Gel Documentation Analysis
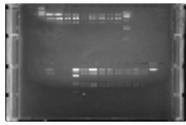
Highly Sensitive Automated Imaging Systems

BioZen Labs | ZENITH
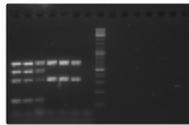
Gel.ProCCD ... superb 16-bit sensitivity

An easy-to-use, versatile Gel documentation + Analysis system with automated software for 1D electrophoresis nucleic acid and protein gel images and Western Blot analysis. Get rapid, accurate, reproducible results from your 1D gels...
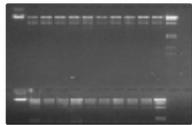
EtBr   EtBr   SyBr Safe

Sharp zoom lens coupled to a zero defect, 16-bit Sony scientific grade CCD camera; the Gel.ProCCD gel documentation system, is a high quality, yet low cost professional gel and bio-imaging system. Options from agarose, PAGE, western blots, dot blots, nucleic acid, colorimetric to fluorescent & chemifluorescent imaging, Colonies, TLC & ELISA Plates, Petri Dish etc. and upgradeable to chemiluminescence.

Featuring high resolution extremely sensitive scientific grade CCD camera (with choice of 1.4, 5.6, 6.3 and 9 megapixel cameras) with extremely low noise and dynamic flat field calibration coupled to a C-mount motorized zoom lens (with option for numerical feedback value) that is pre-focussed for different zooms or sample setting, mounted inside an enclosure that covers and protects the camera and lens. The camera, lens & cabinet connects to & can be controlled from the PC using live-view acquisition capture software.

Choice of illumination options with UV trans/epi lighting, wavelength-specific LEDs and more, add to the versatility of the system. UV roll-out transilluminator can be provided in dual 302-312nm (detection range down to 0.1 ng with EtBr, SYBR etc. & 10 pg with Vistra Green) and 365nm (additionally 254nm, for triple wavelength configuration), and even Red, Green, Blue LEDs ranges. Large filter size of transilluminator for gel images up to 21x26cm, with extra large special filter size of up to 26x26cm also is available. Colorimetric samples up to 38x30cm can be captured. Epi-white light illumination from above is standard using two LED tubes, with an option for low (50%) & high (100%) intensity control. Optionally, ultraviolet epi-illumination in a variety of wavelengths (254/312/365nm) can also be provided. Standard Trans White light and Trans Blue light tables upto 25x25 cm are also available with options for sizes up to 30 x 37 cm.

The mild & stainless steel, epoxy coated microprocessor controlled dark room cabinet has features for UV irradiation safety switch that switches off the UV lights as soon as the door is opened. Additionally, a timer is provided that switches off UV in case the user forgets to shut it off. Option to adjust timer for excision. Also, the user can opt for automatic switching on of the Dual Epi-White LEDs on opening of door and for automatic controls of UV light and exposure. A transilluminator cooling system is also provided to prevent overheating of gels. Option for a front viewing window (with amber filter) & 2 side access doors for gel observation and cutting. Gel platform temperature control (<34 C) & alignment templates also available.

FEATURES

Scientific Sony CCD imaging sensor
16-Bit 1.4, 5.6 and 9 MPl cameras
>4.0 orders of magnitude, 68 dB
Superior signal-to-noise with Peak
Quantum Efficiency > 72% at 460nm
Anti-reflective, microlens sensor
Zoom lens, manual/motorized
Exposure 0.01s to 60s (also automatic)
Live view at 15-20 fps (1360x1024)
RGB LEDs & WL/BL convertor screens
UV Filter for camera & lens

OPTIONS

Chemifluorescence upgradation
Chemiluminescence upgradation
2D Gel Proteomics Analysis Software
Stain-free system (with 30 sec, 2.5 min, 5 min and user-defined UV-on timer)
8.5-51 mm & 12.5-75 mm, 6x Motorized
Zoom Lens; or 8 mm/ 17 mm/ 25 mm/ 50 mm fixed lens available as options.
Close up Diopter lens also available.
Option for Extreme low light F/0.95 or F/1.0 lens also available.
26x32 cm UV filter size also available.

