

# A Studio to Capture All Your Imaging Needs

## UVP ChemStudio Imaging Systems

Chemiluminescence



# The ChemStudio Product Family

With 50 years of experience in imaging, the creators of the UVP ChemStudio Imaging Systems, are the trusted experts in chemiluminescence and gel imaging applications.

No matter what your preferred method of western blotting is, the UVP ChemStudio Series features the highest sensitivity in gel analysis available. Fluorescent western blotting is the preferred method for quantitative comparisons between protein samples and for detection of multiple proteins. However, the ChemStudio and ChemStudio PLUS systems were built with flexibility in mind, providing RGB detection as standard. Whatever your preferred research method, the UVP ChemStudio product family was built to streamline your protocol from detection to analysis, providing the most accurate quantitation of data for an unlimited range of applications.

The UVP ChemStudio product family features the newest technology, a brand new software interface and top-of-the-line camera options, which guarantees a wider dynamic range of imaging than ever before. With a Studio in your lab, your research is unlimited.



UVP ChemStudio

## ChemStudio Product Family

Next Generation Gel and Blot Imagers



UVP ChemStudio PLUS

# UVP ChemStudio Imaging Systems

A studio for every imaging need you can imagine.

The creators behind the UVP ChemStudio imaging systems are renowned for delivering advanced solutions to genomic and proteomic applications. UVP ChemStudio imagers offer high-resolution and sensitive imaging of western blots, fluorescent westerns, protein blots, DNA gels, protein gels, blue light gels, colony plates, and plants. They also work with an unlimited range of excitable stains and dyes.

All imagers run the powerful VisionWorks® Software, full package image capture, enhancement functions and analysis software. Application-based icons for automation, which are included in the software package, offer one-touch capture. The software allows for creating custom icons and workflows based on users' needs.

The UVP ChemStudio guarantees top image quality and an optimized range of high performance features. Whether a basic model or the most advanced, every platform offers flexible modules for light sources, cameras, and optics. With its high resolution cameras, deep ambient temperature cooling, high dynamics and excitation ranges from 400 to 800 nm, this series introduces a new benchmark that goes far beyond publication-quality images.



# UVP ChemStudio

## UVP ChemStudio *touch*

Next A Studio to Capture all your Imaging Needs



### Image quality is the top priority

- **Performance:** Images of the highest quality, with an 8 MP camera, deep cooling and efficient photon-to-signal conversion.
- **Sensitive:** Wide aperture lens optics capture more light in low-light applications. Signals come faster and are stronger.
- **Customized:** User-controlled image enhancement tools to optimize images, using binning, display control, background subtraction, inversion, dark frame correction, noise removal, and many more functions.

### Unlimited application possibilities

- **Versatile:** Ideal for imaging and documentation of gels, western blots, colorimetry, fluorescent westerns, colony plates, plants, IR dyes, and a wide range of fluorescent dyes. Excitation in a range of 400–800 nm.
- **Modular:** Modules for multiplexing, with the option of upgrades that can be carried out in the field.
- **Free Choice:** Various UV wavelengths, white or blue LED transilluminator. Wide range of camera options to match needs of specific applications, from cost saving to high-performance options with high resolution and powerful dynamics.
- **Flexible:** Application-based icons for commonly used applications provide one-touch capture. Templates and macros for creating custom one-touch workflows.

### Data integrity

- **Powerful:** Numerous features for image enhancement and data analysis.
- **Uncompromised:** Unmodified raw data. Users have the choice of applying image enhancement tools.
- **Reproducible:** Calculation of accurate concentration results, including the calibration standard.

### Designed by researchers for researchers

- **Compact:** Small footprint and compact form maximize the use of laboratory bench space.
- **Unrivaled:** Integrated touch-screen computer.
- **Extensive:** A wide illuminated imaging area for simultaneous imaging of multiple gels and blots.
- **Ergonomic:** Thin-Line Transilluminator in a slide-out tray for easy prep.
- **Safe:** UV protection shield protects those doing prep work over the transilluminator.
- **Practical:** Fold-down door minimizes benchtop interferences.

# Versatile for All Your Application Needs

Supports a wide range of applications: chemiluminescence, colorimetry and fluorescence.

## Supporting an unlimited range of applications

The UVP ChemStudio Systems are built to image DNA gels, protein gels, blue/white gels, plants, colorimetrics, and colony plates. They can also be used for imaging chemiluminescent western blots, fluorescent western blots and NIR. All imagers can be upgraded with various lighting options and accessories for expanded application capabilities. The UVP ChemStudio models are also available as a PC controlled version for laboratories with specific computers or IT restrictions.

