

**XD** LABORATORY BIOLOGICAL  
MICROSCOPE



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SUNNY INSTRUMENTS  
**XD SERIES**

**XD** LABORATORY BIOLOGICAL  
MICROSCOPE

SUPERIOR MICROSCOPIC IMAGE  
OUTSTANDING PERFORMANCE & VALUE



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## **XD** LABORATORY BIOLOGICAL MICROSCOPE

- A new generation of infinity color corrected optical systems with wide-field high eye-point eyepieces and plan achromatic objectives, present you a sharp and bright micro-image.
- Koehler illumination with iris aperture diaphragm, 360° rotatable condenser holder, different light is available.
- Different kinds of accessories, more functions, achieve more methods of observation and suit for all kinds of detections or experiments.
- Extraordinary ergonomics design, long working distance, sturdy and durable, adapts for different work environments.
- Professional vertical fluorescence technology, intelligence Chinese fluorescent image processing software, meets the request of professional image processing.



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With stable efficient performance, simple operation approach and complete accessories, XD series inverted biological microscope is the best choice for biomedicine and teaching lab.

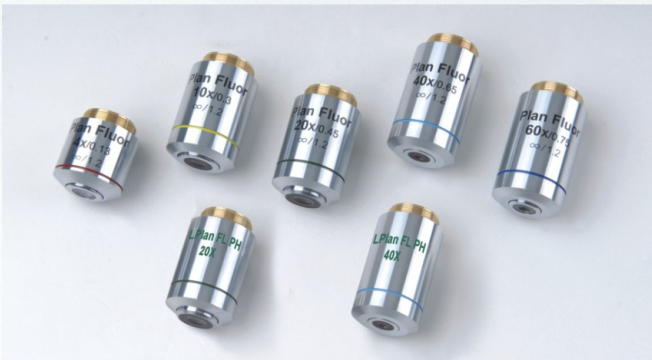
XD laboratory inverted microscope, designed for observing cell and tissue cultures, can be used to observe cell growth, tissue profile, internal structure, etc. Assembled with professional fluorescence attachment, fluorescence effect is observable, such as auto-fluorescence in vivo, cellular fluorescence transfection and protein transfer.



XD-RFL objectives



LPLAN series long working distance plan infinity color corrected objectives, designed for living-cells culture in laboratory, clear image, good contrast, and also have a good performance under fluorescence observation.  
LPLAN PH series long working distance infinity phase contrast objectives. In addition to the realization of the bright field observation, the phase contrast observation function has been developed to make the view showing a sense of relief and a substantial increase in image contrast and resolution.



Series	Magnification	N.A.	W.D.	F.N.	Cover glass thickness	Immersion	Spring
Lplan series (PH)	Lplan4X	0.10	22	22	1.2	/	/
	Lplan10x	0.25	7.94	22	1.2	/	/
	Lplan PH10X	0.25	7.94	22	1.2	/	/
	Lplan20x	0.40	7.66	22	1.2	/	/
	Lplan PH20X	0.40	7.66	22	1.2	/	/
	Lplan40x	0.60	3.71	22	1.2	/	/
Lplan semi-apochromatic series (PH)	Lplan PH40X	0.60	3.71	22	1.2	/	/
	Lplan FL2x	0.06	5.05	25	—	/	/
	Plan Fluor4x	0.13	18.52	25	1.2	/	/
	Plan Fluor10x	0.30	7.11	25	1.2	/	/
	Plan Fluor20x	0.45	5.91	25	1.2	/	/
	Lplan FLPH20x	0.45	5.91	25	1.2	/	/
	Plan Fluor40x	0.65	1.61	25	1.2	/	/
	Lplan FLPH40x	0.65	1.61	25	1.2	/	/
	Plan Fluor60x	0.75	1.04	25	1.2	/	/

LPLAN-FLUOR series infinity plan semi-apochromatic fluorescence objectives, adopting crystal optics materials, various types of chromatic aberration corrected perfectly, large numerical aperture design, provide you high-resolution, high-contrast microscopic images. While doing Fluorescence observation, the images is clear and bright, the background is pure black. In the aspect of UV fluorescence, which has more prominent performance, is the best choice of your observation on living cell culture. LPLAN-FLPH series infinity plan semi-apochromatic phase contrast fluorescence objectives, witch achieve bright field, phase contrast and fluorescence observation in one set objectives, eliminate your inconvenience of replacing different kinds of objectives to improve the observation efficiency and comfort.



