
BioDocAnalyze


UVsolo TS
Biometra

GEL DOCUMENTATION

Introduction

A Choice of Systems for Different Needs

The whole range of Biometra gel imaging systems is suited for the documentation of agarose and polyacrylamide gels with fluorescent and visible coloured 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 system "**UVsolo TS**". This extraordinary compact system is designed for fast saving and printing of gels. No separate computer is necessary.

The computer driven systems of the **BioDocAnalyze (BDA) 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.

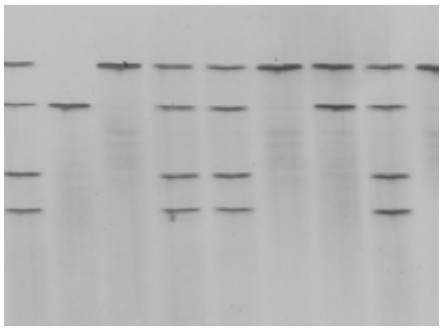
A detailed description of each system is given on the following pages.

System	Type of camera
BDAdigital	Digital single lens reflex camera for colour and black & white images
UVsolo TS, BDA live	Monochrome, scientific grade CCD camera for black & white images

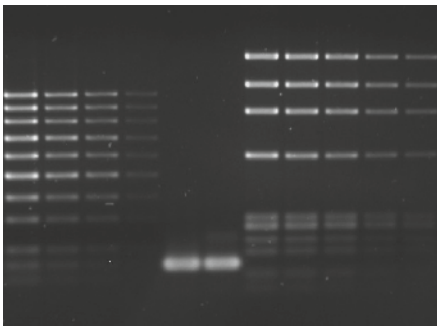
Decision guidance – which is the most appropriate system?

Requirement	Especial recommended system
Primarily saving and printing of images	UVsolo TS
Limited bench space	UVsolo TS, BDAdigital compact, BDA live compact
Coloured images	BDAdigital
Especial light-sensitive system	BDA live, UVsolo TS
Documentation of small gels with maximum zoom	UVsolo TS, BDA live
Documentation and analysis of large gels	BDAdigital
Quantification of samples	BDA live

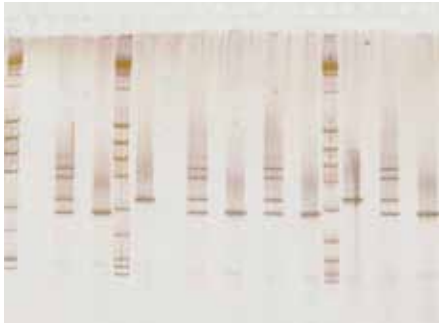
Gel images taken with Biometra gel documentation systems



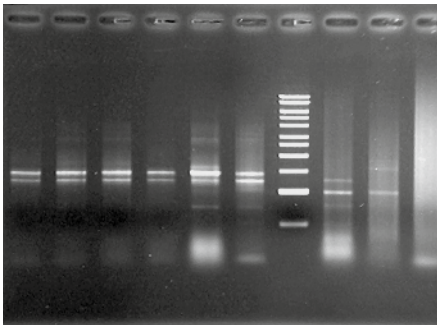
Silver stained polyacrylamide gel (white light, black & white photo)



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



Silver stained polyacryamide gel (white light, colour photo)

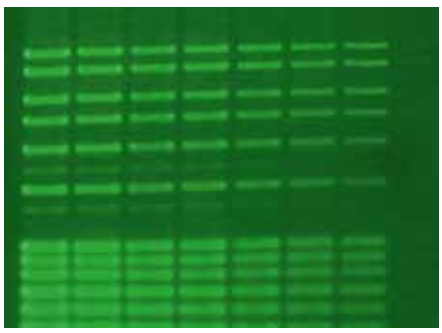


Ethidium bromide stained agarose gel (UV light, black & white photo)

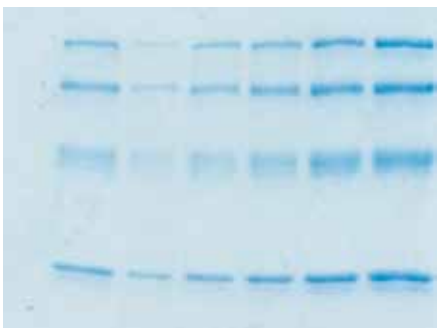
Technical Specifications

	BioDocAnalyze Systems		
	UVsolo TS	**BDAdigital**	**BDA live**
			
System			
Type	Stand-alone	Computer-controlled	Computer-controlled
Camera			
Resolution	1.3 MP	12.2 MP *	1.4 MP
Sensor	monochrome	colour	monochrome
Sensor size	½''	22.2 mm x 14.7 mm	½''
Data depth	8 bit (16 bit file)	8 bit (grey scales) 24 bit (colour)	12 bit
Light-sensitivity	++	+	++
Darkhood			
Filter changer	Filter drawer	4-position filter wheel **	4-position filter wheel **
Illumination			
White light from above	+	with BDA Box	with BDA Box
UV transilluminator	fixed	separate or pull-out **	separate or pull-out **
UV light from above	-	BDA Box 3	BDA Box 3
Software			
Image acquisition software	+	+	+
Gel analysis	optional	+	+ (2 x)
Similarity analysis	optional	optional	optional