ADVANTAGES

Easy to use, safe dark-room
Low cost, yet high quality images
Control camera from PC
Focus, clicking, exposure from PC
Camera mounted conveniently
Easy access to transilluminator
Small foot print requires less space

APPLICATION FILTERS

Orange 590: Ethidium Bromide (EtBr), SYPRO Ruby, ProQ Diamond, Deep Purple, GelRed etc
Green 520: SYBR Green I, Green II, SYBR Gold, GFP, eGFP, Fluorescein, FITC, GelStar, AF488, Cy2, GelGreen..
Orange 560: SYBR Safe, Rhodamine, Cy3, SYPRO Orange, etc
Red Amber 630: SYPRO Red, Texas Red etc
Blue 480: Hoechst, Coumarin, etc
Clear: Coomassie Blue, Silver Stain etc
Alternatively, one Broad Range emission filter to cover Orange, Red, Amber, Green, Blue and White stains.

CE   ✓ISO 9001:2008

Gel Analysis Software

Camera and Lens Control with Gel Image Capture Acquisition Software

Gel image acquisition and control software has full function control panel which allows user to adjust camera, lens settings like exposure time settings, motorized zoom, focus and aperture (iris). Histogram display on the screen shows image saturation and indicates over-saturation/exposure. Options for manual exposure, auto exposure and exposure for intense & faint bands are available. An in-built guide helps the user to understand the excitation and emmision spectrum of widely used stains with suggested filters for different applications. Application protocols can be further edited/created and saved with specific controls for light source, camera settings, exposures, aperture etc. The user can opt to choose the manual mode or automatic mode of light source, focus, exposure & aperture. Also, analysis &report generation protocols can be created and saved for specific protocols & stains.

Workflows to suit your analysis requirements

Gel analysis is rapid, automated to a high level and 100% reproducible and repeatable using application specific/user-defined protocols. The user has the ability to review each stage of the workflow analysis and intervene / edit if required. Combining high levels of automation with final user review allows rapid and accurate quantitative analysis. The user then has full control of the visualization tools and data display - outputting only those data fields that are of importance as well as the images of choice. Thus results are completely reproducible and repeatable.

Fast Accurate Quantitation and Reporting

Advanced colorimetery & densitometry software for 1D gels, Multiplex images and RFLP analysis, highly developed algorithms accurately detect lanes and bands even on distorted gel images. Results can be verified using the range of visualisation tools which aid further examination of lane and band data. Calibrate the bands using one or more Molecular Size standard lanes and derive accurate quantitation from known band volumes. Analysis and data can be exported as Excel files and pdf files. Image files can be saved and exported in jpg, png, tiff and bmp formats. Also provided is a 3D viewer for viewing bands in 3D. Options available for upgradation of tools compliant with US FDA 21 CFR Part 11 regulations.

Colony Counting, 2D Densitometry, Array & Dot Blot Analysis, General Image Analysis Toolbox - Optional Modules.

Define circular or rectangular area of interest. Easy control slider bars for sensitivity and operator size. Initialise sensitivity option. Advanced parameter settings for sensitivity, noise, operator size and background. Automatic Splitting function. Total count and spot data automatically displayed. Wide range of data fields to display in measurements table. Edit, draw, erase, delete or split features. Adjustable pen size for drawing or erasing. Renumber features.

GENERAL

- Fully automatic, single button press image acquisition as final resultant image
- Fully automatic, single button press complete image analysis within area of interest
- Edit and enhance image for improving analysis or create multiplex images
- Brightness, contrast, annotate, illustrate images
- Instant access to refinement of analysis step
- Alternative step-wise image analysis
- Facility to load and save user preferences, including parameters and display options, prior to analysis
- Automatic PDF report generator
- Ruler options to display lane names, numbers and Mws
- Rf and IEF propagation distance calculation
- Single button press export option for publication ready images.
- Print image as per user's choice of dpi

BACKGROUND SUBTRACTION

- Automatic methods:
- Rolling ball, Rubber band, Minimum profile,
- Valley to valley, Lane edge subtract
- Manual methods

