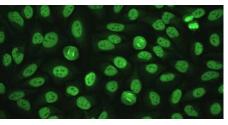




LS



Fluorescence Microscope



A COLORFUL EXPRESSION

Fluorescence is a molecular phenomenon of spontaneous light emission from a substance after being excited. The emitted light is always of lower energy (longer wavelength) than the excitation energy.

The excitation/emission process is extremely sensible, making fluorescence the most complex contrast method in widefield microscopy. An incorrect setup may cause more than a bad image: there might be no visible signal at all.

A SIMPLIFIED APPROACH TO FLUORESCENCE

• Specific dyes have been developed to selectively stain parts of a specimen. These dyes are called fluorochromes.

• A selected wavelength is applied to the sample (excitation); this wavelength refers to the absorption maximum of the fluorochrome.

• Energy is absorbed by the fluorochrome, shifting it to a higher energy level.

• The excited state of the fluorochrome lasts only a split second; falling back to the original energy level is accompanied by an emission of light.

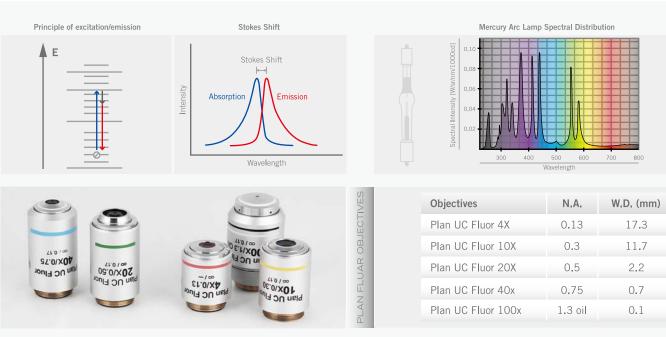
• As the emission comes along with a partial energy transformation, all emission is less energetic than its corresponding excitation.

• "Stokes shift" describes this effect: The emission is always shifted to a longer wavelength (color).

UV excitation — BLUE emission BLUE excitation — GREEN emission GREEN excitation — RED emission As the energy relation of excitation to emission is 10.000:1, a maximum efficient hardware setup has to be targeted.

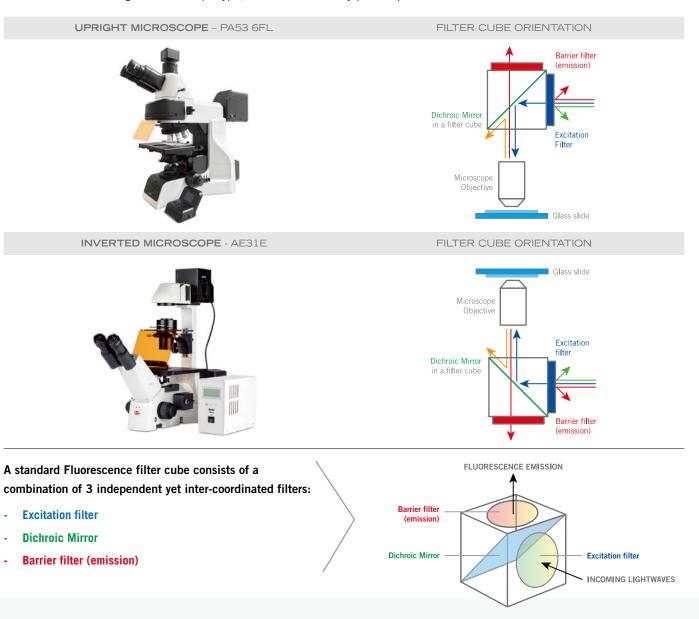
Motic fluorescence light sources are using high Power LED or traditional Mercury-Arc Lamps ensuring a bright and even Illuminated Fluorescence Image.Broadband Mercury-Arc Lamps for great wavelength flexibility or 3-Channel high power LED Lamps for extreme long lifecycle and ultrafast Powercycles.