## Application-based automation and powerful data analysis – all in one stand-alone package

The VisionWorks® Software is a powerful platform. It features automated image capture, enhancement functions and extended analysis tools – all in one package. This software works with both stand-alone and external computer versions of the Studio series imagers.

This unique ability expands the tools available right on the benchtop when using the stand-alone platform. For those users who prefer to perform analysis on an external computer, all imagers include unlimited copies of the software for external use. Laboratory workflows are easy to automate and application-based icons are included for commonly used experiments. Customized application icons can be created and for total workflow solutions, features built using macros facilitate one-touch workflows.

## Expand your range of applications with modular lighting options

With the addition of accessories and emission filters, the UVP ChemStudio series imagers can perform an even wider range of applications. Overhead white, green, red and blue LEDs come as standard in the series.

Furthermore, overhead NIR modules are available that can be upgraded in the field. These allow for a range of multiplex lighting for IR1, and IR2.

### Revolutionary Thin-Line Transilluminator

All imagers are available as a package, which includes a 302nm, UV Thin-Line Transilluminator. The UV Thin-Line Transilluminator uses innovative long-life UV tubes, which practically eliminate service requirements. Instant-on functionality reduces warm-up time to almost zero.

An optional UVP Visi-Blue™ LED Transilluminator is available. It additionally supports blue excitation applications, including GelGreen™ and SYBR® Green (460–470 nm). A blue LED transilluminator represents the safest option for your lab, with no risk of DNA damage or photo-nicking. It is also useful when DNA samples must be used for additional procedures that are performed after the imaging workflow. As an

economical alternative to blue-light applications, a UVP Visi-Blue™ Converter Plate can be used with the Thin-Line Transilluminator to convert UV to blue.

For Coomassie blue, silver stains, and other trans white-light applications, the optional UVP Visi-White™ LED Transilluminator is recommended. An economical solution to additional white-light applications is available by simply pairing the UVP Visi-White™ Converter Plate with the UV Thin-Line Transilluminator.

With the help of a UVP eLITE Light Source, which uses Xenon light engine technology, uniform and high-intensity light across the full range of brilliant multispectral excitation can be produced for a variety of fluorescent dyes.



# A New Standard for Image Quality and Data Integrity

High performance gets the best results - guaranteed excellent image resolution, sensitivity and data integrity.

## High resolution

The UVP ChemStudio includes a high-performance 8 MP chemi imaging camera. Multiple hardware and lighting options are configurable with the highly versatile UVP ChemStudio Imaging Systems.

## Extreme light sensitivity

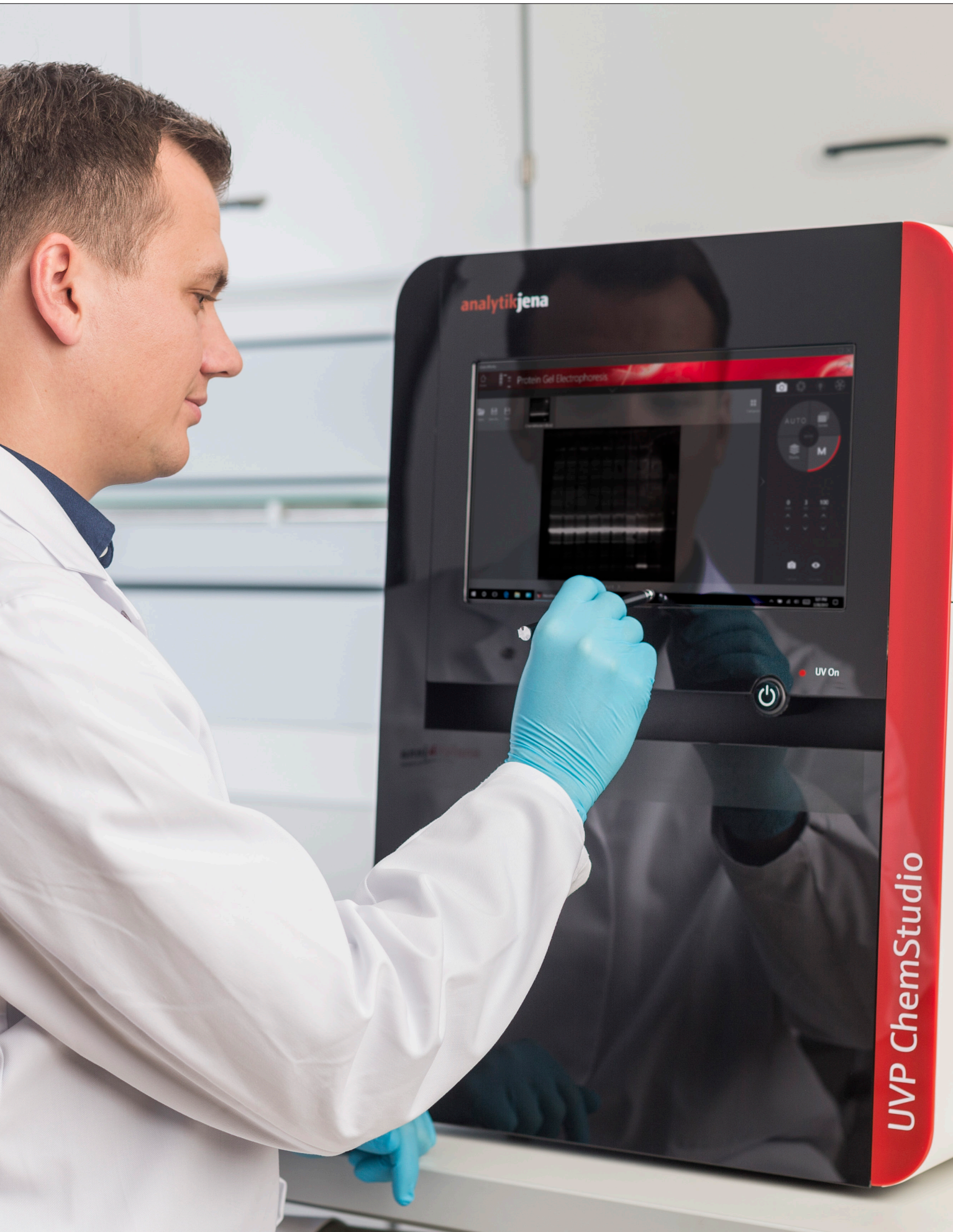
A range of different cameras are available for applications requiring maximum light sensitivity, a wider dynamic range, or supreme quantum efficiency into the IR range. All cameras utilize a wide aperture.