Attachable mechanical stage

Moving range: 120x78mm. It can clamp types of standard cell culture plates. With the help of related accessories, it could be used to move the dish, flask, slide and so on.



Wide-field plan eyepiece

New designed high eye-point wide-field plan eyepiece PL10X/22, has a full bright diagram without chromatic circle. International popular 22mm field of view is convenient for target seeking and counting.



Phase contrast accessories

Select a matching phase contrast slide on the basis of the chosen illuminator. With the phase contrast objectives, phase contrast observation can be realized. Thus you can acquire a better it is better image contrast than the bright field. The cell image is with a strong sense of relief. You can use it to do a more detailed observation on those component parts of colorless transparent cells.



Transmission system

6V30W halogen bulb, critical illumination or Koehler illumination could be chosen. In critical illumination mode, the frame fixed, the filament centre scheduled. With aperture diaphragm, the condenser could be turned away. In Koehler illumination mode, the frame rotatable, the filament centre adjustable. With field diaphragm and aperture diaphragm, the condenser can be removed.



With multiple observations, such as bright field, phase contrast, fluorescence, etc, available to be the effective tool for biological, medical and laboratory use.

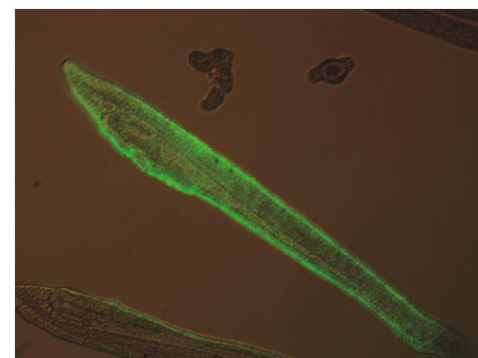
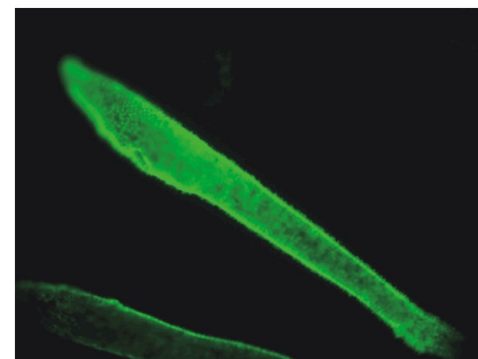
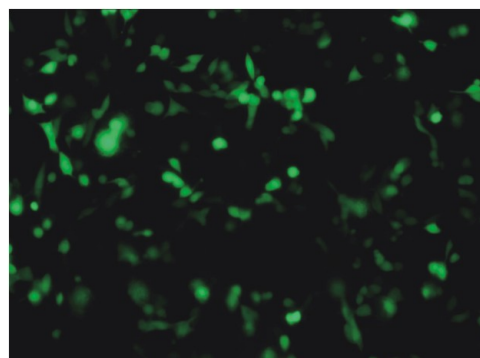
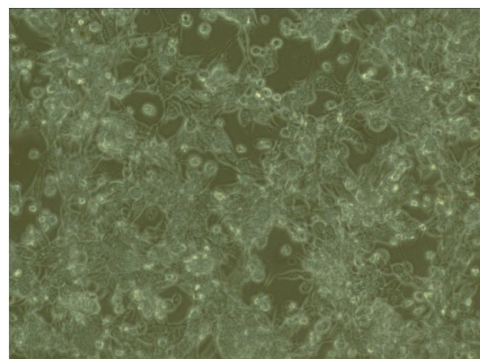
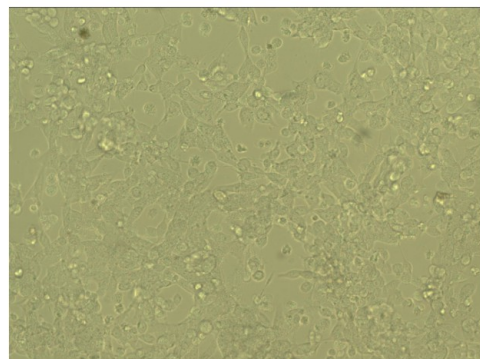
## Semi-Apochromatic fluorescence objectives

A new generation of professional infinity plan semi-apochromatic fluorescence lens with high numerical aperture, which is 25% higher than ordinary plan objective lens, can excite the sample with brighter light and make a substantial increase in image resolution and clarity. The system uses the high quality environmental protection materials, no auto-fluorescence, high UV through rate. Compared with ordinary bright-field achromatic lens in bandwidth and UV transmittance, the objectives with wideband multi-coating technology have obvious advantages.