Motic Plan UC Fluor Objective Series are providing a ultraflat high-contrast image from VIS to Ultraviolet Spectrum. In VIS Spectrum Motic Plan Apochromatic Objective Series are delivering a additional perfect choice of amazing imaging performance.





Motic's fluorescence filter cubes can be used on both upright and inverted microscopes. Following the microscope type, the fluorescence ray path requests a different filter cube orientation.



The excitation filter has a band pass characteristics, opening a defined sector within the spectrum of the light source to match the absorption peak of the fluorochrome.

In a given filter specification, the excitation peak of the filter is specified by the first numeric value, while the width of the ex- citation sector at 50% of the maximum intensity is displayed by the second number (peak width at half height).

A value of 480/30 (nm) for FITC describes a curve of excitation from 465 to 495nm, with a peak around 480nm. The broader the sector, the more energy will excite the sample. A broad sector will result in a strong but unspecific excitation. A narrow sector effectuates a more specific excitation. Filters with narrow excitations are especially desired in case of multiple staining, where excitation maxima of diverse fluorochromes (e.g. GFP mutants) may be close to each other.

The dichroic mirror (from the Greek dikhroos, meaning twocolored) is a long pass filter which starts transmission from the specified wavelength on (e.g.505nm in FITC). For shorter wavelengths the dichroic is impervious and thus acts as a mirror. So the separation of excitation light and emission signal is achieved.

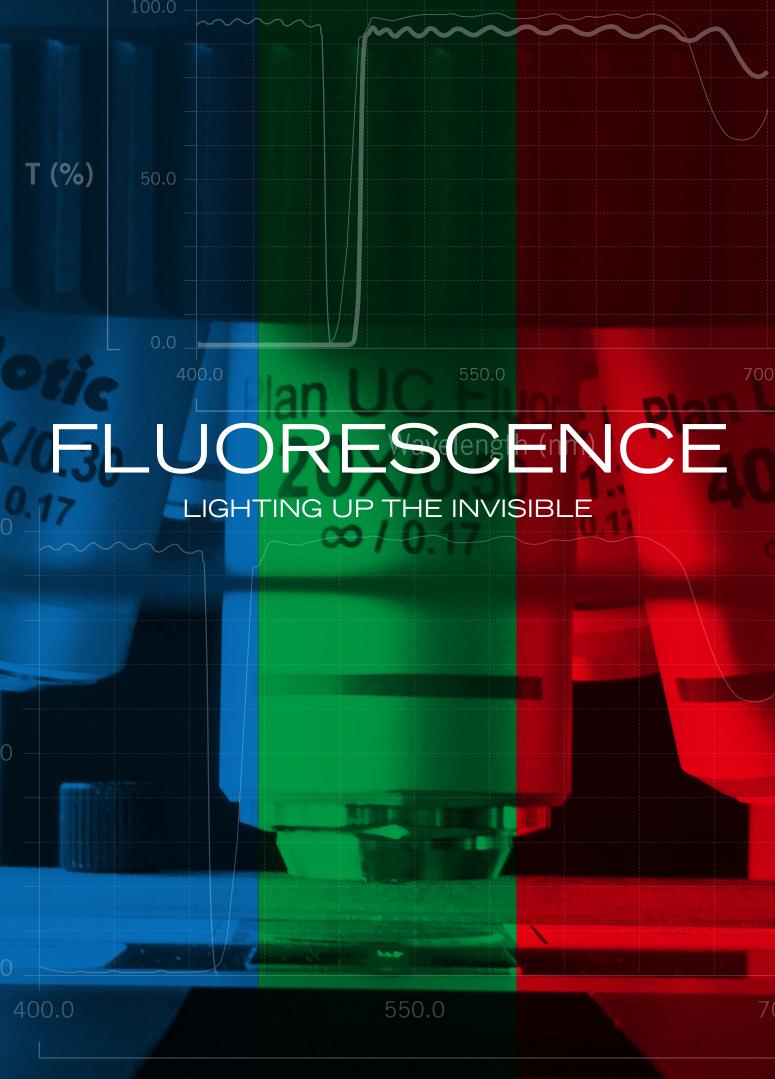
The emission (also called barrier) filter may be designed with long pass or band pass characteristics. The long pass displays all emissions from the stated wavelength on (515nm in FITC), resulting in a mixed color image, while the band pass construction cuts out a pure color. Multiple staining always requests band pass emission filters, as the single signals have to be separated.

