

# BioSpectrum<sup>®</sup>

## Advanced Imaging Systems

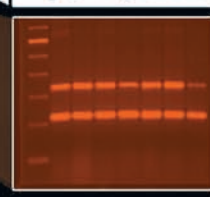
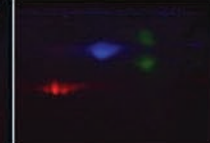
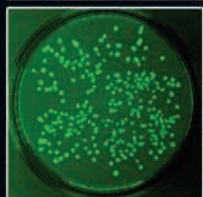
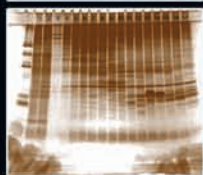
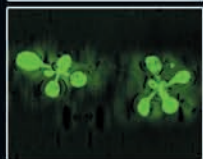
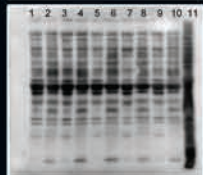
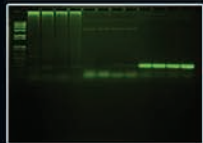
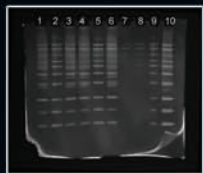
One Powerful System for Multiple Applications!

Chemiluminescence

Bioluminescence

Fluorescence

Colorimetric

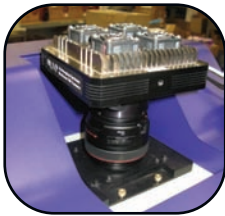


 UVP

Anything You Can Imagine, UVP Can Image!

# BioSpectrum<sup>®</sup> Imaging System

Advanced and automated high resolution system for chemiluminescent, bioluminescent, fluorescent and colorimetric imaging



## Scientific Grade Cameras

are housed in the top of the darkroom. Select from five CCD cameras noted for their high resolution and sensitivity. Cameras are upgradeable.



## VisionWorksLS Software

offers comprehensive image capture, enhancement and analysis capabilities. The software controls the system operations.



## Motorized Platform

adjusts to any location in a ten inch travel range. When adjusting the platform level for experiments, the software continuously tracks the position. Manual lift available.



## Light Tight Darkroom

creates optimum conditions for imaging gels and blots. The wide access door allows easy entry to the darkroom interior.



## LED White Light Illuminator

emits high uniformity with <5% coefficient of variance (CV). Store the tray in the darkroom side pocket when not in use.



## Chemi Tray

creates a dark background for bioluminescent or chemiluminescent samples such as Western blots.



## Viewing Window

is UV blocking and allows visibility of fluorescent gels without opening the door.



## Epi Illumination Sources

include integrated 365nm UV, 460-470nm and white light that are easily controlled by the software.



## UV Transilluminator

sits on the roll-out tray; select from 1UV, 2UV, 3UV Benchtop models or FirstLight uniform UV illuminator.



## Access Ports

for connecting to the external motorized BioLite (optional) multispectral light source ranging from visible to near IR



## Motorized Lenses

are available in several fixed focal length and zoom types with fast image acquisition, high image quality and field of view capabilities.



## Motorized Filter Wheel

with five positions is supplied with three filters (EtBr, SYBR Green, SYBR Gold) to cover a wide range of imaging applications. Standard and custom filters are available.



## Light Tight Access Panel

on the back of the darkroom allows access for connecting additional equipment within the darkroom



## Emission Filters

are easily installed. The interchangeable filter design allows additional filters to be added as required.

