filters and lighting	Manual (software)	Fully automated	Fully automated
Transilluminator (optional)		▪ 3 UV or single UV ▪ Large filter size up to 25 x 26 cm ▪ Roll-out tray	
Platform lift	-	-	Manual or automated for real zoom functionality
Application	Chemiluminescence, Fluorescence, Colorimetric, Multiplex / NIR ready		
Dimensions	(W x D x H)	(W x D x H)	(W x D x H)
Exterior [mm]	470 x 380 x 810	444 x 368 x 851	445 x 445 x 813 (+ camera cover)
Weight [kg]	Approx. 26.8 kg	Approx. 43.1 kg	Approx. 36.7 kg (motorized darkroom) Approx. 27.7 kg (manual darkroom)

Camera/lenses	**CCD-Camera 810**	**CCD-Camera 610***	**CCD-Camera 510**
Greyscale	65,536	65,536	65,536
Bit depth	16 Bit	16 Bit	16 Bit
Pixel resolution	3296 x 2472	2184 x 1472	2336 x 1752
Megapixels	8.1 (may be expanded to 16.2*)	3.2 (may be expanded to 9.6*)	2.1 (may be expanded to 7.4*)
Cooling	Room temp - 35 °C Peltier cooling	Room temp - 50 °C Peltier cooling	Room temp - 35 °C Peltier cooling
Binning	1 x 1 up to 8 x 8	1 x 1 up to 10 x 10	1 x 1 up to 8 x 8
Quantum eff. Peak / 425 nm	50 % and 42 %	86 % and 53 %	50 % and 42 %
Lenses	50 mm f/1,2 30 mm f/1,4	50 mm f/1,2 30 mm f/1,4	12,5 – 75 mm f/1,2 Zoom lens

* Only for ChemStudio and ChemStudio PLUS

Order information

Order number		Description
Darkrooms		
230 V	**100 / 115 V**	
849-00100-2	849-00100-4	**ChemStudio** ▪ Darkroom for chemiluminescence imaging ▪ Without PC, without Camera/Lens Kit and without transilluminator ▪ Including epi white light, Ethidium Bromide emission filter, gel ruler and tray, focus target, Chemi tray (black) ▪ VisionWorksLS Acquisition & Analysis (single license)
849-00101-2	849-00101-4	**ChemStudio SA** ▪ Darkroom for chemiluminescence imaging ▪ Stand alone with integrated 15.6" color touchscreen ▪ Without Camera/Lens Kit and without transilluminator ▪ Including epi white light, Ethidium Bromide emission filter, gel ruler and tray, focus target, Chemi tray (black) ▪ VisionWorksLS Acquisition & Analysis (single license, separate PC required)
849-00102-2	849-00102-4	**ChemStudio PLUS motorized** ▪ Darkroom for chemiluminescence imaging with automated platform lift ▪ Without PC, without Camera/Lens Kit and without transilluminator ▪ Including Ethidium Bromide, SYBR Green and SYBR Gold emissions filter, epi white light, gel ruler and tray, focus target, Chemi tray (black), LED white light plate ▪ VisionWorksLS Acquisition & Analysis (single license)
849-00103-2	849-00103-4	**ChemStudio PLUS manual** ▪ Darkroom for chemiluminescence imaging with manual platform lift ▪ Without PC, without Camera/Lens Kit and without transilluminator ▪ Including Ethidium Bromide, SYBR Green and SYBR Gold emissions filter, epi white light, gel ruler and tray, focus target, Chemi tray (black), LED white light plate ▪ VisionWorksLS Acquisition & Analysis (single license)

Product	Order number			
Camera & Lens Kit	**ChemStudio**			
	ChemStudio	SA	PLUS manual	PLUS motorized
CCD-Cam. 510, 12.5-75 f/1.2, man.	849-00110-0	-	-	-
CCD-Cam. 510, 12.5-75 f/1.2, mot.	849-00111-0	849-00112-0	849-00113-0	-
CCD-Camera 610, 50 f/1.2	849-00120-0	-	-	849-00120-0
CCD-Camera 610, 30 f/1.4	849-00121-0	-	-	849-00121-0
CCD-Camera 810, 50 f/1.2	849-00130-0	849-00131-0	849-00130-0	849-00130-0
CCD-Camera 810, 30 f/1.4	849-00132-0	849-00133-0	849-00132-0	849-00132-0