BAND DETECTION

- Fully automatic multiple band detection
- Adjustable peak parameters:
- Minimum peak
- Noise reduction
- % max peak of lane or gel
- Band separation detection methods:
- Automatic separation from background
- Single Edge
- Fixed width
- Volume and Intensity of bands displayed
- Manual editing of peak and edge detection in image and lane profile windows
- Snap to peak editing
- Automatic band measurements
- View band measurements in measurements table
- Wide range of data fields to display in measurements table
- Histograms for viewing band data
- View multiple lane profiles stacked/overlaid
- Export lane profile information
- Edit Band Name and display on Image
- Automatic Dendrogram creation
- New noise reduction option for band detection removes dust from image
- Median filter

LANE CREATION

- Automatic multiple lane detection
- Export and import of lane templates
- Manual lane detection
- Multi-tier analysis
- Move, resize and bend multi-box
- Move, resize, bend individual lanes
- Add grimaces to account for band distortion
- Delete lanes

PROFILE DECONVOLUTION

- Fit Gaussian curves to profile
- One Gaussian per band
- Manual adjustments of Gaussian
- FWHM (Full Width Half Max) measurement of bands

MOLECULAR WEIGHT/ Rf CALIBRATION

- Calibrate, detect and calculate Molecular Weights of 1D gels
- Library of standards, Add and Edit existing
- Automatic assignment of standard bands
- Propagation by Rf between standards
- 6 curve fitting methods
- Molecular Weights automatically displayed
- pI standards can increased or decreased
- Volume and Intensity displayed
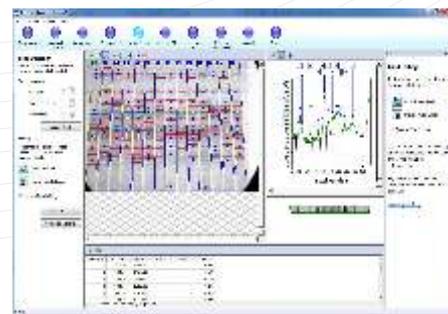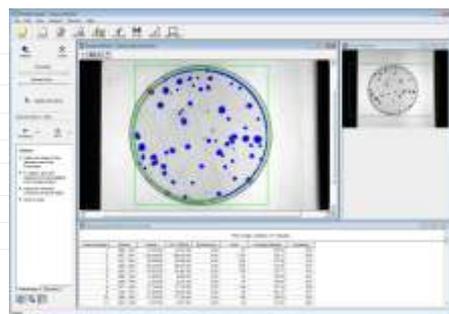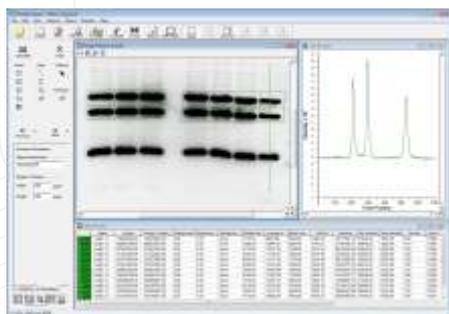
Specifications

