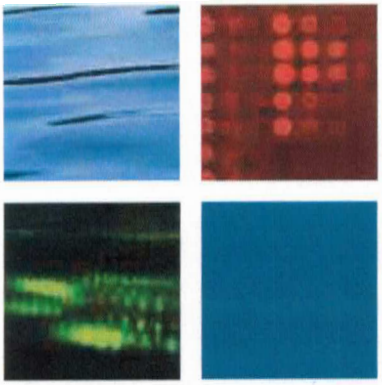


IMAGING

Molecular Imager® VersaDoc™ MP Imaging Systems

- High-energy red, green, and blue excitations for greater sensitivity
- Application-driven software control
- Excellent sensitivity and resolution
- Patented* flat fielding technology
- Highly uniform data (coefficient of variation (CV) ≤5%)
- Upgradability between systems
- Data security — full integration with Quantity One® 1-D analysis software and PDQuest™ 2-D analysis software CFR modules

Versatile and Highly Quantitative

Molecular Imager VersaDoc MP imaging systems are high-quality, flexible instruments that allow you to image a wide range of multiplexed samples, including one-dimensional (1-D) and two-dimensional (2-D) gels, chemiluminescent and chemifluorescent blots, and microplates and autoradiograms.

Wide Range of Applications

- Proteomics and genomics studies
- 2-D protein gels
- 1-D nucleic acid and protein gels
- Western blots
- Northern and Southern blots
- Colony counting
- Microarrays with ≥400 µm spots
- Dot and slot blots

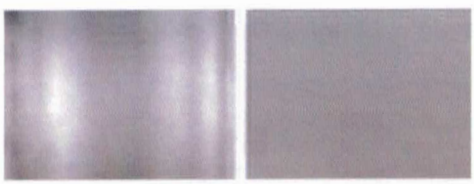
VersaDoc MP systems offer remarkable quality in craftsmanship with highly uniform F-mount lenses for minimum optical distortion, and exceptionally uniform illumination for accurate quantitation across the entire imaging platen.

Available in Two Models

- VersaDoc MP 4000 system — for state-of-the-art mega resolution
- VersaDoc MP 5000 system — for state-of-the-art super sensitivity

* U.S. patent 5,951,838.

Cy dye-labeled gels (top four panels) and SYPRO Ruby-stained protein slide (bottom panel) imaged with the VersaDoc MP 4000 system. Bottom image was printed using the BioOdyssey Calligrapher miniarrayer.



Images of a VersaDoc fluorescent reference plate. Left, VersaDoc image without flat fielding (11% CV); right, VersaDoc image with illumination flat fielding applied (1.1% CV).

BIO-RAD

VersaDoc MP 4000 System

The VersaDoc MP 4000 is the ideal imager for proteomics studies, offering ultimate flexibility with the ability to image chemiluminescent western blots, Coomassie Blue-stained 1-D gels, SYPRO Ruby-stained 2-D gels, and multiplex or multifluorescent samples. The VersaDoc MP 4000 system provides excellent resolution for collecting the finest details of every band and spot. The patented flat fielding technology generates highly uniform data for accurate quantitation across small and large 2-D samples.

- 3.2 megapixel charge-coupled device (CCD), 53 µm resolution
- Accurate, quantifiable data with a CV of ≤5%
- Molecular weight determination and quantitation of protein samples using Quantity One 1-D analysis software
- Identification of differences in protein expression using PDQuest 2-D analysis software
- Data security tools that help you meet U.S. FDA 21 CFR Part 11 regulations (Quantity One and PDQuest CFR modules)

Image acquired using the VersaDoc MP 4000 system. Megapixel resolution combined with highly uniform optics ensure that quantitative results are based on sample expression.

VersaDoc MP 5000 System

The VersaDoc MP 5000 is the ideal luminescent imager; it uses Peltier cooling of a blue-enhanced CCD with high quantum efficiency. Each camera is supercooled to minimize background noise and enhance the signal-to-noise ratio. This high-performance digital camera produces luminescent images of very faint samples at speeds faster than possible with film.