Order number		Description
Transilluminator		
230 V	**100 / 115 V**	
849-20021-0	849-20021-4	benchUV 26Xi Benchtop transilluminator, 8 W, 302 nm, variable intensity, 25 x 26 cm filter size
849-20014-0	849-20014-4	benchUV 26SML Benchtop Transilluminator, 8 W, 254/302/365 nm, 21 x 26 cm filter size

Accessories

Product	Order number	Comment
Gel ruler, fluorescent	849-20600-0	Included with order of darkrooms, double pack
Gel tray	849-20605-0	29 x 23 cm, scope of delivery of darkrooms
Gel cutter	849-20603-0	Double pack
Gel scooper	846-057-013	UV transparent, 14 x 15 cm
Faceshield	849-20602-0	UV blocking
Focus target, fluorescent	849-20601-0	Scope of delivery of darkrooms, double pack
LED white light plate	849-20500-0	Scope of delivery of ChemStudio PLUS
Chemi tray (black)	849-20501-0	Scope of delivery of darkrooms

Software

Product	Order number	Comment
VisionWorksLS Acquisition & Analysis	849-00202-0	Single user license
VisionWorksLS Acquisition & Analysis	849-00203-0	Five user license

Converter plate

Product	Order number	Comment
Converter UV to white	849-20510-0	21 x 26 cm
Converter UV to white	849-20511-0	25 x 26 cm
Converter UV to white	849-20512-0	20 x 40 cm
Visi-Blue Converter	849-20520-0	460 – 470 nm, 21 x 26 cm
Visi-Blue Converter	849-20521-0	460 – 470 nm, 25 x 26 cm
Visi-Blue Converter	849-20522-0	460 – 470 nm, 20 x 40 cm

MultiSpectral light sources

Product	Order number		Comment
	230 V	100/115 V	
eLITE Xenon	849-00300-2	849-00300-4	Kit with epi light fibers
eLITE motorized	849-00301-2	849-00301-4	Kit with epi light fibers
eLITE manual	849-00302-2	849-00302-4	Kit with epi light fibers

Order information

Emission filter

Product	Order number	Comment
Emission Filter 580 - 630 nm	849-00400-0	Deep Purple, EtBr, RFP
Emission Filter 510 - 560 nm	849-00401-0	SYBR® Green
Emission Filter 520 - 620 nm	849-00402-0	SYBR® Gold
Emission Filter 465 - 495 nm	849-00403-0	CFP mice
Emission Filter 503 - 523 nm	849-00404-0	GFP mice
Emission Filter 513 - 557 nm	849-00405-0	Cy2®, FITC, FAM™, GFP, SYBR® Green, SYBR® Gold
Emission Filter 565 - 625 nm	849-00406-0	Alexa555®, Cy3®, SYPRO® Orange
Emission Filter 607 - 682 nm	849-00407-0	Alexa568®, SYPRO® Red, TexasRed®
Emission Filter 668 - 722 nm	849-00408-0	Alexa633®, Cy5®
Emission Filter 700 - 740 nm	849-00409-0	IRDye 680®, CF 680
Emission Filter 767 - 807 nm	849-00410-0	Alexa750®, Cy7®
Emission Filter 780 nm long pass	849-00411-0	Alexa750®
Emission Filter 800 nm long pass	849-00412-0	IRDye 800®, CF 770

Excitation filter for eLITE motorized and eLITE Xenon

Product	Order number	Comment
Excitation Filter 450 nm short pass	849-00330-0	CFP, SYPRO® Ruby
Excitation Filter 455 - 495 nm	849-00331-0	Cy2®, FITC, FAM™, GFP, SYBR® Green
Excitation Filter 502 - 547 nm	849-00332-0	Deep Purple, Et Bromide, RFP
Excitation Filter 533 - 587 nm	849-00333-0	Alexa568®, Rhodomine Red™, SYPRO® Red
Excitation Filter 600 - 645 nm	849-00334-0	Alexa633®, Cy5®, IRDye 680®, CF 680
Excitation Filter 687 - 748 nm	849-00335-0	Alexa750®, Cy7®, IR
Excitation Filter 700 - 740 nm	849-00336-0	
Excitation Filter 750 - 780 nm	849-00337-0	IRDye 800®, CF 770