## Clean images

Cameras are deeply cooled to deliver clean images with no noise and a low background. Additionally, UVP ChemStudios provide user-controlled software tools to apply background subtraction and noise removal.

Data integrity is essential for accurate and reproducible results. The VisionWorks® Software tools provide users with the freedom to apply image enhancement and analysis features when needed. They create uncompromised raw data and preserve the true data, promising the highest quantitative value. The UVP ChemStudio series imagers are designed with an uncompromising focus on high-quality imagery, ensuring that they can bring the most value to your research.





UVP ChemStudio

## An Enhanced Benchtop Experience

Compact design, small footprint, a large integrated touch-screen computer and several ergonomic features – the UVP ChemStudio design maximizes space and user comfort.

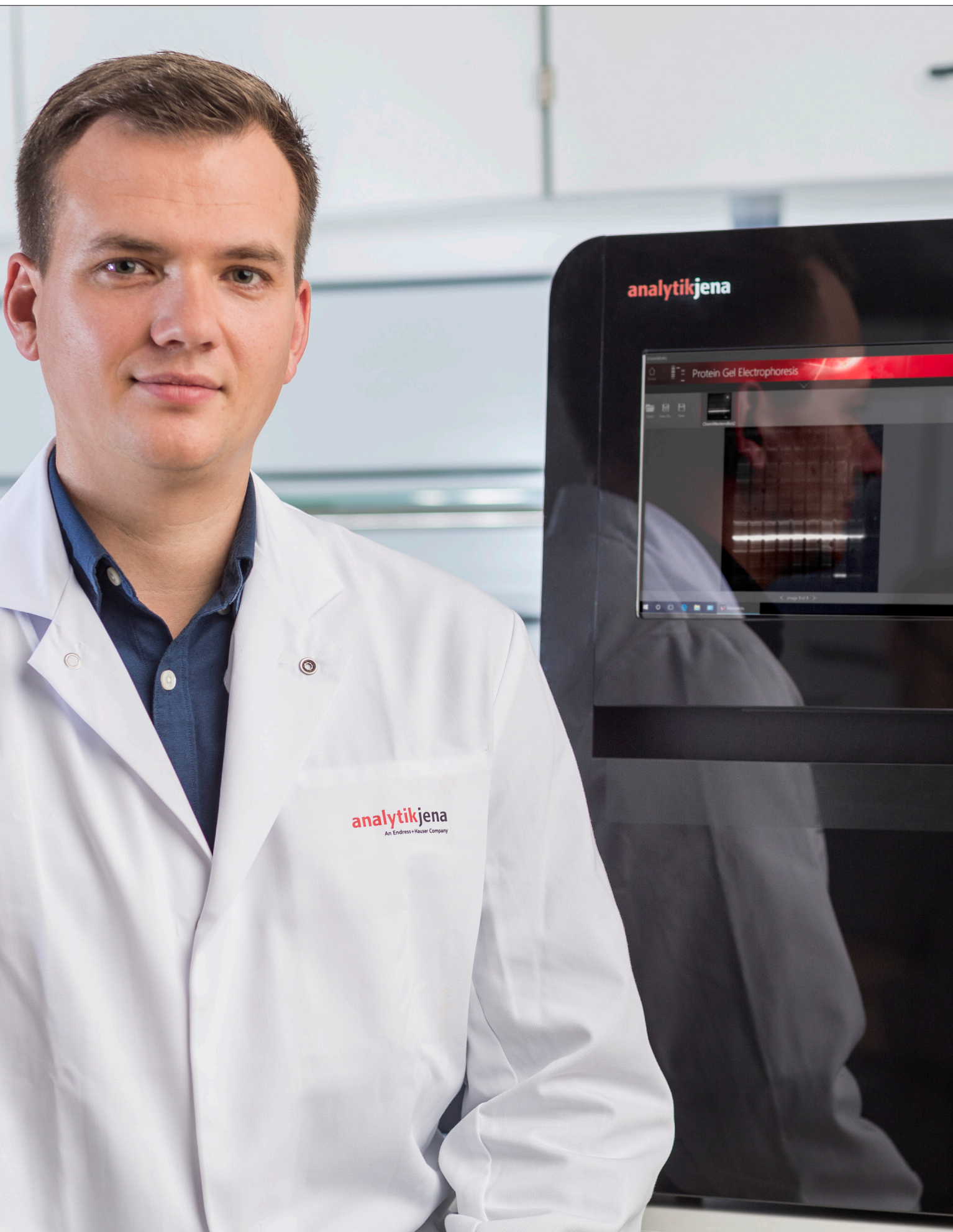
### **The UVP ChemStudio *touch* provides a seamless, efficient imaging experience**