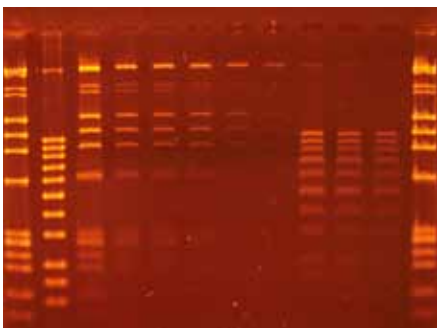
*** Please check homepage for current resolution**
**** Please find details in section "BioDocAnalyze Darkhood"**



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



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



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

UVsolo TS

Stand-Alone Gel Documentation System

UVsolo TS 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**

The system

The UVsolo TS 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 TS. 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 21 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 TS 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. At the end it is only possible to close the door when the override switch is deactivated. This ensures a save operation for subsequent users.

UVsolo TS

Order Information

Documentation of coloured gels

The image acquisition of non-fluorescent gels, e.g. silver or Coomassie Blue stained polyacrylamide gels can be done with the optional available c**onverter plate**. This plate is 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 TS typically is saving and printing of gel images. But it is also possible to analyse gels with the optional gel analysis software BioDocAnalyze (BDA).

It is the same analysis software that is included as a standard in the Biometra computer-controlled systems "BDA". Users of the UVsolo TS install the optional BDA software on a separate personal computer. Gel images in tif or jpg file format can be imported into the BioDocAnalyze 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 „BioDocAnalyze Analysis Software".

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

Item	Order No.
UVsolo TS: 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 (312 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. Dimensions with camera: 78.0 x 36.1 x 33.8 (H x W x D, cm), 230 V 50/60 Hz	033-000
UVsolo TS2: see UVsolo TS, but transilluminator with filter size 21 cm x 26 cm	033-001

Accessories

Bandpass filter for SYBR® Green stains, for UVsolo TS filter drawer	033-012
Bandpass filter for SYBR® Gold stains, for UVsolo TS filter drawer	033-013
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)	031-921
Thermal paper KP65HM, matt, high-contrast, 4 rolls à 20 m	031-985
Thermal paper K95HG, high-glossy, high-contrast, 5 rolls à 18 m	031-987
Converter plate: For application on a transilluminator for documentation of coloured gels, dimensions 0.8 x 30 x 24 (H x B x T, cm)	057-005
UV transparent acrylic tray for preparative tasks on a transilluminator, 31 cm x 36 cm	057-012
UV transparent gel scoop, scoop size 14 cm x 15 cm	057-013
UV bulb 8 W, 312 nm, for UV table	057-002
UV light face protection shield	055-001

Software

BioDocAnalyze (BDA) software: analysis software for gel images in tif, jpg, bmp or Biometra-specific BD1 format	035-004
Similarity Analysis module: Software module for cluster and RFLP analysis as upgrade for BDA software 035-004	035-114

BioDocAnalyze Systems

Computer-Controlled Imaging Systems

BioDocAnalyze (BDA) imaging systems are computer based systems and are designed to provide high functionality with easy-to-use operating interfaces. The quality systems are available as complete "plug-and-play" systems, but can also be ordered as core set plus additional hardware components assorted to individual needs.

Depending on the camera type a specific **image acquisition software** is included to attain optimal results and user comfort. The BioDocAnalyze system with digital single lens reflex camera is referred to as „**BDAdigital**", the system with monochrome CCD camera is named „**BDA live**".

The **BDA gel analysis software** is included in all BDA systems. It is an up-to-date software for fast and versatile analysis of gels and blots.

BDAdigital

BioDocAnalyze with Digital Single Lens Reflex Colour Camera

BDAdigital 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 for „one-click" image acquisition**
- **Powerful BioDocAnalyze gel analysis software**
- **Choice of small darkhood or advanced hood version BDA Box**

The camera is widely software-controlled and provides versatile functions for fast and easy image acquisition. A selection of pre-defined camera settings is available for different gel types and stainings. In addition, individual user profiles can be defined. The gel files can be reliably analysed by self-explanatory BDA software routines (For details please see section "BioDocAnalyze 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.