Excitation filter for eLITE manual

Product	Order number	Comment
Excitation Filter 450 nm short pass	849-00330-0	CFP, SYPRO® Ruby
Excitation Filter 455 - 495 nm	849-00331-0	Cy2®, FITC, FAM™, GFP, SYBR® Green
Excitation Filter 502 - 547 nm	849-00332-0	Deep Purple, Et Bromide, RFP
Excitation Filter 533 - 587 nm	849-00333-0	Alexa568®, Rhodomine Red™, SYPRO® Red
Excitation Filter 600 - 645 nm	849-00334-0	Alexa633®, Cy5®, IRDye 680®, CF 680
Excitation Filter 687 - 748 nm	849-00335-0	Alexa750®, Cy7®, IR
Excitation Filter 700 - 740 nm	849-00336-0	
Excitation Filter 750 - 780 nm	849-00337-0	IRDye 800®, CF 770

Transilluminators | High-quality transilluminators for UV fluorescent stains

UV transilluminators for UV fluorescent stains

- Filter sizes from 15 cm x 15 cm up to 25 cm x 26 cm or 20 cm x 40 cm
- Exceeding uniform illumination
- High-grade filter glass for low background
- Wide choice of standard and high-performance models

The UV transilluminators feature a uniform and bright illumination. The exclusive application of high-grade filter glass provides for excellent documentation results with lowest background signal. The great illumination uniformity allows the reliable quantification of electrophoretically separated fluorescent samples.

benchUV 26Xi

benchUV 20SML

The bench UV transilluminators are equipped with an ultraviolet blocking cover to shield the user from UV radiation. The base is painted with high-quality, scratch-resistant powder coat. Models include a stainless steel top assembly or powder coat paint.

Features	Benefit
Compact size with small footprint	Saves bench space and is compatible with GelStudio gel documentation darkhoods
Stainless steel filter frame	Robust and easy to clean for daily routine
Freely adjustable UV protection shield	User UV protection during handling the gel
Lamp control with electronic high-frequency operating system	Flicker-free illumination and extended lamp durability
Quiet, temperature controlled ventilation	Samples are protected from heating

Benchtop UV transilluminator

The compact models of the **benchUV line** include the economical single intensity and variable intensity transilluminators which are equipped with 8-watt, 302 nm UV tubes.

The variable intensity models feature:

- High setting allows UV excitation of fluorophores on gels for routine photography. Also excites gels with low sample concentration.
- The medium intensity is excellent for viewing and quick single-band excision.
- Low setting is used for positioning and preparation of the gel, excising multiple bands, and focusing for photography.

For users who prefer the choice between 302 nm UV and 365 nm UV the **benchUV ML** models are suited. These models come with single intensity setting and 8-watt UV bulbs of 302 nm and 365 nm. Available filter sizes are 20 cm x 20 cm or 21 cm x 26 cm.

Transilluminators with extraordinary uniform illumination

The **benchUV FirstLight®** transilluminators represent a unique highly uniform 302 nm UV excitation source for quantitative fluorescent imaging in a wide range of applications.

- Produces <5% coefficient of variance (CV) across the full filter area
- Exceptionally uniform, edge-to-edge illumination
- Accurate gel to gel comparison
- Uniformity ensures consistent illumination over the imaging surface resulting in high quality images
- Applications range from DNA and protein gel documentation and analysis

Achieve accurate and reproducible RNA, DNA and protein results. The illuminator emits 302 nm UV excitation and combined with a patented phosphor coating configuration generates exceptionally uniform UV illumination over each band and lane. Multiple gels may be placed on the surface with assurance of uniformity for each gel.

benchUV FirstLight®

High performance UV transilluminators

All high performance UV transilluminators **benchUV i** include the exclusive 25-watt ultraviolet tubes and provide a total of 100-watts of brilliant UV illumination.