- Excellent chemiluminescent sensitivity
- Supercooled to –35°C (absolute) for optimal imaging under low-light conditions
- True 16-bit data and a dynamic range that covers 5.0 orders of magnitude to maximize limit of detection
- Quantitation of differences in sample abundance using Quantity One 1-D analysis software
- Compliance with data security regulations using Quantity One CFR module

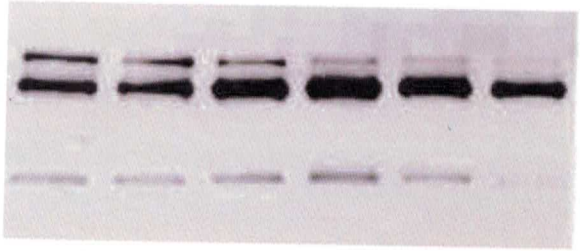


Image acquired using the VersaDoc MP 5000 system. True 16-bit dynamic range enables linear quantitation of low- and high-abundant samples within the same chemiluminescent blot.

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Specifications

	VersaDoc MP 4000	VersaDoc MP 5000
Excitation wavelengths	Red, green, blue, broadband UV, and white light	Red, green, blue, broadband UV, and white light
Standard emission filters	3 included, 2 optional	3 included, 2 optional
Detector	Front-illuminated high-sensitivity CCD with microlens technology	High-sensitivity CCD
Flat fielding	Included	Included
CV using flat fielding	≤5%	≤5%
Multichannel image collection	Included	Included
Optimized exposure	Included	Included
Cooling system	Peltier	Peltier
Cooling range (absolute)	+10°C	–35°C
Pixel size (H x V)	6.8 x 6.8 µm	24 x 24 µm
Pixel array size (H x V)	2,184 x 1,472 pixels	512 x 512 pixels
Pixel data density (analog/digital)	16-bit (0–65,535 levels)	16-bit (0–65,535 levels)
Linear full well capacity	49,000 electrons/pixel	330,000 electrons/pixel
Read noise	11 electrons rms	3 electrons rms
Peak quantum efficiency	87%	~90%
Peak quantum efficiency, 425 nm	>60%	80%
Dynamic range	4.0 orders of magnitude	5.0 orders of magnitude
Illumination modes	Trans- and epi-illumination	Trans- and epi-illumination
Transillumination area	25 x 25 cm	25 x 25 cm
Operating system compatibility	Windows XP/2000/Vista and Mac OS X	Windows XP/2000/Vista and Mac OS X
Dimensions (W x D x H)	58 x 66 x 99 cm	58 x 66 x 99 cm
Technical application support and consultation	Provided by experienced scientific staff	Provided by experienced scientific staff

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What Makes VersaDoc MP Imaging Systems Versatile and Quantitative?

Features	Benefits	Value
Red, green, and blue LED epi-illumination with Class 2 laser intensity, <5% CV in image uniformity, and tight spectral control mechanisms	Ensures numerical data from sample image is a function of sample intensity. Visible spectrum excitation works with most common fluorophores and reduces damage of precious samples	Enables quantitative multiplex fluorescent imaging and analysis of gels, blots, and arrays without the cost of a laser scanner. A variety of fluorescent stains and labels can be tested
Broadband UV (290-365 nm) for transillumination, and white light for both epi-illumination and transillumination	Supports densitometry of gels, blots, arrays, and film. Allows image analysis of fluorescent samples, including ethidium bromide gels	Accomodates all quantitative and documentation needs
Scientific-grade CCD camera		Makes linear comparisons of signals possible across sample images, and ensures intensity differences between bands or spots are due to sample expression
1" CCD array	Provides greater well depth and greater dynamic range	
Absolute cooling	Ensures consistent data between images; confirms intensity changes are due to sample expression, and not to thermoelectric noise	
Highest quantum efficiency	Maximizes photon capture, especially from chemiluminescent blots of low-abundant samples	
Efficient and high-quality bandpass filters in 8-position filter wheel, in light-tight chamber between lens and CCD array (filter wheel includes 3 additional custom filter positions)	Ensures fluorescent emission of interest is captured by CCD camera, prevents cross talk of signals from multiple fluorophores, and blocks excitation source from entering CCD detector area. Positioning filter behind lens ensures coregistration of signals from samples with multiple fluorophores	Provides best signal-to-noise ratio for image analysis
Flexible-mount 35 mm aspheric lenses for image projection	Reduces effect of lens curvature aberration, which can exaggerate photon refraction from sample signals. Supports any Nikon F-mount lens with minimum focus distance ≤0.65 m	Ensures comparative measurements of relative fronts of bands or spot positions on image are due to sample character. Optional lenses can be used, for example, a telephoto lens to enhance system resolution for low- and high-density samples
Patented flat fielding technology using predictive behavior of light to perfect acquired image	Enhances image accuracy, retaining sample behavior as only factor to determine quantitative results	Ensures accurate and dependable sample data
Quantity One 1-D analysis software, quick guides, and a variety of imaging optimization and viewing tools	Facilitates analysis and reporting of a wide array of sample images	Streamlines imaging, analysis, and reporting processes
Quantity One software application-driven acquisition	Integrates system features to determine best optical settings for imaging a variety of stains and labels	Simplifies imaging and quantitation based on application, increasing efficiency and reducing costs