# BioSpectrum<sup>®</sup> Imaging System

UVP Advanced Imaging Systems are designed with superior camera technology to meet the growing needs of Life Science imaging applications

MegaCam 800 Camera	OptiCam 600 Camera	BioChemi 500 Camera	ChemiCam 410 Camera	GelCam 310 Camera
8.3 megapixel resolution scientific grade CCD, regulated cooling technology to capture the finest details in 2D gels to achieve accurate analysis of all spots	3.2 megapixel resolution scientific grade CCD with true 16-bit and deeply cooled for extended exposure times for Northern/Southern blot chemiluminescent imaging	4.2 megapixel resolution scientific grade CCD with regulated cooling and low noise enable fast, accurate and sensitive for Western blot chemiluminescent imaging	2.0 megapixel resolution scientific grade CCD with regulated cooling and low noise for common, multi-purpose imaging of most chemiluminescent and fluorescent samples	2.0 megapixel resolution scientific grade CCD provides the highest resolution camera today for general purpose fluorescent and colorimetric samples

Scientific Grade CCD Camera is mounted in the darkroom, easily accessible and protected by the camera cover

**BioSpectrum Darkroom** is fully automated with all functions controlled via the VisionWorksLS software

**Access port** for connecting to the external **BioLite** (optional) high intensity multispectral light source

**Unique gel viewer window** blocks UV while allowing visualization of samples without opening the door

Motorized **five-position emission filter wheel** with EtBr, SYBR Green and SYBR Gold filters; interchangeable standard and custom filters available

Built-in **epi illumination** sources: 365nm UV, 460-470nm blue and broadband white light

**LED white light illuminator** provides uniform background light for colonies, Coomassie Blue and Silver stained gels; place the tray in the side pocket when the illuminator is not in use

**VisionWorks<sup>®</sup>LS software** allows image acquisition, enhancement, documentation, printing, publishing and analysis



Quickly adjust the **motorized platform** tray height to the top position (manual lift platform available)

Select from 1UV, 2UV or 3UV **Benchtop UV Transilluminators or FirstLight UV Illuminator** with highly uniform (<5% CV) ultraviolet illumination

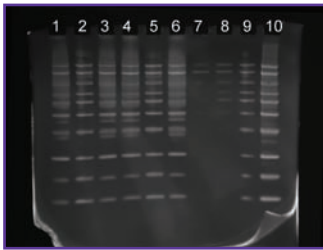
Systems can be configured with a high specification **computer and monitor** (order separately)

**Darkroom footprint** designed to minimize usage of lab space

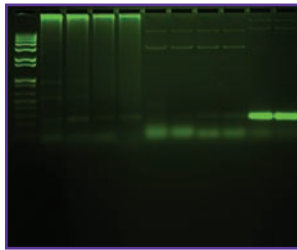


One Powerful System for Multiple Applications!  
 Chemiluminescence | Bioluminescence | Colorimetric | Fluorescence