### Observation of living-cell culture

Observation of GFP-transfected 293T cell culture. Observe the situation of infected 293T cells in bright field, phase contrast and fluorescence with the inverted fluorescence microscope. With different observation, you can judge the condition of the cell growth, activity level and the efficiency of transfection.



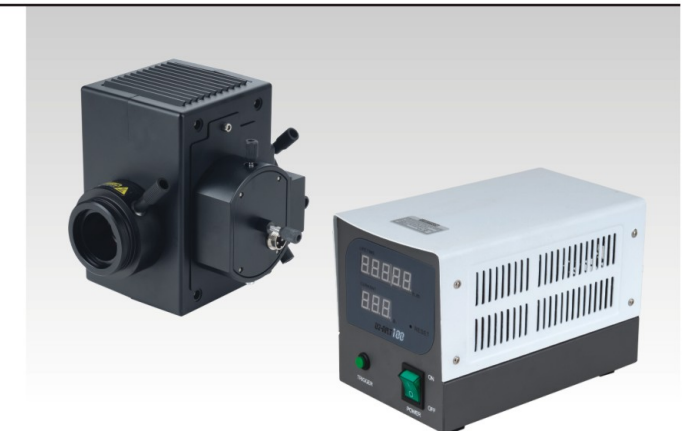
### Observation in vivo

Amphioxus larvae. Observe the development of the larvae with phase contrast, and the auto-fluorescence of the larvae with fluorescence. Combine two images to analyze the distribution of proteins in the larvae.

## Mercury lamp power supply and control system

Light room with protection device, if the light room door did not shut down, the circuit would be automatically cut off to prevent mercury lamp accidental start, and avoid ultraviolet radiation. High pressure DC mercury lamp, high-intensity fluorescent lighting, ensures a high degree of stability, security and service life.

The new digital power control system with a working timer and a current display help users determine the status of the mercury lamp. There is also a safety trigger button to prevent accidental activation of the lamp.



## Filter block switching mechanism

Two-band or three-band can be chosen. In two-band mechanism, each filter block equipped with a draw bar to make handle more easily. In three-band mechanism, filter blocks are integrated into one group. There are three fluorescence channels and a bright field channel.



## Digital camera adapter

Microscopy image can be output to monitor or computer by connecting the trinocular tube and camera device. Then image analysis, processing, storage and transmission would be available.



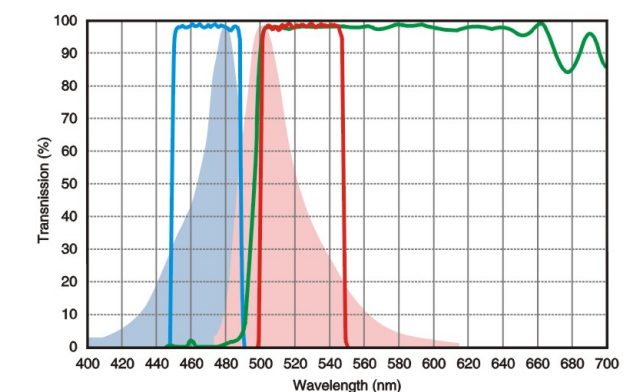
## Efficient illumination system

Best material SiO2, refractory and corrosion-resistant, high UV through rate, making the illumination more uniform and brighter. High temperature resistant composite plastic is used for insulation design to effectively prevent the heat of illuminator from transferring to the body. The illumination with alterable field diaphragm, center adjustable, can effectively reduce the stray light to obtain best observed results. UV protection design is used to the whole system, effectively cut off ultraviolet radiation.



## High-performance fluorescence filters

Our selected high-performance fluorescence filters not only have a high transmittance of the spectrum, but also have good depth and steepness of the cutoff line. Without a cross color but a high S/N ratio, fluorescence imaging contrast was promoted dramatically. We choose stray light elimination of the background to the filter blocks. Thus, the background of the image becomes darker, and the fluorescence brighter.