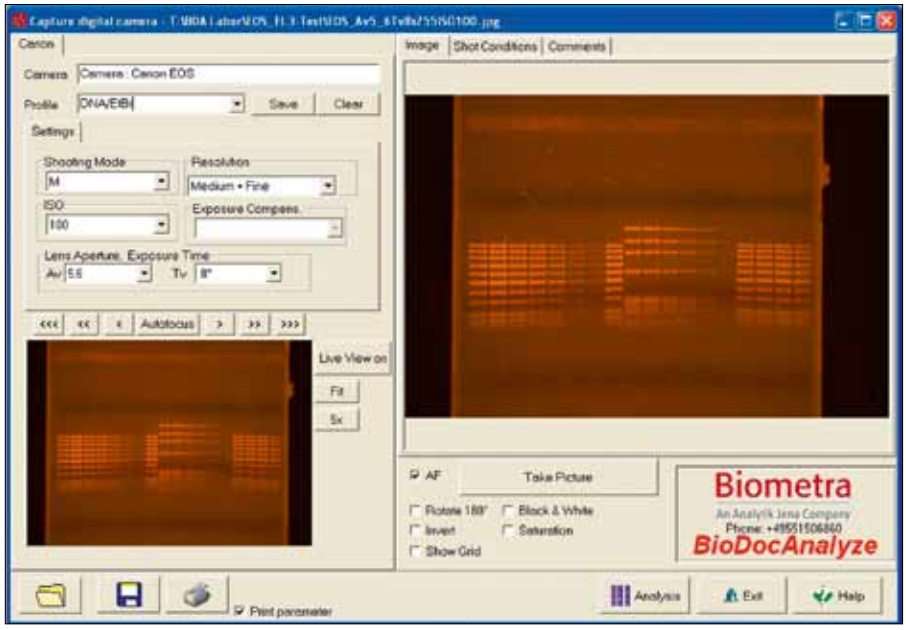


Image acquisition software
for control of

- Acquisition mode (auto, manual)
- Exposure time
- Lens aperture
- Automatic and manual focus
- User definable profiles for camera settings
- Colour and grey scales
- Brightness
- Contrast
- Gamma correction
- Gel rotation
- Live preview
- Inverting
- Saturation monitoring
- Creation of image sections
- Loading and saving files (tif, jpg, Biometra specific BD1)
- Printing

*** Please refer to the Biometra homepage for latest camera resolution.**

Darkhoods

The modular design offers the choice between the cost-effective **BDAdigital compact** with small darkhood or **BDAdigital** systems with the advanced darkhood **BDA Box**.

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

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

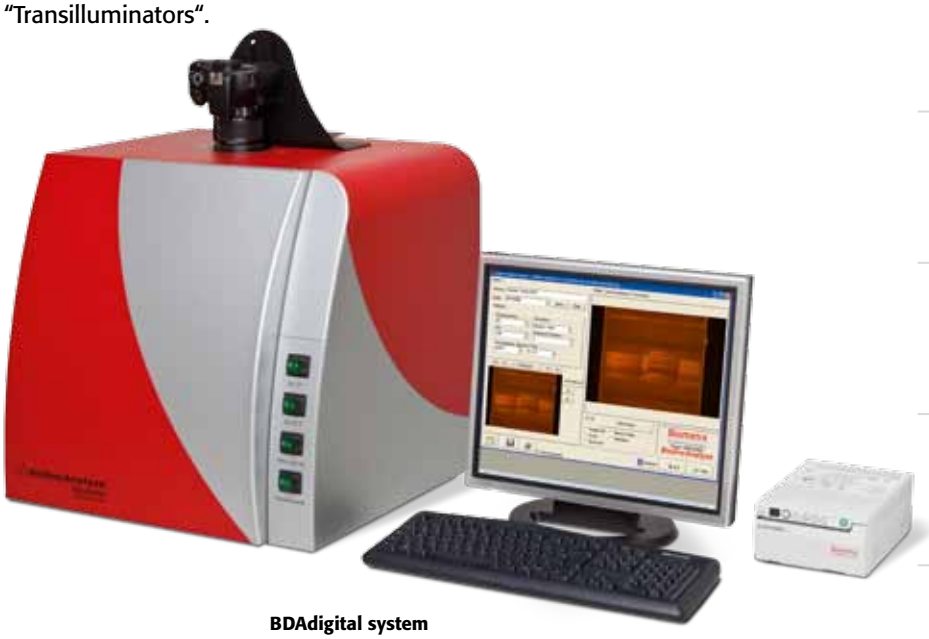
BDAdigital compact and UVstar transilluminator

Transilluminators

BDAdigital systems are equipped with a UV transilluminator out of the wide range of the UVstar line. It is recommend that BDAdigital compact is equipped with a transilluminator version with UV protection lid. Instead of that BDAdigital systems with BDA Box don´t need a UV protection lid mounted at the UV transilluminator as the BDA Box comes its own UV protection shield.

For details please see section "Transilluminators".