An integrated 13.3 inch, wide touch-screen computer allows for the clear visualization in the faint bands and the fine details of images. Users can multitask easier than ever before on the wide screen, as they flip between open windows and files. Large and visible icons on the software interface increase accessibility, ensuring an improved and simple workflow. The computer also offers a Solid-State Drive (SSD) for storing large amounts of images, application presets and data. The several USB ports make it possible to attach a keyboard, mouse, and other accessories, adding to the unit's user-friendliness.

### **Designed for ease of use and convenience**

With a small footprint and fold-down door, the UVP ChemStudio maximizes the use of the often limited laboratory bench space and removes benchtop interference. There when you need it for performing gel excision or procedures over the transilluminator surface, the low-profile transilluminator sits on a slide-out tray. All lighting and controls are software automated and are right at your fingertips. A software controlled five-position filter wheel, in a slide-out tray, allows for simple changeover, to various emission wavelengths.

Users are alerted to the presence of UV, by a bright red "UV On" indicator light. A user-defined, software controlled UV shut-off timer is activated after a set period of inactivity. A UV protection shield is also provided with the system to allow safe and convenient pre-imaging procedures on the Transilluminator.



# UVP ChemStudio PLUS Imaging Systems

Image larger samples using the ChemStudio PLUS models.

The UVP ChemStudio PLUS imaging systems are essential to laboratories performing genomic and proteomic applications with larger sample sizes. The systems are customized for high resolution and sensitive imaging of western blots, fluorescent westerns, protein blots, DNA gels, protein gels, blue light gels, plants, colony plates, TLC plates, and an unlimited range of excitable stains and dyes.

Gel and Blot imaging is enhanced, with a large 15.6", integrated touch-screen computer, a unique Slide2Hide door, and a Thin-Line Transilluminator, with a large 25 x 26 cm illuminated area.

The UVP ChemStudio PLUS *touch* is a touch-screen operated system. This stand-alone system is also available as a PC-controlled version on the UVP ChemStudio PLUS. All imagers run with the powerful VisionWorks® Software, full package image capture, enhancement functions, and analysis software. The software is well suited to creating custom icons and workflows based on users' needs.

With all of these advanced features in one imaging system, the UVP ChemStudio PLUS guarantees top image quality and data accuracy, elevating your research to the next level.



# UVP ChemStudio PLUS

## UVP ChemStudio PLUS *touch*

Setting the Standard in Gel and Blot Analysis



### Image quality is the top priority

- **Performance:** Images of the highest quality, with an 8 MP camera, deep cooling, and efficient photon-to-signal conversion.
- **Sensitive:** Wide aperture lens optics capture more light in low-light applications. Signals come faster and are stronger.
- **Customized:** User-controlled image enhancement tools to optimize images, using binning, display control, background subtraction, inversion, dark frame correction, noise removal and many more functions.