- Deliver high UV output and intensity, no light flicker, fast lamp start-up and reduced electrical consumption
- Stainless steel frame enables easy cleaning
- The back-lit UV illumination is further enhanced with long-life filter and uniformity screen
- UV blocking cover, included with each transilluminator, is adjustable for access to the filter surface

benchUV 40Lhi

Transilluminators | Blue light transilluminators for fluorescent stains

Blue light transilluminators are a quite interesting alternative to UV transilluminators as there is no risk of sample damage during illumination. This is important when samples shall be processed furthermore after gel documentation. Users also benefit from it as there is no risk of UV exposure. Blue light excitation is applicable for fluorescent dyes for nucleic acid or protein stains with excitation wavelengths around 470 nm. Examples for compatible stains are: SYBR® Green, GelGreen™, SYBR® Safe, SYBR® Gold or SYPRO® Ruby and GFP stains.

The blue light illuminator **benchBL** is available as compact 8-watt model and in its size similar to the benchtop models „benchUV". The amber protective cover blocks blue light transmission, allows visualization of most samples above 500 nm.

- Blue light illumination for e.g. green fluorescent stains
- Safe solution: No damage of DNA, no risk of UV exposure for users

benchBL 26

UV-to-blue converter plates

Alternative to a blue light transilluminator a converter plate can be applied on top of a UV transilluminator to convert UV light to blue light. Three different sizes of the **Visi-Blue converter plate** are available. In combination with a camera system an amber camera filter has to be applied.

Visi-Blue converter plate

Transilluminators | Documentation of visible colored samples

White/UV transilluminator: benchUV WL.
The benchUV transilluminator is also available as dual use version: UV table and white light table. benchUV WL features a 20 cm x 20 cm filter size for UV fluorescent samples and additional a 20 cm x 20 cm filter size for white light transillumination. The white light table can be used for the documentation of all visible colored samples like silver or Coomassie Blue stained gels as well as for radiographs. The benchUV WL can not be integrated into a GelStudio darkhood due to its geometry.

benchUV WL

UV to white light converter plates
Alternatively to the use of a white light table a converter plate can be applied at the top of a UV transilluminator. The converter plate converts the UV light to visible light and thus economically extents the application scope of all UV table models to the visualisation of colored dyes.

White light table benchWL
For documentation of only visible colored samples without the need for any UV light the white light transilluminator benchWL is the table of choice. It comes with a 21 cm x 26 cm filter size. The exceeding uniform illumination provides for bright sample images.

benchWL

Order information

Order number		Description
230 V	**110 - 115 V**	**UV transilluminators without intensity setting, 302 nm UV**
849-20015-0	849-20015-4	benchUV 15, filter size 15 cm x 15 cm, 8 W 302 nm UV, UV protection shield
849-20016-0	846-20016-4	benchUV 20, filter size 20 cm x 20 cm, 8 W 302 nm UV, UV protection shield
849-20017-0	849-20017-4	benchUV 26, filter size 21 cm x 26 cm, 8 W 302 nm UV, UV protection shield
		UV transilluminators with variable intensity setting, 302 nm UV
846-20018-0	846-20018-4	benchUV 15i, filter size 15 cm x 15 cm, 8 W 302 nm UV, high/medium/low intensity setting, UV protection shield
849-20019-0	849-20019-4	benchUV 20i, filter size 20 cm x 20 cm, 8 W 302 nm UV, high/medium/low intensity setting, UV protection shield
849-20020-0	849-20020-4	benchUV 26i, filter size 21 cm x 26 cm, 8 W 302 nm UV, high/medium/low intensity setting, UV protection shield
849-20021-0	849-20021-4	benchUV 26Xi, filter size 25 cm x 26 cm, 8 W 302 nm UV, high/medium/low intensity setting, UV protection shield
		UV transilluminators without intensity setting, 2 UV wavelengths: 302 nm, 365 nm
849-20011-0	849-20011-4	benchUV 20ML, filter size 20 cm x 20 cm, 8 W 302/365 nm UV, UV protection shield
849-20012-0	849-20012-4	benchUV 26ML, filter size 21 cm x 26 cm, 8 W 302/365 nm UV, UV protection shield
		UV transilluminators without intensity setting, 3 UV wavelengths: 245 nm, 302 nm, 365 nm
849-20013-0	849-20013-4	benchUV 20SML, filter size 20 cm x 20 cm, 8 W 254/302/365 nm UV, UV protection shield
849-20014-0	849-20014-4	benchUV 26SML, filter size 21 cm x 26 cm, 8 W 254/302/365 nm UV, UV protection shield
		FirstLight® uniform UV transilluminators, without intensity setting, 302 nm UV
849-20001-0	849-20001-4	benchUV FirstLight® 20, filter size 20 cm x 20 cm, 302 nm UV grid, UV protection shield
849-20003-0	849-20003-4	benchUV FirstLight® 26, filter size 25 cm x 26 cm, 302 nm UV grid, UV protection shield
		High-Performance UV transilluminators with variable intensity setting, 302 nm or 365 nm UV
849-20035-0	849-20035-4	benchUV 20hi, filter size 20 cm x 20 cm, 25 W 302 nm UV, high/medium/low intensity setting, UV protection shield
849-20037-0	849-20037-4	benchUV 30hi, filter size 25 cm x 30 cm, 25 W 302 nm UV, high/medium/low intensity setting, UV protection shield
849-20034-0	849-20034-4	benchUV 40Lhi, filter size 20 cm x 40 cm, 25 W 365 nm UV, high/medium/low intensity setting, UV protection shield
		Blue light transilluminator, 460 - 470 nm with variable intensity setting
849-20070-0	849-20070-4	benchBL 26, filter size 21 cm x 26 cm, 8 W 460 - 470 nm, high/medium/low intensity setting, amber protection shield
		UV (302 nm)/white light transilluminator, without intensity setting
849-20052-0	849-20052-4	benchUV WL20, filter size 20 cm x 20 cm for UV and 20 cm x 20 cm for white light, 8 W 302 nm UV, 8 W white light, UV protection shield
		White light transilluminator, without intensity setting
849-20060-0	849-20060-4	benchWL 26, filter size 21 cm x 26 cm, 8 W white light