Effective anti-theft protection of the camera



BDAdigital system

Features	Benefit
High-resolution images in colour or in grey 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

Ordering Information

see page 133 – 135

BDA live

BioDocAnalyze with Digital Monochrome CCD Camera

- **Light-sensitive scientific-grade CCD camera**
- **High resolution camera of 1.4 MP and high-quality zoom lens**
- **Extended dynamic range of 12 bit for 4096 grey levels**
- **Powerful BioDocAnalyze analysis software (second licence included for free)**

BDA live 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 1.4 megapixel resolution and a data depth of 12 bit making it ideal for precise band detection and accurate sample quantification.
The intuitive image acquisition software allows the creation of high-contrast images in a few steps.

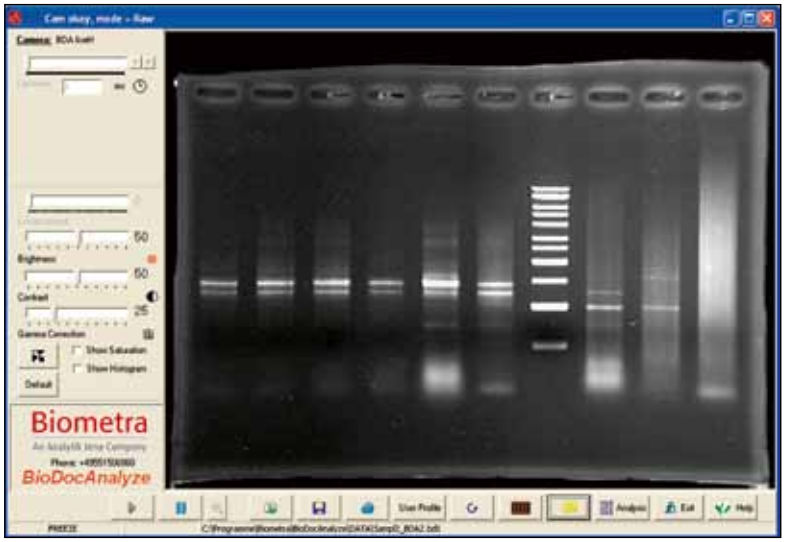


Image acquisition software
for control of

- Exposure time
- Brightness
- Contrast
- Gamma correction
- Signal enhancement
- Gel rotation
- Live view, freeze view
- Inverting
- Saturation monitoring
- Creation of image sections
- Loading and saving files (16 bit tif, 8 bit tif, jpg, bmp, Biometra specific BD1)
- Printing

BDA live is available as complete system including darkhood BDA Box, transilluminator, thermal printer, installed up to date computer and

BDA live system

converter plate or it can be composed of BDA live core set including camera and software plus further required components.

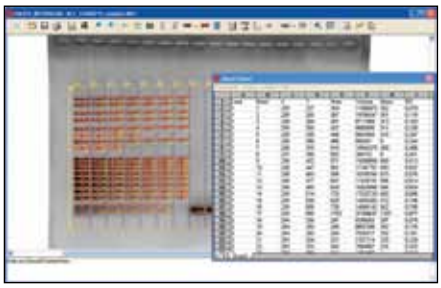
For users who are applying several different fluorescent dyes and want to use only one bandpass filter the "**BDA live Plus**" systems are the right choice. These systems include a bandpass filter with wider transmission pass than the more specific filtering bandpass filters of the "BDA live" systems. Recommended transilluminators for the "BDA live Plus" set are UV tables with strong filter effect: the "UVstar Plus" tables.

An especial space and budget-saving version of BDA live is the "**BDA live compact**" set. The set consists of the core set with camera, bandpass filter, image acquisition and analysis software (2 licences) plus small darkhood "BDA 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 transferred to the BDA analysis module. 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.

BDA live sets and systems include two full licences of the analysis software. Additional licences are available.

For details of software features please see next page.



BDA live compact and UVstar transilluminator

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

For details of BDA Box and the bandpass filters please refer to section "BioDocAnalyze Darkhood".

Details of the transilluminators are found in section "Transilluminators".

Ordering Information

see page 133 – 135

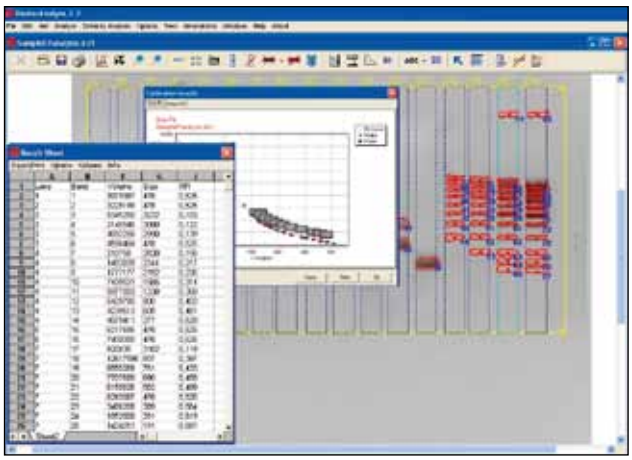
BioDocAnalyze Analysis Software

Gel Analysis in a Few Steps

- **Basic revision of the popular BDA gel analysis software**
- **Optimized software interface for analyses in a few steps**
- **Helpful additional functions**
- **Intuitive to handle gel analysis with accurate results**
- **Included in BDAdigital and BDA live**
- **Optional component for UVsolo TS**