### Unlimited application possibilities

- **Versatile:** Ideal for imaging and documentation of gels, western blots, colorimetry, fluorescent westerns, colony plates, plants, IR dyes and a wide range of fluorescent dyes. Excitation in a range of 250–800 nm.
- **Modular:** Modules for multiplexing, with the option of upgrades that can be carried out in the field.
- **Free Choice:** Various UV wavelengths, blue or white LED transilluminator.
- **Flexible:** Application-based icons for commonly used functions provide one-touch capture. Templates and macros for creating custom one-touch workflows.

### Data Integrity

- **Powerful:** Numerous features for image enhancement and data analysis.
- **Uncompromised:** Unmodified raw data. Users have the choice of applying image enhancement tools.
- **Reproducible:** Calculation of accurate concentration results, including the calibration standard.

### Designed by researchers for researchers

- **Compact:** Small footprint to maximize the use of laboratory bench space.
- **Unrivaled:** Integrated 15.6 inch touch-screen computer.
- **Extensive:** A large wide illuminated imaging area for simultaneous imaging of multiple gels and blots.
- **Ergonomic:** Thin-Line Transilluminator in a slide-out tray for easy prep.
- **Safe:** Integrated pull-down UV protection shield protects those doing prep work over the transilluminator.
- **Practical:** "Slide2Hide" door minimizes benchtop interferences.

## Optimized Work Flows and Convenience

Multitasking, efficiency and ease-of-use is ensured, with the large touch-screen interface, the Thin-Line Transilluminator and the Slide2Hide door.

The Thin-Line Transilluminator is slim and sits on a slide-out tray, for simple preparative work on gels. Thin, long-life UV bulb technology delivers high-intensity and uniform transillumination, for a large imaging area of 25 x 26 cm. This is ideal for imaging multiple gels, and several colony plates of various sizes.

The UVP ChemStudio PLUS *touch* has the largest, 15.6" integrated touch-screen computer, to provide a conveniently wide viewing area. Multiple gel images can be viewed, with clear visuals of faint bands. The interface contains ample space for multi-tasking on several windows and programs. Large and visible application icons on the VisionWorks *touch* Software, increase accessibility for improved and efficient work flows.

Additionally, the touch screen computer, which uses a Windows operating system, is wireless network capable and has a Solid-State Drive (SSD) to store large amounts of images, templates and data. There are 7 USB ports for the use of additional accessories such as a keyboard and mouse, adding to the unit's user-friendliness.

### Designed for convenient benchwork

The Slide2Hide door features an ergonomic design, with smooth operation that limits bench-top interference when tucked beneath the darkroom. Access to the interior of the darkroom is easy and unintrusive.

- Long-life UV lamp technology for minimum service requirements, independent of the number of times the transilluminator is turned on/off
- UV lamps are instant-on, with no need to warm-up
- A UV intensity switch with low and high settings is included, to provide optimal UV radiation for gel documentation or for preparative work

### Expand your range of applications with modular lighting options

The UVP ChemStudio PLUS imagers expand to perform an even wider range of applications with the addition of accessories. Overhead white, green, red and blue LEDs come as standard in the series, and optional UV lamps can be installed in the system to provide overhead UV illumination to support excitation ranges from 250-800 nm. Furthermore, overhead NIR modules are available that can be upgraded in the field. These allow for a range of multiplex lighting for IR1, and IR2.



## UV Protection is a Priority

An integrated UV Protection Shield, maximizes protection from UV radiation, when working over the transillumination surface while the darkroom door is open.

The UV Protection Shield is neatly stowed away and there is no need for a separate storage location. It is easily pulled down for immediate use, and can be set at a custom angle according to the user's needs. When the Thin-Line Transilluminator is rolled out, the shield protects users from UV while performing preparative work on gels. Additionally, the systems are equipped with a red "UV On" indicator light, to alert users to the presence of UV light.

- Protected when working over the transilluminator surface
- The angle of the shield can be freely adjusted according to user needs
- Side angle design shields nearby personnel from UV radiation
- Convenient red UV "On" indicator light

# VisionWorks® Software

All versions of the UVP ChemStudio and UVP ChemStudio PLUS series imagers are operated by VisionWorks® software. This guarantees powerful capture, quantitating and analysis.

## Automation based on applications

Application-based template icons come preset and preloaded for common experiments in chemiluminescence, fluorescence, and visible fluorescence.