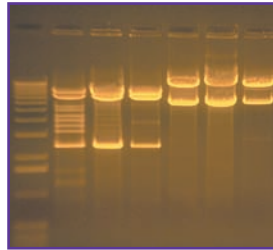
Alexa PAGE



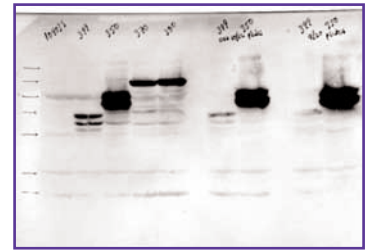
SYBR Green DNA



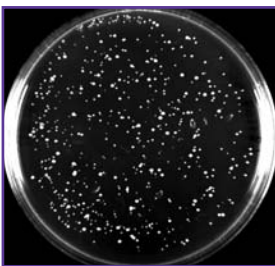
Ethidium Bromide



Autoradiograph



Colonies



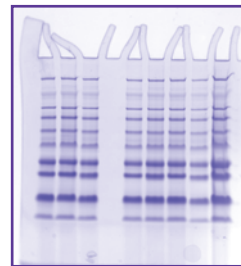
2D Silver Stain



GFP Barley Seed



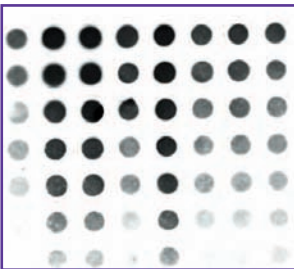
Coomassie Blue



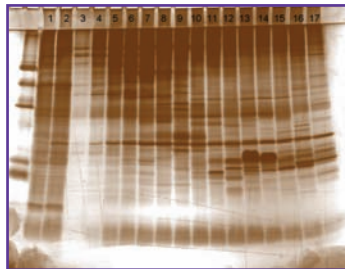
GFP Plant



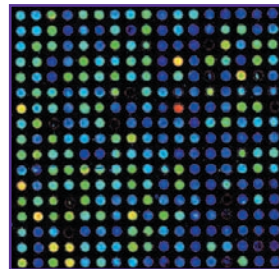
Dot Blot



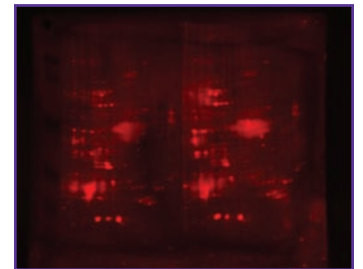
Protein Gel



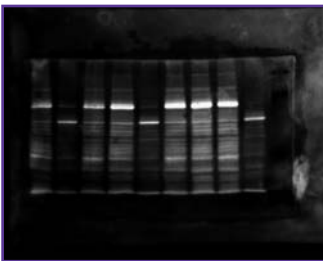
Fluorescent Microarray



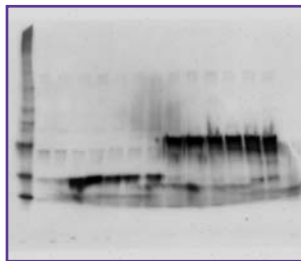
2D SYPRO Ruby



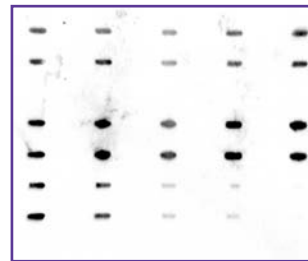
Chemi Western Blot



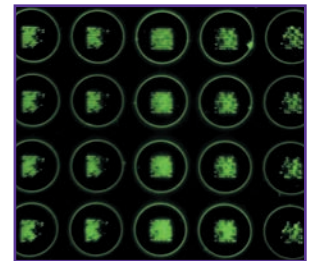
Chemi Western Blot



Chemi DNA Northern Blot



96 Well Microarray



Luciferase Microplate



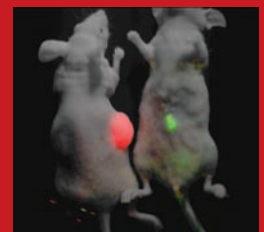
Multiplex CY Dyes DIGE



iBox® Small Animal Imaging System

UVP's iBox is revolutionizing non-invasive in vivo imaging by enabling researchers to visualize and image fluorescent signals from multiple fluorophores for quantitative analysis.

Contact UVP for detailed product specifications for your research applications.



## BioSpectrum Testimonials

UVP's BioImaging Systems are placed in thousands of laboratories world wide. Go to [uvp.com](http://uvp.com) for additional user testimonials and customer profiles describing imaging applications.

"We chose the **BioSpectrum 500** for our department imaging system after demonstrations from several companies. Most other imagers were either too expensive, too complicated to use, or were geared more towards clinical applications. We felt that UVP offered the best value for the price, and that their imager was better suited to basic science applications. Some features of the UVP system, such as the preview door to view DNA gels and the AutoExpose feature, are really nice additions that were not present on other imagers. We were impressed with the UVP imager and continue to be very happy with it.

Our imager is routinely used to take pictures of chemi Western blots, DNA gels, protein gels and soft agar 'swim' plates. The AutoExpose feature is perfect for DNA gels and only having to click one button makes image capture really easy. I use the imager almost every day for chemi-blot and almost never use film any more. We routinely use a light box (for imaging colony plates and soft-agar swim plates) and fitting this into the imager was a major consideration for our lab. Few other competitors were able to fit the light box into their darkrooms."