The BioDocAnalyze (BDA) 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 directly transferred from the image acquisition window of BDAdigital or BDA live to the analysis software window. Also files generated with other acquisition sources can be imported.
The user-friendly interface provides for efficient analysis and generates precise band size calculations. All important functions are addressed with dedicated icons. Sample quantifications are done with one mouse-click.



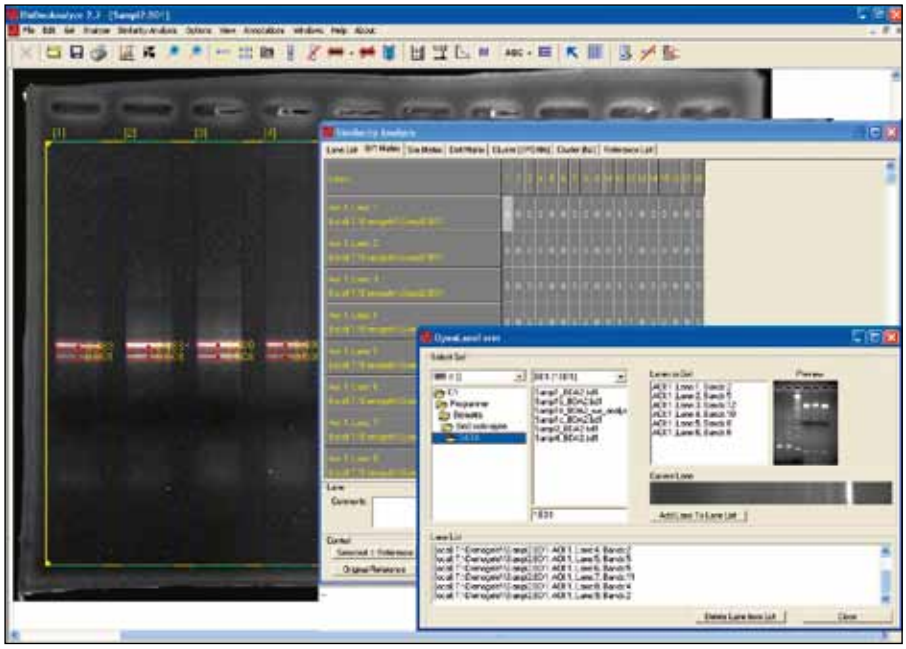
Features

- 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 pseudocolour functions
- Add annotations and arrows to lanes, bands and gel image
- Overlay and merging of gel images
- Simultaneous display of intensity profiles for several lanes

The analysis software convinces with its self-explanatory design and can be easily used without extensive training. Clear icons with displayed short instructions support every analysis step. The automatic search for lanes and bands is directly started after defining the area of interest on the gel image. When necessary the sensitivity for lane and band detection can be optimised by moving the parameter sliders. The new detection results are immediately displayed on the gel image. Detected bands are not only marked with a bar but are clearly visible surrounded in their edges. This unique BDA software feature provides a fast visible confirmation for correct detection. Alternatively to the automatic band detection individual manual band detection is possible. Band sizes or masses are automatically calculated when marker values are entered. All results can be displayed both on the gel image and in a table.

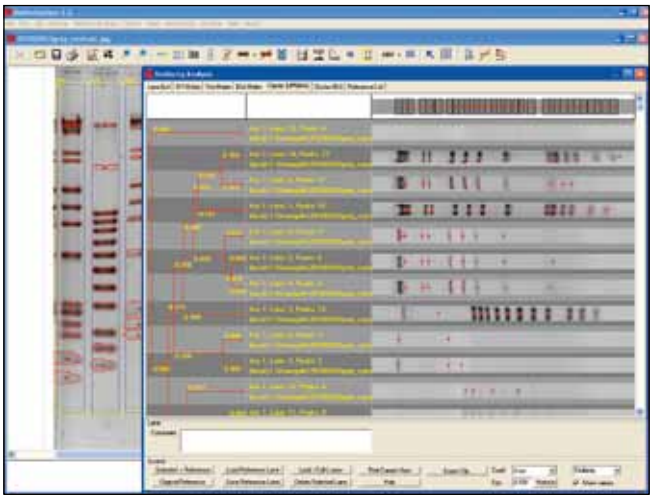
The table can be saved in Excel format. For illustration purposes comments and arrows can be added to the gel image. The legend list provides the choice of parameters to be displayed or printed. The analysed gel images are saved in the Biometra file format *.BD1 ensuring that the applied detection parameters are saved together with the gel image. For export of the gel image to other software it can be directly transferred by clipboard or can be saved as TIF, JPG or BMP file.

