cell analysis



Guide to Invitrogen imaging systems

A one-stop solution for your microscopy needs



Compact and portable imaging systems

Now you can have an easy-to-use cell imaging platform where you want it and when you want it. Simply place your Invitrogen[™] EVOS[™] imaging system at your desired location, flip the switch, and you'll typically be ready to go in under two minutes.

From intimate hands-on demonstrations to presentations of data in front of large audiences, EVOS imaging systems are perfect for teaching, sharing, learning, and discovery.





Publication-quality imaging

In today's competitive scientific environment, generating publication-quality images is critical to your success. To help ensure you get the image quality you need, EVOS systems give you top-of-the-line imaging components, including:

- High-quality camera and optics to capture high-resolution images
- LED illumination to produce exceptional signal-to-noise ratios
- Easy-to-use image processing and analysis software for ready-to-publish images

Technology that's better for our environment

Traditional light sources in fluorescence microscopy use mercury-based bulbs that contain a carcinogen, requiring special handling and disposal. By using LED light sources, EVOS systems do not require these special steps and are thereby more environmentally friendly and more energy-efficient.

EVOS imaging systems at a glance









	M7000	M5000	FLoid	XL Core
	Cat. No. AMF7000	Cat. No. AMF5000	Cat. No. 4471136	Cat. No. AMEX1000
		Fluorescence		Brightfield
Hardware attributes				
Simple installation	Yes	Yes	Yes	Yes
Installation and training	Service team	User	User	User
Motorized encoded X/Y scanning stage	Yes			
Manual mechanical stage		Yes	Yes	Yes
Mechanical or fixed stage option				Yes
Objective turret positions	5	5		4
Objective range	1.25–100x	1.25–100x	20x	1.25–100x
Fluorescence channels	4	4	3	
Fluorescence LED light cubes	Yes	Yes		
Monochrome or color camera option	Both	Mono with LED-based RGB illumination scheme	Mono	Color
Epifluorescence images	Yes	Yes	Yes	
Transmitted-light images	Yes	Yes	Yes	Yes
Color images	Yes	Yes	No	Yes
Benchtop system	Yes	Yes	Yes	Yes
Suitable for use in tissue culture hood		Yes	Yes	Yes
Darkroom needed	No	No	No	No
Associated printer		Optional	Yes	
Onstage incubator for time-lapse imaging	Optional	Optional		
Time-lapse imaging	Multichannel	Multichannel		
Autofocus	Yes	Yes		
Z-stack capability	Yes	Yes		
Automated multiwell plate screening	Yes			
Cloud connectivity		Yes		
USB ports	Yes	Yes	Yes	Yes
DVI ports		Yes		
Software attributes				
Celleste analysis software	Optional	Optional	Optional	Optional
Embedded analysis		Yes		
Intuitive onboard software	Yes	Yes	Yes	Yes
Networking capability	Yes	Yes	Yes	
Integrated reagent selection guide			Yes	

Image analysis with Celleste software

Transform your 2D and 3D cell image analysis with Celleste 5.0 Image Analysis Software

A full-feature image analysis suite designed for any image-based biological application that generates publication-quality data, Invitrogen[™] Celleste[™] 5.0 Image Analysis Software helps process measurements over multiple data points to enable qualitative and quantitative data. Streamlined and customizable workflows allow for repeatability and reproducibility across experiments.

Features include:

- Powerful image analysis capabilities for segmentation, classification, and quantification of single images or a batch of images
- Comprehensive image processing and enhancement functions with optional modules for deconvolution, 3D rendering, and 3D analysis
- Rapid processing with manual and automatic measurements over multiple channels and images

Invitrogen[™] Celleste[™] 2D Deconvolution Module

Improve single-plane image quality (signal-to-noise ratio) of cells or tissue slices by clearing background haze (out-of-focus light).

- Blind and nonblind deconvolution options
- Dramatically improved image quality
- Removal of blur that can obscure important details

Invitrogen[™] Celleste[™] 3D Deconvolution Module

Dramatically improve resolution and clarity of thick samples like spheroids, tissue slices, or cells in 3D matrices by deconvolving image Z-stacks.

- Blind and nonblind deconvolution options
- Advanced point spread function (PSF) controls with measured and theoretical PSF options
- A suite of 3D display and visualization tools

Widefield



Deconvolved



Widefield







Find out more at thermofisher.com/celleste

Cell viability

Using Invitrogen[™] LIVE/DEAD[™] labeling kits, you can label your cells, image them on the Invitrogen[™] EVOS[™] M5000 or EVOS M7000 microscopes, and perform cell counting measurements using Celleste 5.0 Image Analysis Software.

Simply import a multifluorescent captured image, apply smart segmentation, and get an accurate and rapid determination of cell viability.