*K. Watts, Department of Microbiology and Molecular Genetics, Loma Linda University, Loma Linda, California*

## BioSpectrum Accessories



### UV Transilluminators

may be configured with the system. Select from 1UV, 2UV or 3UV Benchtop Transilluminators or the FirstLight UV Illuminator with <5% coefficient of variance (CV) over the full image area. The uniformity enables accurate, reproducible analysis of fluorescently labeled samples.



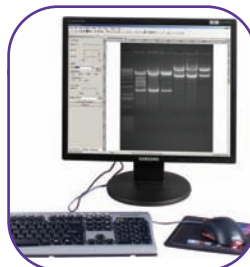
### Thermal Printer

generates archive quality, 256 gray scale prints. Glossy and matt papers are available. Paper rolls easily install in 10 seconds.



### BioLite™ Light Source

Directed epi or transillumination fiber optic source with filters for excitation of fluorescent multiplexed western blots, DIGE 2D gels, PAGE gels, microplates and more.



### Computer and Monitor

can be configured with the system and are ordered separately. Contact UVP for high specification components.



### Glowell Luminescent

Standard emits stable luminescence for more accurate chemi blot exposures and quantitation between images. The Glowell standard is excellent for quality control of the imager over time with benchmark testing for IQ requirements.



### Gel Tools

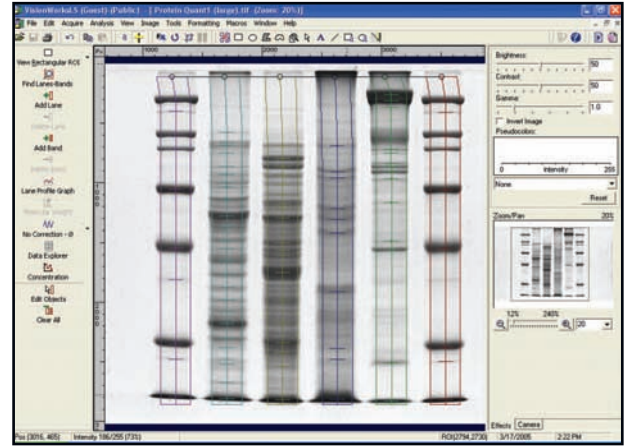
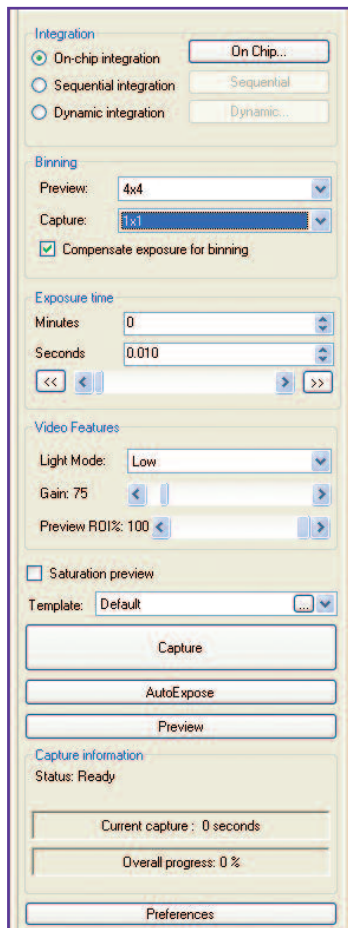
are useful for researchers moving or cutting gels. The **Gel-Cutter** allows for easy cutting and removal of gel materials. The **Gel-Scooper** is for transferring gels. The **Gel-Trays** are UV transmitting and protect the transilluminator surface. The **Gel-Ruler** fluoresces under 302/365nm UV.