	Gel.ProCCD116	Gel.ProCCD516	Gel.ProCCD616	Gel.ProCCD916
CAMERA				
Megapixels (Resolution)	1.4 MP (1390x1040)	5.6 MP (2780x2080)	6.3 MP (3096x2080)	9 MP (3475x2600)
Extendable Image Resolution	4.6 MP	8.6 MP	9.5 MP	12.2 MP
Pixel Size	4.6x4.6 µm	6.5x6.5 µm	6.8x6.8 µm	9.2x9.2 µm
Bit Depth	16-bit Gray	16-bit Gray	16-bit Gray	16-bit Gray
Grayscale Levels	65536	65536	65536	65536
Cooling	Ambient	Ambient/Peltier Cooled	Fan Cooled/Peltier Cooled	Fan Cooled/Peltier Cooled
Dynamic Range	>4.0, 68 dB	>4.0, 68 dB	> 4.0, 68 dB	>4.8, 68 dB
Exposure Time (seconds)	0.01 sec to Unlimited (or Auto)	0.1 - 60 seconds (or Auto)	0.244 - 1000 seconds	0.01 sec to Unlimited (or Auto)
LENS				
Optical Zoom	8-48mm, 6x, Motorized	8-48mm, 6x, Motorized	8-48mm, 6x, Motorized	8-48mm, 6x, Motorized
Aperture	F1.2	F1.2	F1.2	F1.2
Operation	Motorized	Motorized	Motorized	Motorized
Filter Holder	Triple, 4 or 7 filter wheel	Triple, 4 or 7 filter wheel	Triple, 4 or 7 filter wheel	Triple, 4 or 7 filter wheel
Filters	Red/Green/Orange/Blue/etc	Red/Green/Orange/Blue/etc	Red/Green/Orange/Blue/etc	Red/Green/Orange/Blue/etc
ILLUMINATION				
UV Transillumination Size	21x26cm or 26x26cm (optional)	21x26cm or 26x26cm (optional)	21x26cm or 26x26cm (optional)	21x26cm or 26x26cm (optional)
Epi-illumination Image Size	38x30cm	38x30cm	38x30cm	38x30cm
UV Transilluminator	Sliding pullout drawer	Sliding pullout drawer	Sliding pullout drawer	Sliding pullout drawer
UV Transilluminator Standard	302-312nm	302-312nm	302-312nm	302-312nm
UV Transilluminator Optional	254nm / 365nm / Dual / Triple	254nm / 365nm / Dual / Triple	254nm / 365nm / Dual / Triple	254nm / 365nm / Dual / Triple
Overhead Epi-White	Yes	Yes	Yes	Yes
Overhead Epi-UV	Optional	Optional	Optional	Optional
Red/Green/Blue Epi-LEDs,	Optional	Optional	Optional	Optional
White/Blue Trans light table	Optional	Optional	Optional	Optional
CABINET				
Touch Screen	Optional	Optional	Optional	Optional
Darkroom Cabinet	Yes	Yes	Yes	Yes
UV Safety Interlock Switch	Yes	Yes	Yes	Yes
Timer for UV light	Yes	Yes	Yes	Yes
Connectivity	USB 3.0	USB 3.0	USB 3.0	USB 3.0
SOFTWARE + COMPUTER				
Gel Acquisition Software	Yes	Yes	Yes	Yes
1D Gel Analysis Software	Yes	Yes	Yes	Yes
Colony & Array Analysis	Optional	Optional	Optional	Yes
2D Gel Analysis Software	Optional	Optional	Optional	Optional
Image Database Software	Yes	Yes	Yes	Yes
Computer	Windows + Intel	Windows + Intel	Windows + Intel	Windows + Intel
MISCELLANEOUS				
Voltage	110/220VAC, 50/60 Hz	110/220VAC, 50/60 Hz	110/220VAC, 50/60 Hz	110/220VAC, 50/60 Hz
Size	55 x 50 x 70 cm	55 x 50 x 71 cm	55 x 50 x 71 cm	55 x 50 x 71 cm
Weight	25 kg	26 kg	26 kg	26 kg
Operating Conditions	5C-45C, <75% Humidity	5C-45C, <75% Humidity	5C-45C, <75% Humidity	5C-45C, <75% Humidity

Installations of Gel Docs Across India

Indian Institute of Technology
Guwahati | Assam

CromDx Molecular Diagnostics Pvt Ltd
Noida | NCR Delhi

Indian Institute of Science Education & Research
Thiruvananthapuram | Kerala

HLA Lab, Max Super Speciality Hospital
Saket | Delhi

ZENITH
BioZen Labs
www.BioZen.co.in

ZENITH ENGINEERS
No. 4/5 Ram Babu Verma Marg
Near Pareek Hospital, Civil Lines,
Agra - 282002, India.

Em info@BioZen.co.in
Tl (+91-562) 406 4593
Fx (+91-562) 285 2141
Mb (+91) 96346 40888

CE

ISO
9001:2008

Reseller