To select the correct filter cube, the applied dyes and their excitation/emission maxima have to be carefully taken into consideration. A standard equipment may include DAPI, FITC and TRITC filter cubes, which will cover common dyes in clearly separate sectors of the light spectrum.

MOTIC'S STANDARD FILTER COMBINATIONS



MOTIC' S STANDA	MOTIC' S STANDARD FILTER COMBINATIONS ARE:							
Filter combinations	Exciter	Dichroic	Barrier Filter					
DAPI/Hoechst	D350/50X	400DCLP	D460/50m					
FITC/RSGFP/Fluo3	D480/30X	505DCLP	D535/40m					
FITC Long Pass	D470/40X	505DCLP	E515LPv2					
TRITC (Rhodamine) / CY3	D540/25X	D565DCLP	D605/55m					
Texas Red/Cy3.5	D560/40X	595DCLP	D630/60m					
Cy5/Fluor633/Alexa Fluor 647	HQ620/60X	Q660LP	HQ700/75m					
Cyan GFP	D436/20X	455DCLP	D480/40m					
Endow GFP	HQ470/40X	Q495LP	HQ525/50m					
Yellow GFP	HQ500/20X	Q515LP	HQ535/30m					



Wavelength (nm)



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Design Change: The manufacturer reserves the right to make changes in instrument design in accordance with scientific and mechanical progress, without notice and without obligation.

Updated: 15.03.2019 Code: 130090??????



Official Distributor:







PA53 BIO / PA53 FS6

Microscopy Solutions for Clinical and Life Science Applications

PA53 Series – Upright Biological Laboratory Microscopes

1

The PA53 upright biological laboratory microscope series is designed with the user in mind. In keeping with Motic Scientific's mission statement of providing technologies for people at affordable prices, we are proud to offer our new entry level high-end microscope series for clinical and life science applications with an impressively high price to performance ratio. Our PA53 BIO and PA53 FS6 models have an ergonomic design helping to reduce user fatigue during extended periods of use and also feature intuitive control layout for optimized and efficient workflow.

The modularity of the PA53 biological series microscopes offers you flexibility in choosing a cost-efficient or advanced configuration depending on your needs. It also allows the ability to upgrade your configuration should your daily workflow change or require different illumination techniques. Whether you are observing HE stained tissue in brightfield, need to study endothelial cells under phase contrast, diagnose a potential case of gout with polarization or perform advanced FISH/HER2 analysis with bright fluorescence imaging, the PA53 biological series has you covered---and won't break the bank.



Featuring Intelligent & Convenient Functionality Increase Your Work Efficiency and Comfort





Cytology

Transmitted, Full Kohler 100W Halogen Illumination

Our standard PA53 BIO and PA53 FS6 configurations are equipped with transmitted, full Kohler 100W halogen illumination. Intelligent heat-reduction engineering ensures you can use our 100w halogen illumination for long periods without worrying about injury due to overheating. Our 100W halogen bulbs also feature a lifespan 5 times higher than traditional 30W halogen bulbs, meaning more time for your lab work.