The „merging" function is particular helpful for the analysis of imported chemiluminescence blots: Different images or also frames and images can be overlayed, moved and merged. This allows for example the introduction of a marker taken with white light from above with the image of a chemiluminescence blot.



Similarity Analysis – upgrade module

The BioDocAnalyze software can be upgraded with the Similarity Analysis Module for comparison of fragment patterns. This module provides a striking and fast insight into the similarity of lanes. It can be used for cluster and RFLP analysis. The effect of coefficients, distinction sensitivity and the impact of individual lanes or bands to the similarity ranking can be monitored by one mouse-click.



Features

- Similarity Analysis according to RF or molecular weight of bands
- Cluster analysis (UPGMA, Neighbour Joining)
- Similarity and distance matrix
- 0/1 matrix
- Reference lanes, lane list
- Correlation coefficients Pearson, Dice, Jaccard, Cosine, Overlap
- Export and printing of tables and dendrograms

BioDocAnalyze Darkhood

BDA Box – The Ultimate Darkhood

- **Dedicated to imaging of fluorescent and coloured gels and blots**
- **Premium user convenience**
- **Integrated UV protection**
- **4 different configurations**

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

Design

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 coloured 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:

	Darkhood version			
Feature	**BDA Box 1** Cost-saving version	**BDA Box 2** Standard version	**BDA Box 3** Advanced version	**BDA Box 2BL** for blue light LED table BLstar
Epi-white light	+	+	+	+
UV protection shield	+	+	+	- *
Mounting of UV band-pass filter	Directly screwed to camera lens	4-position filter wheel	4-position filter wheel	4-position filter wheel
Transilluminator	Fixed	-	-	Pull-out, with adapter for BLstar
Epi-UV light	-	-	+	-

*** Shield should be upgraded when a UV table is used in parallel to the blue light table.**

The BDA Box comes with an ingenious "all-in-one" camera mounting to be compatible with all supplied BioDoc-Analyze 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.

Transilluminators

UV transilluminators

The BDA Box can be equipped with one of the different UV table versions of **UVstar**. Important characteristics of UVstar are the excellent illumination uniformity and the very low background signal.

For documentation of gels with colourimetric 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 the converter plate is given in section "Transilluminators".

There is the choice between:

Filter size:	20 cm x 20 cm 23 cm x 30 cm
UV wavelength:	254 nm 312 nm 365 nm 254/312 nm 312/365 nm
Mode of intensity setting:	50 or 100 % dual switch 10 to 100 % with 10% increment regulator
Filter glass specification:	High-grade filter Super Brilliant high-grade filter

Blue light LED transilluminators

Alternatively to a UV transilluminator a blue light table with LED illumination 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.

Filter size:	BLstar 9: 9 cm x 12.5 cm BLstar 16: 16 cm x 20 cm
LED wavelength:	470 nm
Intensity setting:	BLstar 9: no intensity switch, only 100 % BLstar 16: 50 % or 100 % dual switch
Filter:	Lid with amber filter for visualisation of fluorescent signals

For details of the blue light transilluminators please see section „Transilluminators".

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.

BDA Box 3 is available with epi-UV of 254 nm and 365 nm. Alternative 312 nm UV is supplied on request.

Overhead white light in BDA Box1 and BDA Box 2

Overhead white light and overhead UV light in BDA Box 3

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	BDA Box
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	BDA Box 1
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	BDA Box 2, BDA Box 2BL*, BDA Box 3

*** There is no need for a bandpass filter when using a blue light table. Nevertheless BDA Box 2BL comes with filter wheel to make a parallel use of a UV table easy.**

Filter wheel

Slider for easy inserting of new filters

Bandpass Filters for BioDocAnalyze Systems

High-Grade Filters for Different Dyes

For the documentation of UV fluorescent images a bandpass 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. This filter is supplied as standard in BDA systems.
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 a bandpass 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. Biometra offers such a bandpass filter with wide bandpass: filter BP590/200. It can be used together with a Biometra standard transilluminator UVstar as this comes with a high-grade filter for low background signal. To achieve an even more high-contrast image with the wide bandpass filter it is recommended to choose the Super Brilliant version of UVstar, one of the "UVstar Plus" transilluminators.

Chart of performance for the most commonly used fluorescent dye ethidium bromide

Bandpass filter		UV transilluminator	Performance (low background, bright sample signal)	Filter Order No.
BP590		UVstar Plus	+++	034-011
		UVstar	++	
BP590/200		UVstar Plus	++	034-015 resp. 034-016*
		UVstar	+	

Standard delivery in BDA systems: bandpass filter BP590 and transilluminator UVstar.