Order number	Description
	Converter plates
849-20510-0	Converter plate UV-to-white, 21 cm x 26 cm filter size
849-20511-0	Converter plate UV-to-white, 25 cm x 26 cm filter size
849-20512-0	Converter plate UV-to-white, 20 cm x 40 cm filter size
849-20520-0	Converter plate UV-to-blue "Visi-Blue", 21 cm x 26 cm filter size, 460 nm - 470 nm*
849-20521-0	Converter plate UV-to-blue "Visi-Blue", 25 cm x 26 cm filter size, 460 nm - 470 nm*
849-20522-0	Converter plate UV-to-blue "Visi-Blue", 20 cm x 40 cm filter size, 460 nm - 470 nm*
849-20523-0	Converter plate UV302-to-UV365, 25 cm x 26 cm filter size*

* Includes amber 50 mm square camera filter, compatible with UVsolo, GelStudio SA.

For compatibility of transilluminators with Analytik Jena imaging systems please check this table:

	Gel imaging system		
Transilluminator version	GelStudio digital compact GelStudio live compact	GelStudio digital GelStudio live GelStudio SA	Dimensions (height incl. protection shield) H x W x D, cm
benchUV with 8 W tubes	+	+	12.2 x 35.6 x 27.9 For SML models: 13.7 x 35.6 x 27.9
benchUV FirstLight®	+	+	14.3 x 35.6 x 27.9
benchUV high performance with 25 W tubes	+ (but not with benchUV 40Lhi)	-	
benchBL	+	+	14.3 x 48.6 x 33.7
benchUV WL	-	-	14.3 x 48.6 x 33.7
benchWL	+	+	10.8 x 33.7 x 24.1

Accessories

Order number	Description
849-20602-0	UV light face protection shield
846-055-002	UV light protecting glasses
849-20605-0	UV transparent acrylic tray for preparative tasks on a transilluminator, 29 cm x 23 cm
846-057-013	UV transparent gel scoop, scoop area 14 cm x 15 cm

Spare parts

Bestellnummer	Description
846-057-007	UV bulb 8 W, 254 nm
846-057-002	UV bulb 8 W, 302 nm
846-057-009	UV bulb 8 W, 365 nm
846-057-016	UV bulb 25 W, 302 nm
846-057-017	UV bulb 25 W, 365 nm
34-9-720-007	White light bulb, 8 W

UV transparent gel scoop

PCR UV Cabinets and Workstations |
Systems for a contamination free work area

Analytik Jena offers a complete line of PCR UV systems. PCR UV hoods use shortwave ultraviolet to control unwanted transfers of nucleic acids. The systems bring together UV irradiation and antimicrobial coated stainless steel and aluminum to create a dual-attack environment against PCR contaminations.
In addition to standard PCR UV² models, PCR UV³ HEPA systems with integrated three-stage filters are available. The equipment provides efficient use of lab space and a perfect arranged working area for any application, like sample preparation, nucleic acid isolation, PCR or Real-Time PCR preparation and more.