Comfortable Viewing

In order to reduce operator eyestrain, our standard PA53 BIO and PA53 FS6 configurations are equipped with super wide-field FN23, diopter adjustable eyepieces. The 30-degree, Siedentopf type observation tube offer light distribution of 100:0, 20:80, and 0:100 and ensures a comfortable viewing angle during extended use. Furthermore, the prismatic lenses used provide strong chromatic aberration correction, ensuring you are viewing your samples in true-to-life colors.



Convenient, Multifunctional Illumination Control Knob

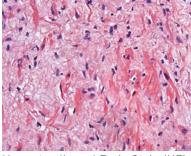
With your workflow and ease of use in mind, our PA53 BIO and PA53 FS6 models come standard with multifunctional illumination control knobs. Control illumination intensity or switch between reflected and transmitted light with ease.

Environmentally Friendly ECO Function

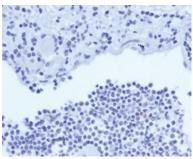
An automatic power saving mode is engaged whenever an operator leaves temporarily. This power saving mode is enabled to protect your samples from the heat of the illuminator. ECO mode also results in energy savings which extend the lifetime of the lamp and reduce overall operational costs.

Consistent, Even Illumination with IL Function

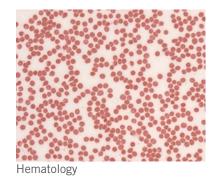
Working efficiency is further increased by providing an optimized consistent, even brightness in illumination with the IL function. With the IL function engaged, the brightness level will be maintained even if the observation magnification is changed during observation.



Haemotoxylin and Eosin Stain (HE)



Immunohistochemistry (IHC)



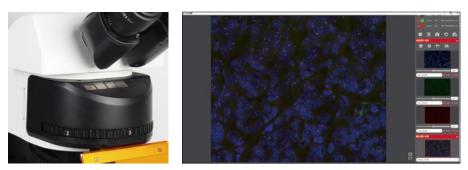
PA53 FS6 – Upright Fluorescence Microscopes

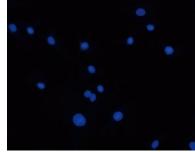
The PA53 FS6 offers a reflected fluorescence illumination system with our high-powered LUMOS LED or traditional mercury-arc lamp set-up. Up to six filter cubes can be inserted into the coded fluorescence turret to ensure optimal multi-color fluorescence observation. Our standard configuration PA53 FS6 features mounted, high quality DAPI, FITC, and TRITC filter cubes in addition to 2 empty filter cubes which can be mounted by the user depending on their specific research or application needs. We also offer a mounted filter cube for FISH analysis which is recommended to be used with our long lifecycle (20,000 + hours) LUMOS LED.

Our expertly designed, carefully in-house crafted, high-performance Plan UC Fluor objectives provide an ultra-flat, high-contrast image perfect for use with the LUMOS FL LED Lamp to obtain high quality bright fluorescence imaging in the UV-Visible light range.



From Simple Measurements to Complicated Analyses Our Superior Optical Performance Fulfills Your Needs





DAPI Exciter filter (wave length) : D350/50x nm Beam splitter filter (wave length) : 400DCLP nm Emitter filter (wave length) : D460/50m nm

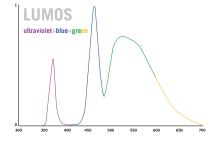
Fluorescence Module

The coded fluorescence turret automatically remembers the fluorescence channel and each channels brightness. This avoids the issue of stray light and saves you from having to purchase expensive OD6 or OD8 filters to increase fluorescence performance.

Motic Fluorescence Imaging Software

Our Motic Fluorescence Imaging Software plug-in for Motic Images Plus 3.0 is included with all PA53 FS6 purchases. It was developed in-house and offers a professional fluorescence digital image processing solution for multi-channel imaging. This software supports up to four channel imaging which can then be merged to meet FISH and other fluorescence imaging analysis applications.