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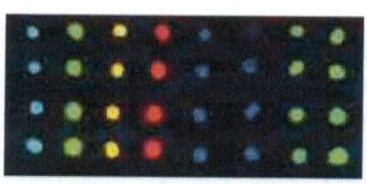
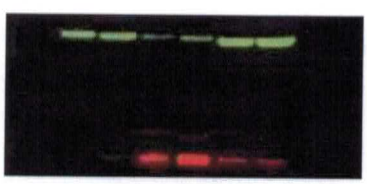
VersaDoc MP Applications

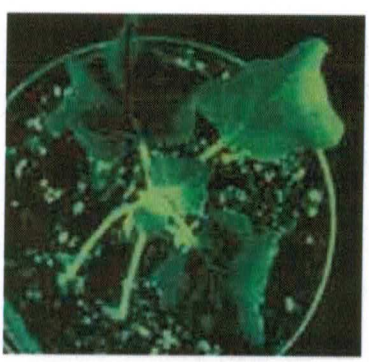
Application	Stain/Label/Dye/Method	Light Sources	Filters
Multiplexing	DIGE Cy2	Blue LED	530BP28
	DIGE Cy3	Green LED	605BP35
	DIGE Cy5	Red LED	695BP55
	Pro-Q Diamond	Green LED	605BP35
	Pro-Q Emerald 300	Trans UV	530BP28
	Pro-Q Emerald 488	Blue LED	530BP28
	SYPRO Ruby	Trans UV	605BP35
	Flamingo™ fluorescent gel stain	Blue LED	605BP35
Blotting	Qdot 525	Trans UV	530BP28
	Qdot 605	Trans UV	605BP35
	Qdot 705	Blue LED	695BP55
	Chemiluminescence	None	Clear
	Chemifluorescence	Blue LED	530BP28
Protein staining	Colorimetric	White LED	Clear
	Coomassie Blue	Trans white	Clear
	Copper stain	White LED	Clear
	Deep Purple	Green LED	605BP35
	Krypton	Green LED	605BP35
	NanoOrange	Blue LED	605BP35
	Silver stain	Trans white	Clear
	SYPRO Orange	Blue LED	605BP35
	SYPRO Red	Green LED	605BP35
	SYPRO Ruby	Trans UV	605BP35
	Zinc stain	White LED	Clear
Nucleic acid staining	Ethidium bromide	Trans UV	605BP35
	GelStar	Blue LED	530BP28
	Fluorescein	Trans UV	605BP35
	Oligreen	Blue LED	530BP28
	PicoGreen	Blue LED	530BP28
	Radiant Red	Trans UV	605BP35
	SYBR Green	Blue LED	530BP28
	SYBR Gold	Blue LED	530BP28
	Texas Red	Green LED	650BP28
Fluorophore labeling	Alexa Fluor 488	Blue LED	530BP28
	Alexa Fluor 555	Green LED	605BP35
	Alexa Fluor 647	Red LED	695BP55
	FITC	Blue LED	530BP28



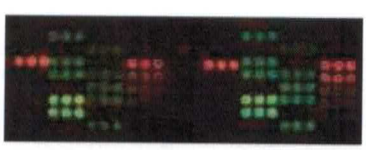
Dot blot of nanoparticles (Invitrogen Corporation and Evident Technologies) imaged on the VersaDoc MP 4000 system.



Cy3-labeled human β-actin and Cy5-labeled phosphorylated cofilin, imaged with the VersaDoc MP 5000 system.



Green Fluorescent Protein (GFP) expression in plant imaged with the VersaDoc MP 4000 system.



Cy3/Cy5 protein slide printed using the BioOdyssey Calligrapher miniarrayer and imaged with the VersaDoc MP 4000 system.

0.2 µg/ml 97.7 pg/ml

Serial dilutions of broad range markers on 4–20% Tris-HCl gel stained with Flamingo fluorescent gel stain and imaged with the VersaDoc MP 5000 system.