* For details please see "BioDocAnalyze Systems, Order Information".

UV fluorescent dye examples and compatible bandpass filters

Filter Transmission range	Compatible dye	Emission maximum	Filter Order No.
BP590, 565 – 615 nm Included in BDA systems	**For nucleic acids:**		034-011
	Ethidium bromide	595 nm	
	GelRed™	605 nm	
	For proteins:		
	Oriole™	604 nm	
	SYPRO® Orange	570 nm	
	SYPRO® Ruby	610 nm	
BP540/80, 500 – 580 nm Order separately	**For nucleic acids:**		034-012
	GelGreen™	525 nm	
	GelStar®	527 nm (RNA: 532 nm)	
	SYBR® Gold	537 nm	
	SYBR® Green I	521 nm	
	SYBR® Green II (for RNA)	521 nm	
	SYBR® Safe	530 nm	
BP590/200, 490 – 690 nm Included in BDA live Plus systems or order separately	**For nucleic acids and proteins:**		034-015 resp. 034-016 *
	All dyes compatible with filter 034-011 and 034-012, see above, and additionally:		
	For proteins:		
	SYPRO® Red	630 nm	
	For proteins, on Western Blots:		
	WesternDot™ 625 with Qdot® nanocrystals	625 nm	

* Application of bandpass filter BP590/200:

With BDA Box 2/3, in filter wheel:	Insert 034-016 (= filter 034-015 + adapter ring + sealing ring) directly in the filter wheel.
With BDA Box 1, small hood BDA Hood or with stand	With BDA live: Screw filter 034-015 directly to the camera zoom lens.
	With BDAdigital: Screw filter 034-015 with adapter ring 034-019 (58 – 55 mm) to the lens.

BioDocAnalyze Systems

Order Information

Item	Order No.
BDAdigital	
BDAdigital core set: Digital SLR camera[a] with USB2.0 interface, camera power supply, bandpass filter with transmission max. of 590 nm for e.g. ethidium bromide stains, BDA software for image acquisition and gel analysis	034-000
BDAdigital compact: BDAdigital core set, small darkhood BDA Hood	034-050
BDAdigital system 20: BDAdigital core set, BDA Box 2, transilluminator UVstar 20 (20 cm x 20 cm filter size), PC, TFT, thermal printer, UV converter plate	034-302 034-312 [b]
BDAdigital system 30: dto., but with transilluminator UVstar 30 (23 cm x 30 cm filter size)	034-303 034-313 [b]
BDA live	
BDA live core set: Digital monochrome ½'' CCD camera with FireWire interface, resolution 1384 x 1032 pixels, manual zoom lens 8 – 48 mm (F1.0 – F1.2), FireWire PCI express card, bandpass filter with transmission max. of 590 nm for e.g. ethidium bromide, BioDocAnalyze software for image acquisition and gel analysis (2 licenses)[e]	032-001
BDA live compact: BDA live core set, small darkhood BDA Hood	032-050
BDA live system 20: BDA live core set, BDA Box 2, transilluminator UVstar 20 (20 cm x 20 cm filter size), PC, TFT, thermal printer, UV converter plate	032-302 032-312 [b]
BDA live system 30: dto., but with transilluminator UVstar 30 (23 cm x 30 cm filter size)	032-303 032-313 [b]
BDA live Plus core set: Digital monochrome ½'' CCD camera with FireWire interface, resolution 1384 x 1032 pixels, manual zoom lens 8 – 48 mm (F1 – F1.2), FireWire PCI express card, bandpass filter BP 590/200 with wide bandpass, BioDocAnalyze software for image acquisition and gel analysis (2 licenses)	032-002
BDA live Plus system 20: BDA live Plus core set, BDA Box 2, transilluminator UVstar 20 Plus (20 cm x 20 cm filter size), PC, TFT, thermal printer, UV converter plate	032-304 032-314 [b]
BDA live Plus system 30: dto., but with transilluminator UVstar 30 Plus (23 cm x 30 cm filter size)	032-305 032-315 [b]
Stand and darkhoods (transilluminator not included)	
Stand: Height adjustable	031-908
BDA Box 1: Darkhood (52 cm x 54 cm x 51 cm, H x W x D), overhead white light, UV protection shield, for integration of a transilluminator with max. footprint of 42.5 cm x 43.0 cm (W x D), e.g. UVstar	034-801 [c] 032-801 [d]
BDA Box 2: 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 UVstar models below)	034-802 [c] 032-802 [d]
BDA Box 3: dto., plus overhead UV light (245 nm, 365 nm)	034-803 [c] 032-803 [d]
BDA Box 2BL: Darkhood (52 cm x 54 cm x 51 cm, H x W x D), overhead white light, 4-position filter wheel, drawer with adapter for blue light transilluminator BLstar	034-805 [c] 032-805 [d]