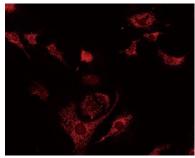




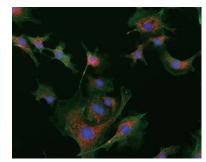
LUMOS FL : High-Powered UV-BG Fluorescence LED Lamp

- Features apochromatic design.
- Compared to the lifespan of only 200 hours and the high cost of mercuryarc lamps, the LUMOS FL provides over 20,000 hours of use.
- No light toxicity like traditional mercury-arc lamps which can damage samples with infrared light heat toxicity.
- Instant On/Off: Unlike traditional mercury-arc lamps which take up to 20 minutes to reach optimal brightness levels when turned on, the LUMOS FL is ready for use at the flip of a switch.
- Does not pose toxic gas danger to users.
- Avoids stray light interference during observation, helping to avoid errors in user interpretation of images.
- Individually controls each LED channel and eliminates need for multiple filters therefore reducing filter cube expense.
- Features a broad spectrum spread which can satisfy multiple user applications.





TRITC Exciter filter (wave length) : D540/25x nm Beam splitter filter (wave length) : 565DCLP nm Emitter filter (wave length) : D605/55m nm



RGB Three channels Integration





High Performance sCMOS Technology

The new Moticam S line of cameras mark yet another milestone in Motic's digital microscopy expansion. By utilizing the latest sCMOS sensors coupled with our own PCB design and on-board image management systems, each Moticam S promises to deliver professional digital microscopy solutions at an affordable price. This new scientific grade Moticam line is designed and manufactured totally in-house under strict German quality guidelines. Whether for Clinical, Research or Industrial use, this new generation of Moticam has a model for even the most demanding users. The Moticam brand is recognized around the world as representing easy to use and adaptable attachable cameras for virtually any microscope. At Motic, we believe in making quality Digital Microscopy affordable for everyone and we know that you will enjoy this new line.

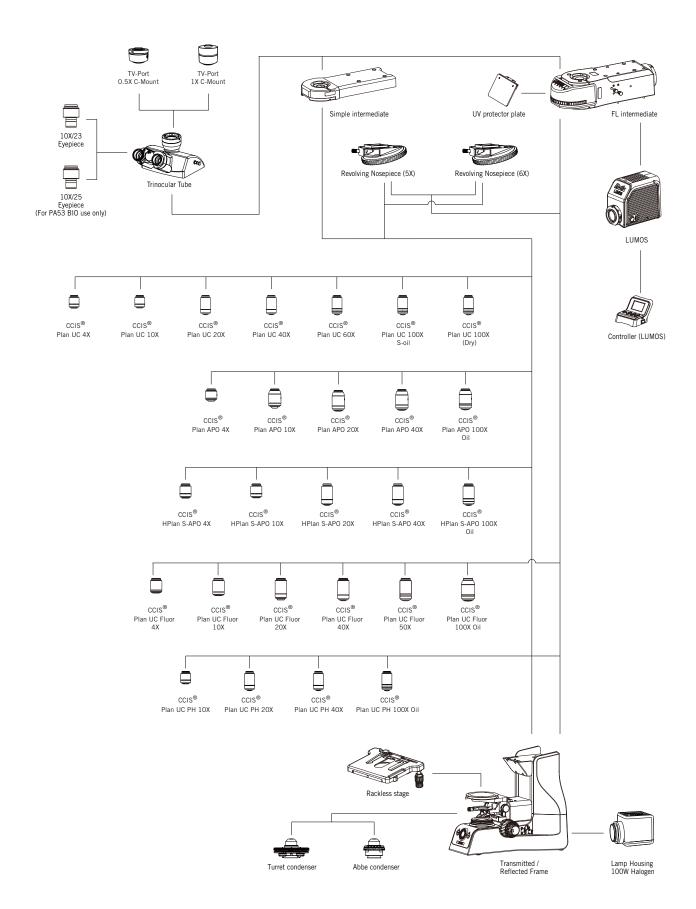
Key Features

- Super-fast frame rates with USB 3.1 data transfer.
- Offers resolution up to 12 MP.
- Rolling shutter or global shutter models depending on your specific application.
- Excellent true color reproduction.