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Ordering Information

Catalog #	Description
Molecular Imager VersaDoc MP Imaging Systems	
170-8640	**Molecular Imager VersaDoc MP 4000 System**, PC or Mac, 100/240 V, includes CCD camera, darkroom, power supply, cables, epi-illumination, transillumination, fluorescent reference plate, focusing target, Quantity One software, instructions
170-8650	**Molecular Imager VersaDoc MP 5000 System**, PC or Mac, 100/240 V, includes CCD camera, darkroom, power supply, cables, epi-illumination, transillumination, fluorescent reference plate, focusing target, Quantity One software, instructions
170-8647	**VersaDoc MP Red Module**
170-8648	**VersaDoc MP Green Module**
Accessories	
170-7706	**Optional Fixed Lens, 105 mm**
170-7725	**Fixed Lens, 50 mm**
170-7726	**Zoom Lens, 28–80 mm**
170-8001	**White Light Conversion Screen**
170-8008	**VersaDoc Fluorescent Reference Plate**
170-8052	**CCD Camera for VersaDoc MP 5000 System**
170-8642	**CCD Camera for VersaDoc MP 4000 System**
170-8655	**Sample Tray**
Analysis Software	
170-9600	**Quantity One 1-D Analysis Software**
170-9601	**Quantity One 1-User Network License**
170-9602	**Quantity One 2-User Network License**
170-9603	**Quantity One 3-User Network License**
170-9604	**Quantity One 4-User Network License**
170-9605	**Quantity One 5-User Network License**
170-9606	**Quantity One 10-User Network License**
170-9607	**Quantity One 20-User Network License**
170-9608	**Quantity One Add 1 User to Network License**
170-9615	**Quantity One CFR Module**
170-9620	**PDQuest Basic 2-D Analysis Software**
170-9630	**PDQuest Advanced 2-D Analysis Software**
170-9631	**PDQuest Advanced 1-User Network License**
170-9632	**PDQuest Advanced 2-User Network License**
170-9633	**PDQuest Advanced 3-User Network License**
170-9634	**PDQuest Advanced 4-User Network License**
170-9635	**PDQuest Advanced 5-User Network License**
170-9636	**PDQuest Advanced 10-User Network License**
170-9637	**PDQuest Advanced 20-User Network License**
170-9638	**PDQuest Advanced Add 1 User to Network License**
170-9640	**PDQuest Basic to Advanced Software Version Upgrade**
170-9645	**PDQuest Advanced CFR Module**

Catalog #	Description
Stains and Standards	
161-0490	**Flamingo Fluorescent Gel Stain**, 10x solution, 20 ml
161-0491	**Flamingo Fluorescent Gel Stain**, 10x solution, 100 ml
161-0492	**Flamingo Fluorescent Gel Stain**, 10x solution, 500 ml
161-0363	**Precision Plus Protein™ Unstained Standards**, 1 ml, 100 applications
161-0373	**Precision Plus Protein All Blue Standards**, 500 µl, 50 applications
161-0374	**Precision Plus Protein Dual Color Standards**, 500 µl, 50 applications
161-0375	**Precision Plus Protein™ Kaleidoscope™ Standards**, 500 µl, 50 applications
161-0376	**Precision Plus Protein™ WesternC™ Standards**, 250 µl, 50 applications
161-0380	**Precision Protein™ StrepTactin-HRP Conjugate**, 300 µl, 150 applications
170-5070	**Immun-Star™ WesternC Chemiluminescent Kit**, includes 50 ml luminol/enhancer, 50 ml peroxide solution
BioOdyssey Calligrapher MiniArrayer Systems	
169-2000	**BioOdyssey Calligrapher MiniArrayer System**, 115 V, includes the arrayer, 3 pins (1 each MCP100, MCP360, and MCP310S), platen adaptor, waste and supply bottles, vacuum pump, training DVD, user manual
169-2100	**BioOdyssey Calligrapher MiniArrayer System**, 230 V
169-2200	**BioOdyssey Calligrapher MiniArrayer With Cooling Module**, 115 V, includes the arrayer, 3 pins (1 each MCP100, MCP360, and MCP310S), platen adaptor, waste and supply bottles, vacuum pump, refrigerated circulator with digital control, humidity control module, training DVD, user manual
169-2300	**BioOdyssey Calligrapher MiniArrayer With Cooling Module**, 230 V

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