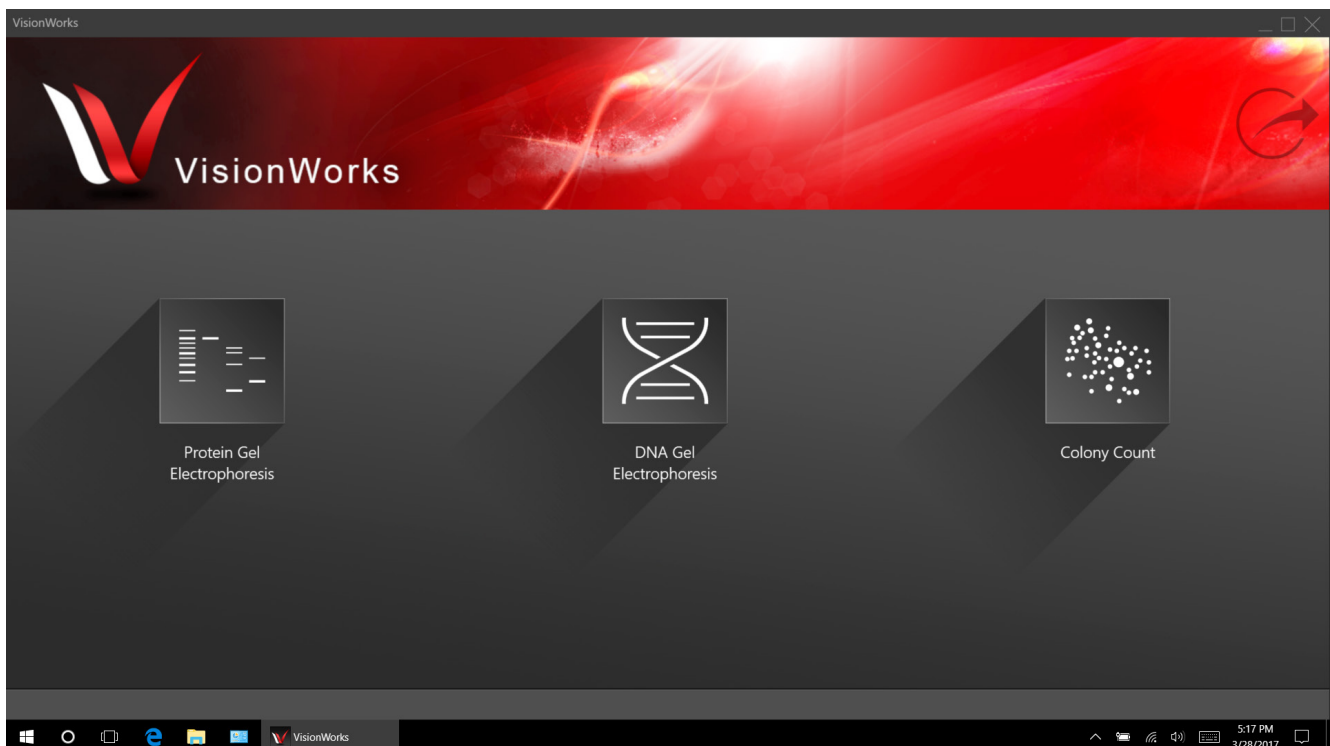
## One-touch workflows for drastically improved laboratory efficiency

For more complex application workflows, macros are used to automate several workflow actions so that they can be activated by one touch. Additionally, user accounts can easily be set up with passwords to save and protect user data.

## Extensive image enhancement and analysis tools

Image enhancement and analysis features are included with all systems. Researchers can personalize their experiments and make use of enhancement features and annotation tools, e.g., for publication purposes. The software offers many powerful tools such as noise reduction, background subtraction, inversion, pseudocolor, compositing and more.

The extensive analysis features are optimized for accurate and reproducible results. Several custom tools are available as well, such as finding lanes and bands, 1D analysis, area density, and colony counting. Once the quantitation results have been generated, reports are created to show thorough analysis, such as Molecular Weight (MW), Rf, band intensities and area density calculations. All data can be conveniently exported to Excel.