Two styles are available: The standard PCR UV and the PCR UV HEPA systems.

Two sizes are available: The cabinet features a smaller work area than the workstation.

- Up to three built-in shortwave (254 nm) UV tubes for decontamination between experiments
- Timer sets UV exposure up to 12 h
- Safety shut-off switch automatically turns the UV light off when door is opened
- Keylock prevents accidental exposure of samples to UV
- Unique, easy-clean antimicrobial coating on the stain less steel and aluminum surfaces
- Hinged door flips up for easy access to the work area
- Built-in power outlets for operation of equipment inside the work area
- Two shelves allow placement of small equipment
- MAKROLON® panels block UV below 400 nm
- With or without three-stage HEPA filter
- Different sizes: Cabinet or Workstation to meet each individual need

High efficient UV decontamination

All PCR UV Cabinets and Workstations create an ideal environment for preparing PCR master mixes and other reactions by reducing any possible sample contamination significantly by the built-in 254 nm UV tubes for inactivation of DNA / RNA between experiments. Thereby the use of UV irradiation is a reliable standard laboratory practice and reduces surface and airborne contaminants in the chamber. Maintain a clean work area to save time and reduce the repeat experiments.
The hoods include a timer to control UV decontamination of the chamber, by simply setting the desired time. A key operates the UV providing a means for preventing accidental UV irradiation of samples. Both types feature a safety shut-off switch, which automatically turns the UV light off when the door is opened, protecting users from UV exposure.

- Decontaminate apparatus and reagents within minutes
- Integrated timer to set UV irradiation from 5 min up to 12 h
- Important features for user and sample protection

Perfect antimicrobial protection

Additional contamination control is provided with a coated stainless steel and aluminum design that maintains antimicrobial efficacy. The durable coating material is a safe and natural agent for continuous protection. Resultant the easy-clean surface is stain as well as fingerprint resistant and suppresses the growth of bacteria, molds and fungi on surfaces.

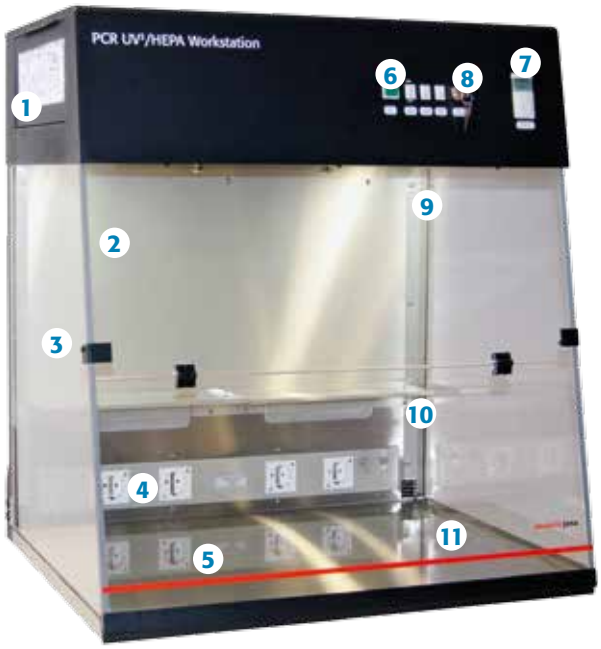
Efficient work area

PCR UV systems are designed for placement of large instruments on the work area or small items on the two removable shelves. Overhead white light brightly illuminates the work area and up to four built-in power outlets allow operation of additional equipment within the chamber. Furthermore the non-ventilated, circulation free chamber limits exposure of equipment to an open lab environment.

Cabinets and larger workstations sizes are available for both the PCR UV² and UV³ HEPA styles.