[a] **Please check our homepage www.biometra.com for the current camera resolution.**
[b] **PC with operating system in English language (system without annotation: PC with operating system in German language)**
[c] **including anti-theft adapter for BDAdigital camera**
[d] **including adapter for BDA live camera**
[e] **Without BDA Box 2/3 please order adapter ring 035-027 additionally for mounting the bandpass filter directly at the camera lens.**

BioDocAnalyze Systems

Order Information

Item	Order No.
UV-Transilluminators for BDA Box	
For separate transilluminators (with UV protection shield) and further information please refer to the order information in chapter "Transilluminators".	
UVstar 20: filter size 20 cm x 20 cm, 8 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-503
UVstar 20i: dto., but with 10 – 100 % intensity setting	057-513
UVstar 30: filter size 23 cm x 30 cm, 12 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-603
UVstar 30i: dto., but with 10 – 100 % intensity setting	057-613
UV-Transilluminators for BDA Box, with Super Brilliant filter	
UVstar 20 Plus: filter size 20 cm x 20 cm, 8 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-523
UVstar 20i Plus: dto., but with 10 – 100 % intensity setting	057-533
UVstar 30 Plus: filter size 23 cm x 30 cm, 12 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-623
UVstar 30i Plus: dto., but with 10 – 100 % intensity setting	057-633
UV-Transilluminators with 2 wavelengths, for BDA Box	
UVstar 20HM: filter size 20 cm x 20 cm, 4 x 8 W UV bulbs (254 nm) and 4 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-543
UVstar 30HM: filter size 23 cm x 30 cm, 6 x 8 W UV bulbs (254 nm) and 6 x 8 W UV bulbs (312 nm), 50 or 100 % intensity switch	057-643
UVstar 20ML: filter size 20 cm x 20 cm, 4 x 8 W UV bulbs (312 nm) and 4 x 8 W UV bulbs (365 nm), 50 or 100 % intensity switch	057-553
UVstar 30ML: filter size 23 cm x 30 cm, 6 x 8 W UV bulbs (312 nm) and 6 x 8 W UV bulbs (365 nm), 50 or 100 % intensity switch	057-653
Blue light transilluminators, for BDA Box 2BL	
BLstar 9: viewing area 9 cm x 12.5 cm, 2 arrays of 470 nm LEDs, lid with amber filter, power supply	057-370
BLstar 16: viewing area 16 cm x 20 cm, 2 arrays of 470 nm LEDs, 50 or 100 % intensity switch, lid with amber filter, power supply	057-570
Accessories	
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)	031-921
Thermal printer paper KP65HM, high contrast, 4 rolls à 20 m	031-985
Thermal printer paper KP91HG, high glossy, 4 rolls à 18 m	031-986
Thermal printer paper K95HG, high glossy, high contrast, 5 rolls à 18 m, only compatible with printer P95DE!	031-987
UV converter plate, for application on a transilluminator for documentation of colour stains (0.8 x 30 x 24, H x W x D, cm)	057-005
UV transparent acrylic tray for preparative tasks on a transilluminator, 31 cm x 36 cm	057-012
UV transparent gel scoop, scoop area 14 cm x 15 cm	057-013

Item	Order No.
BP590, bandpass filter for ethidium bromide stains (already included in all BDA systems), 58 mm Ø	034-011
BP540/80 bandpass filter with transmission range of 500 to 580 nm, e.g. for SYBR® Green stains, 58 mm Ø	034-012
BP590/200 bandpass filter with wide bandpass, transmission range of 490 – 690 nm for different dyes, e.g. ethidium bromide and SYBR® Green, 55 mm Ø	034-015
dto., but plus adapter ring for filter wheel of BDA Box 2/3	034-016
Adapter ring 55 – 58 mm for bandpass filter BP590/200 (034-015) mounting to lens adapter of BDAdigital (without use of BDA Box 2/3)	035-027
Adapter ring 55 – 58 mm for bandpass filter 034-011 and 034-012 mounting to BDAvideo and BDA live camera lens (without use of BDA Box 2/3)	034-019

Computer

Personal computer for BDAdigital, Windows 7 Professional, completely installed	034-916 034-917 [b]
Personal computer for BDA live, Windows 7 Professional, completely installed	032-916 032-917 [b]
19 inch TFT screen	035-923

[b] **PC with operating system in English language (without annotation: PC with operating system in German language)**

Software

BioDocAnalyze (BDA) software (already included in BDAdigital, BDA live): Analysis software for gel images in tif, jpg, bmp or Biometra specific BD1 format	035-004
Additional license for BioDocAnalyze gel analysis software 035-004	035-905
Additional license for BioDocAnalyze gel analysis software 035-004, minimum order quantity 3 pieces	035-907
Similarity Analysis module: Software module for cluster and RFLP analysis as upgrade for BDA software 035-004	035-114