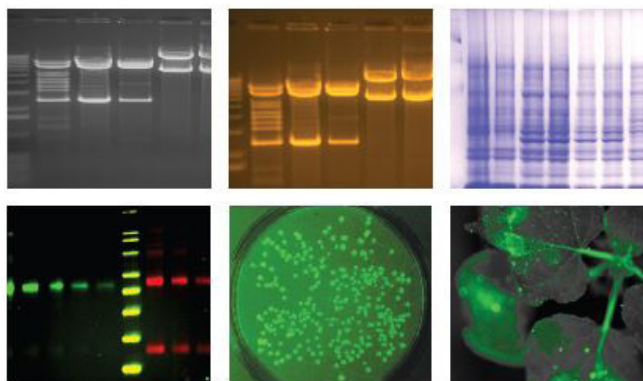


## Technical Data

Specifications/Features	UVP ChemStudio	UVP ChemStudio PLUS
<b>Light sources</b>	<ul style="list-style-type: none"> <li>Overhead: white, red, green and blue LEDs included.</li> <li>Base lighting: Thin-Line Transilluminator, (302 nm) with High/Low intensity control</li> </ul>	<ul style="list-style-type: none"> <li>Overhead white, red, green and blue LEDs included</li> <li>Base lighting: Thin-Line Transilluminator, (302 nm) with High/Low intensity control</li> </ul>
<b>Filter wheel</b>	Five-position automated filter wheel	Five-position automated filter wheel
<b>Darkroom features</b>	<ul style="list-style-type: none"> <li>13.3" integrated, multi-touch computer (UVP ChemStudio <i>touch</i> only)</li> <li>Fold-down door</li> <li>Thin-Line Transilluminator in a pull-out tray</li> <li>UV On indicator light</li> <li>USB port (right panel of unit)</li> <li>6 additional USB ports on "touch" systems only (back side of unit)</li> <li>Access port for optional UVP eLITE Light Source</li> </ul>	<ul style="list-style-type: none"> <li>15.6" integrated, multi-touch computer (UVP ChemStudio PLUS <i>touch</i> only)</li> <li>Slide2Hide door</li> <li>Thin-Line Transilluminator in a pull-out tray</li> <li>UV On indicator light</li> <li>USB port (right panel of unit)</li> <li>6 additional USB ports on "touch" systems only (back side of unit)</li> <li>Access port for optional UVP eLITE Light Source</li> </ul>
<b>Accessories included</b>	<ul style="list-style-type: none"> <li>Ethidium bromide filter</li> <li>VisionWorks® Software for image capture, enhancement and analysis (unlimited licenses)</li> <li>Flash drive with VisionWorks® Software (license free)</li> <li>UVP Fluorescent Focus Target</li> <li>UVP Chemi Tray (black)</li> <li>UV Gel Tray</li> <li>UV Protection Shield</li> <li>Empty flash drive for data and image storage</li> <li>Keyboard and mouse (touch screen systems only)</li> </ul>	<ul style="list-style-type: none"> <li>Ethidium bromide filter</li> <li>VisionWorks® Software for image capture, enhancement and analysis (unlimited licenses)</li> <li>Flash drive with VisionWorks® Software (license free)</li> <li>UVP Fluorescent Focus Target</li> <li>UVP Chemi Tray (black)</li> <li>UV Gel Tray</li> <li>Integrated UV Protection Shield</li> <li>Empty flash drive for data and image storage</li> <li>Keyboard and mouse (touch screen systems only)</li> </ul>
<b>Dimensions: L x W x H</b>	41 x 46 x 61 cm (16 x 18 x 24 inch)	43 x 47 x 82 cm (17 x 19 x 32 inch)
<b>Wireless network capability</b>	Wireless network capable, Wi-Fi, accessory for wired-to-ethernet connection available	Wireless network capable, Wi-Fi, accessory for wired-to-ethernet connection available

## Applications

- Chemiluminescence
- Multiplex fluorescence
- NIR
- RGB
- DNA gels
- Protein gels
- Plant imaging
- Fluorescent dyes
- Colorimetric imaging
- Colony counting



# Order Information

Order number	Darkroom, Voltage	Specifications	Applications
<b>Package 1</b>			
849-97-0848-01	UVP ChemStudio <i>touch</i> , 115 V	<ul style="list-style-type: none"> <li>▪ 4 MP (<b>Unavailable in North America</b>)</li> <li>▪ Deep level cooling</li> <li>▪ Automated lens</li> <li>▪ Software: application-based automation</li> <li>▪ Professional imaging on a budget</li> </ul>	Chemiluminescence Fluorescence
849-97-0848-02	UVP ChemStudio <i>touch</i> , 230 V		
849-97-0848-03	UVP ChemStudio, 115 V		
849-97-0848-04	UVP ChemStudio, 230 V		
<b>Package 2</b>			
849-97-0928-01	UVP ChemStudio <i>touch</i> , 115 V	<ul style="list-style-type: none"> <li>▪ 8 MP</li> <li>▪ Deep level cooling</li> <li>▪ Automated lens</li> <li>▪ Software: application-based automation</li> <li>▪ Highest performance and resolution</li> </ul>	Chemiluminescence Fluorescence
849-97-0928-02	UVP ChemStudio <i>touch</i> , 230 V		
849-97-0928-03	UVP ChemStudio, 115 V		
849-97-0928-04	UVP ChemStudio, 230 V		
<b>Package 3</b>			
849-97-0930-01	UVP ChemStudio <i>touch</i> , 115 V	<ul style="list-style-type: none"> <li>▪ 6 MP</li> <li>▪ Deep level cooling</li> <li>▪ Automated lens</li> <li>▪ Software: application-based automation</li> <li>▪ Versatile, from chemiluminescence to NIR</li> </ul>	Chemiluminescence Fluorescence Visible Fluorescence Infrared
849-97-0930-02	UVP ChemStudio <i>touch</i> , 230 V		
849-97-0930-03	UVP ChemStudio, 115 V		
849-97-0930-04	UVP ChemStudio, 230 V		