# VisionWorks® LS Software

VisionWorksLS is a sophisticated image capture and analysis software package with comprehensive tools to facilitate the capture of chemiluminescent, fluorescent or colorimetric stained gels, blots, colonies and membranes. Capabilities include:

- Extensive image acquisition functions
- Image enhancement capabilities
- 1D lane and Area Density/analysis and Colony Counting
- One-touch automated macros
- User defined templates and preference settings
- Report generation
- Support for 21 CFR Part 11 compliance
- Export data directly to Excel spreadsheets

**Camera Control and Image Capture.** The camera menu guides the user through the easy to use image acquisition steps. The BioChemi 500 camera plugin is shown below.



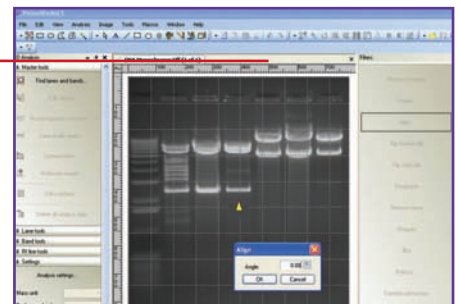
**Software Control.** User-friendly, one-touch simplicity for automating image capture and analysis!

## Image Capture Capabilities

UVP's cameras are selected for the high resolution and sensitivity for image capture as well as for the ability to control the capture settings. The integrated software menu allows selection of functions to achieve superior captured images.

- **Integration** functions include on-chip integration for the simplest image capture. Sequential integration captures multiple pictures taken at a uniformly increasing exposure time. Dynamic integration allow images to be captured at set intervals.
- **Binning** allows users to obtain a quick preview of the image before continuing with a longer full resolution exposure.
- **Saturation preview** assures imaging results are quantifiable by detecting over-exposure of bands in live preview.
- **Imaging templates** allow for creation of custom application settings to enable two-button image capture with reproducible results in seconds.
- **AutoExpose** function enables the perfect image exposure to be captured automatically below the saturation level of every pixel in the image for the widest dynamic range possible and the best quantitative analysis of bands.

**Align.** Use the align tool to adjust the alignment of the lanes for optimal calculation of MW standards.

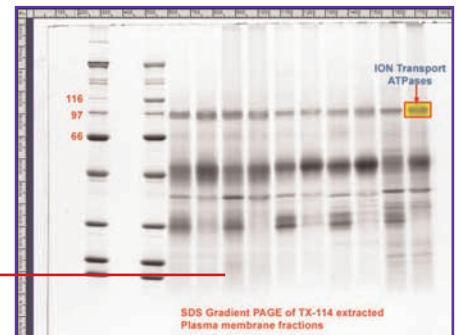


## Image Enhancement Tools

VisionWorksLS offers many enhancement features, process filters and annotation capabilities as non-destructive tools for visualization and publication.

- **Annotation** can be added in the form of text, lines, highlights and more
- **Filter tools** include align, rotate, emboss, sharpen, resize, starfield subtraction and background correction
- **Spatial calibration** is used to determine the image scale and measure lengths, angles and areas

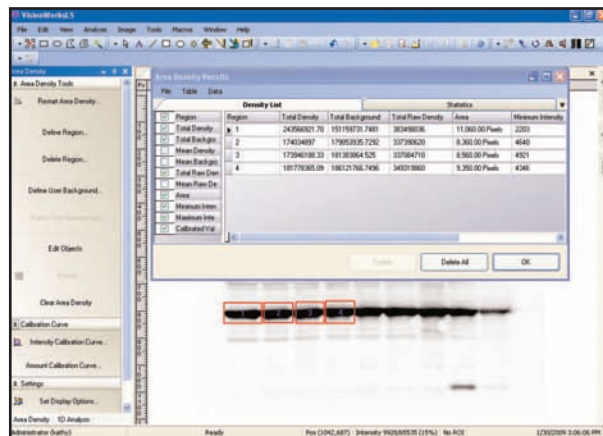
**Annotation.** Overlay non-destructive annotation or "burn" the annotation into an image for permanent documentation.