Sophisticated platform for any sample preparation

All Analytik Jena Cabinets and Workstations combine a whole slew of important features for contamination-sensitive applications:



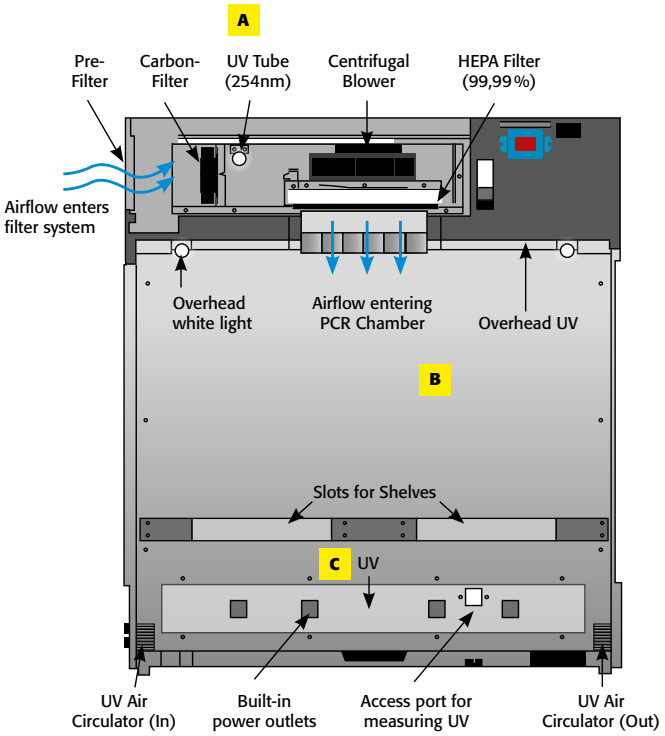
1. Three-stage filter system:
   Pre-filter; Carbon-filter; HEPA Filter; Plus UV to decontaminate
2. Antimicrobial coated surface prevents contamination
3. MAKROLON® panels blocks UV below 400 nm
4. Built-in power outlets for operating equipment inside
5. Large working area
6. Power switches are conveniently located
7. UV timer
8. UV lock prevents accidental UV exposure of samples
9. Shortwave 254 nm UV light for decontaminating the chamber
10. Two removable shelves for placement of small objects
11. Door flips open for easy access to interior;
    UV shuts off when door is open

PCR UV³ HEPA feature

Next to all specifications noted above the PCR UV³ Cabinet & Workstation also include a three-stage filter module with built-in 254 nm shortwave UV light source. The system circulates filtered and decontaminated air into the PCR chamber.
This positive pressure laminar flow can be set to high or low, whereby a honeycomb metal grid guarantees a stabilized air flow.

- Pre-filter helps to preserve the life of other filters by capturing large dust particles
- Activated carbon filter specializes in capturing ozone, gases, odors and smoke
- HEPA filter provides a barrier (99.99 %) against dust, bacteria and mold down to 0.3 microns

A side access with a slide out design makes changing filters and UV tube easy. Protection is given due to the automatic safety switch, which shuts UV off when the side door is opened.



PCR UV³ HEPA drawing

The PCR UV³ HEPA drawing (below) front cut-out view demonstrates the air flow through the filter module. These models supply three UV sources (UV³) which are indicated in the drawing: filter area (A), chamber (B) and UV/air circulator (C).

Technical data

	PCR UV²		PCR UV³ HEPA	
	Cabinet	**Workstation**	**Cabinet**	**Workstation**
UV source	▪ Two 254 nm shortwave UV sources ▪ Chamber and UV/air circulator		▪ Three 254 nm shortwave UV sources ▪ Chamber, UV/air circulator and filter module	
White light	Overhead white light brightly illuminates the work area			
Three-stae filter module	-	-	▪ Pre-filter ▪ Carbon filter ▪ HEPA filter	
Power outlets	2	4	2	4
Shelves	2	2	2	2
Design	Antimicrobial coated aluminum			
Dimensions	222 x 102 mm	330 x 107 mm	222 x 102 mm	330 x 107 mm
Timer	UV timer	UV timer	UV timer	UV timer
Adjustment 1	5 – 60 minutes in increments of 5 minutes			
Adjustment 2	1 – 12 hours in increments of 15 minutes			
Safety shut off	Automatic switch off of ultraviolet light, when door is opened			
Design	Stainless steel, aluminum and MAKROLON®			
Interior	▪ Uniquely coated stainless steel and aluminum design and easy-clean surface ▪ Durable coating material contains silver ions: a. Providing continuous antimicrobial protection b. Stain and fingerprint resistant c. Listed by Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) as an antimicrobial agent d. Suppresses growth of bacteria, molds and fungi on surfaces			
Interior	Aluminum powder coated			
Door and side panel	MAKROLON® panels block wavelength below 400 nm			
Dimensions	(W x D x H)	(W x D x H)	(W x D x H)	(W x D x H)
Exterior [mm]	544 x 610 x (729)	737 x 610 x (729)	544 x 610 x (826)	737 x 610 x (826)
Interior [mm]	500 x 544	706 x 544	500 x 544	706 x 544
Weight [kg]	40.8 kg	46.7 kg	57.6 kg	63.5 kg