Order number	Description
<b>115 V</b>	<b>230 V</b>
<b>ChemStudio PLUS Imagers, 815 Camera</b>	
849-97-0847-01	849-97-0847-02 UVP ChemStudio PLUS <i>touch</i> : Stand-alone system
849-97-0847-03	849-97-0847-04 UVP ChemStudio PLUS: System for external computer-control
<b>115 V</b>	<b>230 V</b>
<b>ChemStudio PLUS Imagers, 695 Camera</b>	
849-97-0851-01	849-97-0851-02 UVP ChemStudio PLUS <i>touch</i> : Stand-alone system
849-97-0851-03	849-97-0851-04 UVP ChemStudio PLUS: System for external computer-control
<b>115 V</b>	<b>230 V</b>
<b>MultiSpectral Light Sources</b>	
95-0105-01	95-0105-02 UVP eLITE Xenon, Kit with epi light fibers
98-0072-07	98-0072-07 UVP eLITE motorized, Kit with epi light fibers

# Order Information

Order number	Description
<b>230 V</b>	<b>Emission Filters</b>
849-00401-0	Emission filter, 50 mm squared, with transmission range of 510-560 nm, for, e.g., SYBR® Green
849-00402-0	Emission filter, 50 mm squared, with transmission range of 520-620 nm, for, e.g., SYBR® Gold
849-00400-0	Emission filter, 50 mm squared, with transmission range of 580-630 nm, for, e.g., Deep Purple, EtBr, RFP
849-00403-0	Emission Filter 465 - 495 nm: CFP mice
849-00404-0	Emission Filter 503 - 523 nm: GFP mice
849-00405-0	Emission Filter 513 - 557 nm: Cy2®, FITC, FAM™, GFP, SYBR® Green, SYBR® Gold
849-00406-0	Emission Filter 565 - 625 nm: Alexa555®, Cy3®, SYPRO® Orange
849-00407-0	Emission Filter 607 - 682 nm: Alexa568®, SYPRO® Red, TexasRed®
849-00408-0	Emission Filter 668 - 722 nm: Alexa633®, Cy5®
849-00409-0	Emission Filter 700 - 740 nm: IRDye 680, CF 680
849-00410-0	Emission Filter 767 - 807 nm: Alexa750®, Cy7®
849-00411-0	Emission Filter 780 nm long pass: Alexa750®
849-00412-0	Emission Filter 800 nm long pass: IRDye 800, CF 770
<b>230 V</b>	<b>Transilluminators</b>
849-95-0584-01	UVP UV Thin-Line Transilluminator, 302 nm, LP, 25 cm x 26 cm
849-20500-0	UVP Visi-White™ LED Transilluminator, 28 cm x 28 cm
849-95-0591-01	UVP Visi-Blue™ LED Transilluminator, 24.5 cm x 24.5 cm
849-95-0594-01	UVP UV Thin-Line Transilluminator, 302 nm, LP, 16.8 cm X 21 cm
849-95-0599-01	UVP Visi-White™ LED Transilluminator, 16.8 cm x 21 cm
849-95-0593-01	UVP Visi-Blue™ LED Transilluminator, 16.8 cm x 21 cm
<b>230 V</b>	<b>Converter Plates</b>
849-20511-0	UVP Visi-White™ Converter Plate UV-to-white, 25 cm x 26 cm filter size
849-20521-0	UVP Visi-Blue™ Converter Plate, 25 cm x 26 cm filter size, 460-470 nm
849-38-0408-01	UVP Visi-White™ Converter Plate UV-to-white, 16.8 cm x 21 cm filter size
849-38-0409-01	UVP Visi-Blue™ Converter Plate, 16.8 cm x 21 cm filter size, 460-470 nm
<b>230 V</b>	<b>NIR Accessories</b>
849-98-0123-01	Overhead NIR Module 660 nm, 787 nm
849-38-0417-01	Emission Filter, 810 nm LP, 50MM SQUARED, RoHS (IRDye 800CW)

\* Please have a look on our homepage to see the full range of available accessories.





# WolfLabs

**Pricing on any accessories shown can be found by keying the part number into the search box on our website.**

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.