## Image Analysis Capabilities

VisionWorksLS analysis includes comprehensive tools for in-depth image analysis. The easy to use, intuitive functions automate your experiments with accurate quantitation, generation of lane profile graphs, plus intensity histograms, concentration curves and much more!

- 1D lane analysis
- Plant imaging
- Protein quantitation
- Western blot densitometry
- GFP expression
- PCR gene expression
- And more ...
- Area density
- Molecular weights
- Quantitative PCR
- Colony counting
- Multiplexing
- Quantitative TLC

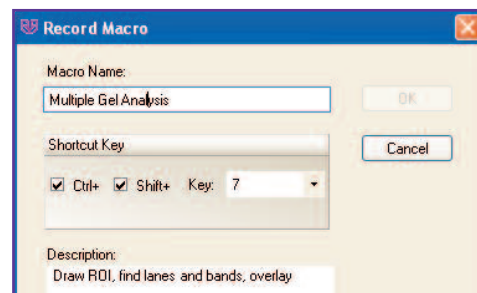


**Area Density Tool for Western Blots.** Quickly determine relative intensities of Western blots and more.

## One-Touch Automated Macros

Create personalized, custom macros to automate routine, time consuming procedures involving image capture, enhancement, analysis and data archiving. Record keystrokes that perform a series of complex functions within the software. Assign a function key to the recorded macros for **one-touch automation**. The macros simplify operations to prevent user errors. Macros can be used to auto-adjust dark chemi blots to perfection.

- Name and describe the custom macro
- Acquire a typical image for analysis
- Record the keystrokes required for analysis
- Save the custom macro in the Macro dropdown menu

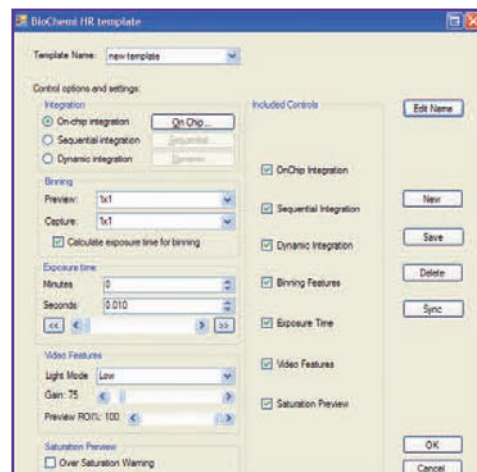


**Record Macros.** For repeat procedures.

## User Profiles, Templates and Preferences

Researchers can personalize their workspace preferences by placing tool bar icons and plug-ins along the sides, bottom or across the top of the screen, then save the profile by user name. Also set up user accounts with passwords to protect user data.

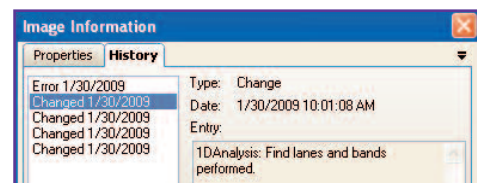
User defined templates are great time savers and allow users to set the darkroom and camera settings to quickly and easily capture a wide range of samples. Also select from several pre-set capture templates which includes a template for acquiring a series of multiple exposures of chemiluminescent Western blots.



**Templates.** Define custom settings.

## Reports, Export Data and History Tracking

- Create detailed and user-configured reports showing extensive analysis results on MW, Rf, precise position of bands, band intensities, area density calculations, etc. Export data to Excel.
- VisionWorks software image history tracking, with change logs, support 21 CFR Part 11 compliance.



**Image History.** Record changes to images.

## IQ/OQ Documentation

UVP offers Installation Qualification (IQ) and Operational Qualification (OQ) documentation for on-site installation and operation of the BioSpectrum System that will enable researchers to easily comply with regulatory bodies. Contact UVP for information.

## Technical Support

UVP provides customers with hardware and software support from a world wide network of Bioluminescence Specialists, Distribution Partners and Technical Support. Live, on-line technical assistance and training are available.