Colocalization

Celleste software includes a colocalization feature, which measures the spatial overlap between two (or more) different fluorescent labels to demonstrate a correlation between a pair of biomolecules in 2D or 3D space.



Cell cycle

Researchers looking at changes in the cell cycle during an organism's development can use Celleste 5.0 Image Analysis Software to monitor intensity and color as cells go through the different cell cycle phases.





+	Class Name: G1 Count: 84				
	Sum(84) :	20523.00	84	10901.47	
٠	Class Name: G1/S Count: 57				
	Sum(57) :	16128.00	57	8848.99	
٠	Class Name: S / G2/ M Count: 42				
	Sum(42) :	9333.00	42	6296.07	

Wound healing

Wound healing, embryonic development, and tumorigenesis involve an orchestrated movement of cells in particular directions in response to external signals, both chemical and mechanical. With the wound-healing measurement on Celleste software, you can generate data on migration rate and direction with the touch of a button.



EVOS M5000 Imaging System

Form, function, and flexibility in one



Features

- Onboard software for acquisition, annotation, and analysis
- Machine learning-based cell counting and confluency analysis
- Autofocus, Z-stack capability, time-lapse imaging, and multichannel capture with a single click
- Automated multichannel fluorescence
- High-resolution monochrome camera and novel LED-based color illumination modes
- Proprietary RGB illumination for color images
- Connect, our cloud-based platform, enables you to access images and data anytime and anywhere with an internet connection



Unique and proprietary color illumination mode enables rendering of true color in transmitted light.

System highlights

Hardware	Details		
Illumination	LED light cubes (>50,000 hr life per light cube) with adjustable intensity		
Contrast methods	Epifluorescence and transmitted light (brightfield and phase contrast)		
Objective turret	5-position control		
Fluorescence channels	Simultaneously accommodates up to 4 fluorescent light cubes		
Condenser working distance	60 mm		
Stage	Mechanical stage with x- and y-axis fine-positioning controls and automated z-axis software controls; interchangeable vessel holders available		
LCD display	18.5 in. high-resolution articulated LCD monitor		
Camera	Highly sensitive 3.2 MP monochrome CMOS camera (2,048 x 1,536) with 3.45 µm pixel resolution		
Output ports	3 USB ports, 1 DVI port (supports direct output to USB and networked storage), Wi-Fi connectivity		
Power supply	AC adapter		
Dimensions (W x L x H)	18 x 18 x 23 in.		
Weight	50 lb		

Software

Designed by biologists for biologists, the EVOS M5000 Imaging System is remarkably easy to use. Following seamless image acquisition, you can analyze, edit, and annotate your images using a set of convenient tools available both in live mode and for saved images. For common applications, we have created easy-to-use image analysis tools driven by sophisticated segmentation algorithms. With a few clicks you can get a total count of your DAPI-stained cells or an estimate of confluence for reproducibility when you split your cells. Once you have edited and analyzed your images, save the images and data to the integrated hard drive, to an external USB device, to a local network, or to Connect, using the EVOS[™] Image Analysis app.

Applications

The EVOS M5000 system integrates precision components with a unique modern design to deliver high-quality fluorescence and color imaging with unprecedented flexibility. It is a fully integrated system that combines precision optics, an 18.5 inch high-resolution articulated LCD monitor, and a highly sensitive 3.2 MP monochrome CMOS camera (2,048 x 1,536) with 3.45 µm pixel resolution. The monochrome camera affords the best sensitivity for detection of faint fluorescence signals and allows quantitative analysis, while the unique and proprietary color illumination mode enables rendering of true color in transmitted light (e.g., when imaging stained tissue samples).

Key software capabilities

- Z-stacking
- Automated Z-stacking
- Automated cell counting
- Multichannel time-lapse imaging



Intuitive interface allows even novice users to take images like a pro within minutes.

Educational resources

BioProbes[™] *Journal*, our awardwinning print and online magazine, highlights the latest breakthroughs in cell biology, featuring new technologies and products.

Read the latest issue at thermofisher.com/bioprobes

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The most complete reference guide on fluorescent labeling and detection— The Invitrogen[™] Molecular Probes[™] Handbook: A Guide to Fluorescent Probes and Labeling Technologies describes over 3,000 reagents and kits representing a wide range of Invitrogen[™] labeling and detection products.

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Ordering information				
Product	Cat. No.			
EVOS M7000 Imaging System	AMF7000			
EVOS Onstage Incubator	AMC1000			
EVOS M5000 Cell Imaging System	AMF5000			
EVOS FLoid Imaging System	4471136			
EVOS XL Core Imaging System	AMEX1000			

Find out more at thermofisher.com/cellimaging

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