MOTICAM S TECHNICAL SPECIFICATIONS

Moticam	S1	S3	S6	S12	MoticamProS5 Lite	MoticamProS5 Plus
Sensor Type	СМОЅ					
Sensor Size	1/3"	1/2.8"	1/1.8''	1/1.7"	2/3"	2/3"
Resolution	1.2M	ЗM	6M	12M	5M	5M
Imaging Area (Diagonal)	6.09mm	6.44mm	8.92mm	9.33mm	11.1mm	11.1mm
Pixel Size	3.75µm x 3.75µm	2.5µm x 2.5µm	2.4µm x 2.4µm	1.85µm x 1.85µm	3.45µm x 3.45µm	3.45µm x 3.45µm
	1280x960@120fps	2048x1536@60fps	3072x2048@30fps	4000x3000@25fps	2448x2048@35.7fps	2448x2048@68.3fps
Max. Frame Rate:	640x480@240fps	1920x1080@60fps	1536x1024@50fps	2048x1080@50fps	1224x1024@88.4fps	1224x1024@175.8fps
Scan Mode	Progressive					
Shutter Mode	Rolling Shutter	Rolling Shutter	Rolling Shutter	Rolling Shutter	Global Shutter	Global Shutter
Data Transfer	USB3.1					
Exposure Time	15us~2sec	21us~2sec	16us~2sec	22us~2sec	14us~2sec	7us~2sec
Sensitivity (G)	2350 mV @ 1/30 sec	600 mV @ 1/30 sec	425 mV @ 1/30 sec	280 mV @ 1/30 sec	1146 mV @ 1/30 sec	1146 mV @ 1/30 sec
Focusable Lens	12mm	12mm	16mm	16mm	16mm	16mm
Power consumption	less1.0W@ 5V(USB-supply) less1.5W@ 5V(USB-supply)				V(USB-supply)	
Lens Mount	CS-Mount					
Support Device	TWAIN, SDK and DirectShow Driver					
Supported OS (Recommended)	Higher than Microsoft Windows7/8/10, MAC OSX10.9 and Linux					
Minimum Computer Requirements (Recommended)	2GHz Dualcore, RAM memory 2GB and Video Memory Min 512MB					
Operating Temperature	From -10 to + 60 degree celsius non condensing					
Package Includes	CS Ring Adaptor, Calibration Slide, USB3.1 cable, Image Plus 3.0 for PC / OSX / Linux(Accessories Package) Focusable Lens, 30mm and 38mm Eyepiece Adapter, Macro Tube and Macro Tube Calibration dot					