# Ordering Information & Specifications

**BioSpectrum®**



MultiSpectral Imaging System

Each system includes: VisionWorksLS software, choice of camera and lens, darkroom with manual or motorized platform, white light illuminator, 3 filters, choice of transilluminator. **System configurations may vary by country.** Contact a BioImaging Specialist or dealer to discuss configuring a system for your imaging applications. Computer and monitor are ordered separately.

## Ordering Information

- BioSpectrum 310 Imaging System** (GelCam 310 Camera)
- BioSpectrum 410 Imaging System** (ChemiCam 410 Camera)
- BioSpectrum 500 Imaging System** (BioChemi 500 Camera)
- BioSpectrum 600 Imaging System** (OptiCam 600 Camera)
- BioSpectrum 800 Imaging System** (MegaCam 800 Camera)

## VisionWorksLS Software

Capabilities:	Image acquisition/analysis
Plugins:	Interface with camera, darkroom
Tools:	Macros and templates, plus image enhancement tools
Documentation:	Create reports and export data
Compatibility:	Win XP

## Darkroom Specifications

Epi Lights:	White Light, 365nm UV, 460-470nm Blue
Transillumination:	Choice of UV Benchtop Transilluminator or FirstLight Illuminator (with 21x26cm filter) White Light Illuminator (27x27cm) with uniformity at <5% CV
Emission Filters:	Five position motorized wheel with EtBr (570-640nm), SYBR Green (515-570nm), SYBR Gold (485-655nm) Additional filters available
Controls:	Software automated with templates
Platform:	Motorized with 10 in. range or Manual control
Dimensions:	17.5W x 17.5D x 32H in. (44.5 x 44.5 x 81.3cm) plus camera cover

**Ask about software network versions for multiple users.**

## Camera Specifications

Specifications	MegaCam 800	OptiCam 600	BioChemi 500	ChemiCam 410	GelCam 310
CCD Bit Depth	14 bit	16 bit	14 bit	14 bit	12 bit
File Bit Depth (A/D)	16 bit	16 bit	16 bit	16 bit	16 bit
Grayscale Range	65,536	65,536	65,536	65,536	65,536
Pixel Resolution	3326 x 2504	2184 x 1472	2048 x 2048	1600 x 1200	1600 x 1200
Megapixels	8.3	3.2	4.2	2.0	2.0
Cooling Type	-50° C From Ambient 4-Stage Peltier	-60° C From Ambient 4-Stage Peltier	-28° C Absolute & Regulated 2-Stage Peltier	-28° C Absolute & Regulated 2-Stage Peltier	None
Chip Source	Kodak 4/3" KAF-8300	Kodak 3/4" KAF-3200ME	Kodak 1" KAI-4021M	Kodak KAI-2020M	Sony 1/1.8" ICX274AL
Binning Modes	1x1 thru 10x10	1x1 thru 16x16	1x1 thru 8x8	1x1 thru 8x8	None
Captured Image Size (TIF)	16.3mb	6.3mb @ 16-bit	8.2mb @ 16-bit	3.7mb @ 16-bit	3.7mb @ 16-bit
PC Interface Connection	USB 2.0	Ethernet	USB 2.0	USB 2.0	USB 2.0
Quantum Efficiency Peak & Chemi 425nm	62% & 44%	90% & 63%	55% & 50%	56% & 50%	---
Lens Options	F/1.2 50mm Large Format (LF) Motorized Lens   F/1.4 50mm LF Motorized Zoom Lens F/1.8 28mm LF Motorized Zoom Lens   F/2.8 24-70mm LF Motorized Zoom Lens				12.5-75mm Zoom lens (Motorized or Manual)



Web Site: [www.uvp.com](http://www.uvp.com)

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**Ultra-Violet Products Ltd.** Unit 1, Trinity Hall Farm Estate,  
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**Tel:** +44(0)1223-420022 | **Fax:** +44(0)1223-420561

**For a quote or additional information contact:**

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