Order information

Order number	Description
849-00001-02	**PCR UV² Cabinet,** 230 V (UK plug)
849-00001-03	**PCR UV² Cabinet,** 230 V (Euro plug)
849-00001-04	**PCR UV² Cabinet,** 115 V (US plug)
849-00001-05	**PCR UV² Cabinet,** 100 V (US plug)
849-00002-02	**PCR UV³ HEPA Cabinet,** 230 V (UK plug)
849-00002-03	**PCR UV³ HEPA Cabinet,** 230 V (Euro plug)
849-00002-04	**PCR UV³ HEPA Cabinet,** 115 V (US plug)
849-00002-05	**PCR UV³ HEPA Cabinet,** 100 V (US plug)

Order number	Description
849-00005-02	**PCR UV² Workstation,** 230 V (UK plug)
849-00005-03	**PCR UV² Workstation,** 230 V (Euro plug)
849-00005-04	**PCR UV² Workstation,** 115 V (US plug)
849-00005-05	**PCR UV² Workstation,** 100 V (US plug)
849-00006-02	**PCR UV³ HEPA Workstation,** 230 V (UK plug)
849-00006-03	**PCR UV³ HEPA Workstation,** 230 V (Euro plug)
849-00006-04	**PCR UV³ HEPA Workstation,** 115 V (US plug)
849-00006-05	**PCR UV³ HEPA Workstation,** 100 V (US plug)

UVLink 1000 Crosslinker | Immobilisation of nucleic acids to membranes

The UVLink 1000 crosslinker is a microprocessor controlled UV irradiation system dedicated to nucleic acid linking to membranes for Southern, Northern, Dot and Slot Blot applications. It can also be used for UV sterilisation and for elimination of PCR contaminations.

- Crosslinking of DNA and RNA to nylon or nitrocellulose membranes
- Microprocessor control provides precise UV dosis control
- Irradiation can be defined as Energy (Joules/cm²) or Time (seconds)
- Preset programs for nucleic acid immobilisation at 120 mJoule/cm²
- Safety interlock door with UV protection glass

Microprocessor control provides reproducibility

The programmable microprocessor constantly monitors the UV light emission. The irradiation stops exactly when the programmed energy is achieved. Thus the effect of decreasing UV intensity due to bulb aging is compensated.

Durability

The UVLink 1000 Crosslinker combines the latest UV technology with high quality manufacturing: UV exposure chamber in stainless steel, protective quartz disk on the UV sensor cell and a highly resistant keypad.

Ease of use

The large display providing a series of predefined methods makes the crosslinker an easy to use but yet powerful instrument for immobilisation of nucleic acids to membranes. The programmed data are shown on the LED display.

Technical data

UV light	5 × 8 W 254 nm
UV irradiation energy	0 up to 99.99 J/cm²
Maximum time of exposure	999.9 min
Instrument dimensions (H x W x D, cm)	22.2 x 40.0 x 34.9
Chamber (inside) dimensions (H x W x D, cm)	12.7 × 25.4 × 30.5

Order information

Order number	Description
849-30101-2	**UVLink 1000 Crosslinker,** 254 nm UV, 230 V
849-30101-4	**UVLink 1000 Crosslinker,** 254 nm UV, 115 V
846-057-007	UV tube, 8 Watt, 254 nm, 29 cm long