SYSTEM OVERVIEW

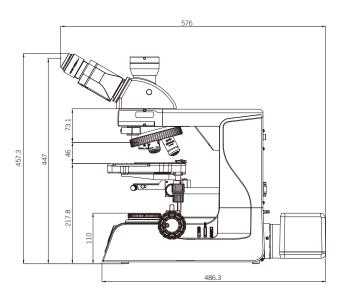


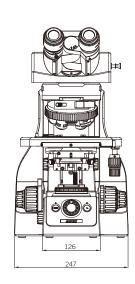
SPECIFICATIONS

Model	PA53 BIO	PA53 FS6				
Optical System	Scalable Infinity-Corrected Optical System(CCIS®)					
Illumination	Transmitted Illumination System Transmitted / Reflected Fs Illumination Sy					
Transmitted illumination	Kohler illumination 100W long life halogen lamp					
Reflected Flour Illumination						
Observation Tube	30°Trinocular (100:0,20:80,0:100)					
	Wide-Field(FN23) Eyepiece 10X/23mm, Diopter adjustable					
Eyepieces	Wide-Field(FN25) Eyepiece 10X/25mm, Diopter adjustable	/				
Nosepiece	Coded Quintuple(5) revolving nosepiece					
Recommended Objectives	Plan UC Achromat Series Plan UC 4X/0.1, W.D=30.5mm,CG=0.17 Plan UC 10X/0.25, W.D=17.4mm,CG=0.17 Plan UC 20X/0.45,W.D=0.8mm,CG=0.17(Optional) Plan UC 40X/0.65,W.D=0.6mm,CG=0.17 Plan UC 60X/0.8,W.D=0.35mm,CG=0.17(Optional) Plan UC 100X/1.25 Oil,W.D=0.16mm,CG=0.17 Plan UC 100X/0.8,W.D=2mm,CG=0.17	Plan UC Fluor Series Plan UC Fluor 4X/0.13,W.D=17.3mm,CG=0.17 Plan UC Fluor 10X/0.3,W.D=11.7mm,CG=0.17 Plan UC Fluor 20X/0.5,W.D=2.2mm,CG=0.17 Plan UC Fluor 40X/0.75,W.D=0.7mm,CG=0.17 Plan UC Fluor 100X/1.3 oil,W.D=0.1mm,CG=0.17				
Plan APO Series	Plan APO 4X/0.15 W.D.=20mm,CG=0.17 Plan APO 10X/0.35 W.D.=4.2mm,CG=0.17 Plan APO 20X/0.75 W.D.=0.55mm,CG=0.17 Plan APO 40X/0.95 W.D.=0.18mm,CG=0.17 Plan APO 100X/1.3 oil. W.D.=0.25mm,CG=0.17	/				
HPIan S-APO Series	HPIan S-APO 4X/0.13,W.D=17.3mm,CG=0.17 HPIan S-APO 10X/0.3,W.D=11.7mm,CG=0.17 HPIan S-APO 20X/0.5,W.D=2.2mm,CG=0.17 HPIan S-APO 40X/0.75,W.D=0.7mm,CG=0.17 HPIan S-APO 100X/1.3 oil,W.D=0.1mm,CG=0.17	/				
Plan UC Phase Contract Series	Plan UC PH 10X/0.25, W.D=17.4mm,CG=0.17,ph1 Plan UC PH 20X/0.45,W.D=0.8mm,CG=0.17,ph2 Plan UC PH 40X/0.65,W.D=0.6mm,CG=0.17,ph2 Plan UC PH 100X/1.25 0il,W.D=0.16mm,CG=0.17,ph3					
Focusing Mechanism	Stage Z range: 29.5 mm, Coarse and Fine focusing knob Coarse focusing : 17.7mm/turn; fine focusing: 0.1/turn, Upper limit stopper, Torque adjustment ring					
Condenser	Abbe conden	ser				
Stage	Rackless stage					
Filter Cubes	/	DAPI/Hoechst/AlexaFluor 350 EGFP/FITC/Cy2/AlexaFluor 488 TRITC/Cy3/TagRFP/AlexaFluor 546 DAPI/Green/Orange #1 FISH (Multiple filter cube options available on request consult with your Motic sales representative)				
	Motic Images Plus 3.0 (Best paired with Moticam S line cameras)					
Software	/	Motic Images Plus 3.0 FL channel merge plug-in				

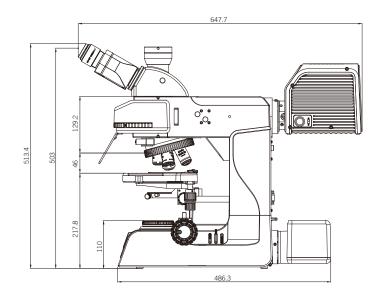
DIMENSIONS

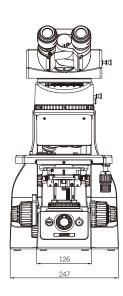
PA53 BIO





PA53 FS6







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