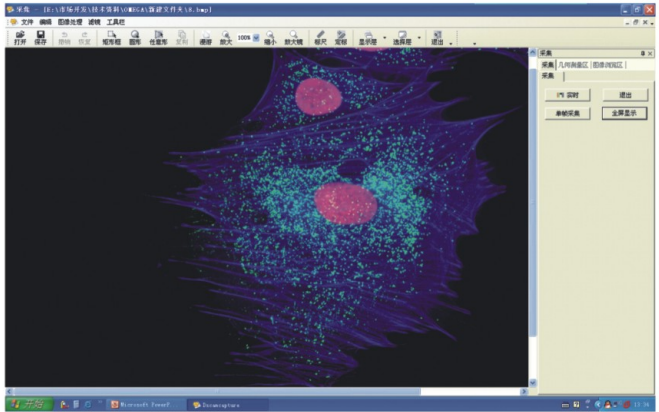
High-performance semiconductor-cooling color CCD, help you record each observation process in a experiment. Rebuild the original characteristics of the sample.



Scientific research class cold CCD, 1.4 mega effective pixels, 2 / 3 "target surface, 12V DC high-efficiency semiconductor-cooling system, which can perfectly restrain noises of heat signal, elimination of dark current, and increase in S/N ratio greatly to help users to get high-resolution, high-definition professional fluorescence images. With USB2.0 high speed transmission interface, and easy PC connection.

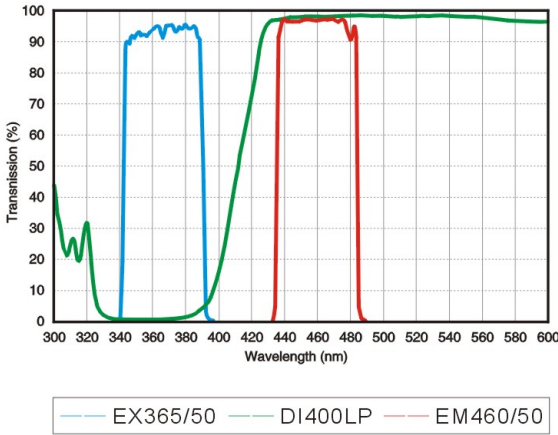
Camera	type	Single chip color CCD
	Refrigeration mode	Peltier Semiconductor refrigeration
Image Sensor	size	2/3 inches
	Effective Pixels	140 Million
	Pixel size	6.45 μ m × 6.45 μ m
	Scan Mode	Progressive Scan
Microscope adapter		C mount
Effective image resolution		1360x1024
Data transfer	Transmission interface	USB 2.0
	Transmission speet	480M/s
Image Format		bmp/jpg
Preview	Preview mode	Full Pixel Preview
	Preview speed	12.5 Frame/s
Exposure Control	Exposure mode	Auto/hand
	Exposure time	0-159.13s, Incremental 0.03s
	Auto exposure value	40-180
White balance mode		Auto/hand
Operating temperature		-10℃- 60℃
Cooling temperature		Below room temperature 20℃
Working voltage		12V

Smart cool takes full advantage of Windows system resources, comprehensively supports for WinXP, VISTA, WIN7. Chinese interface, simple, intuitive, convenient and fast. It offers a variety of powerful tools for area selection. The area of any shape can be processed and analyzed. It can also accomplish many professional image processing and analysis operations including color adjustment, image warping, mathematical morphology, image enhancement, image overlay, texture analysis, feature recognition and others. It support for true color image acquisition, and processing and analysis about RGB, CMY, HSV color models. And its geometric parameter measurement function, can do quantitative analysis to slender body, massive body, granular body, threadlike body etc.

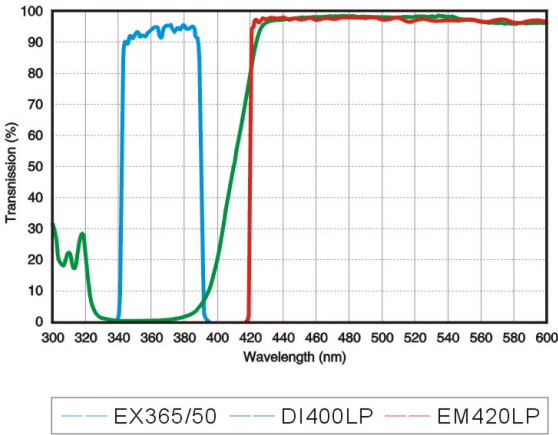


Standard parameters of fluorescent filter module, substantially meets the needs of conventional scientific research. We also can provide specialized filer module for fluorescent probes according to the special requirements of detection and analysis.

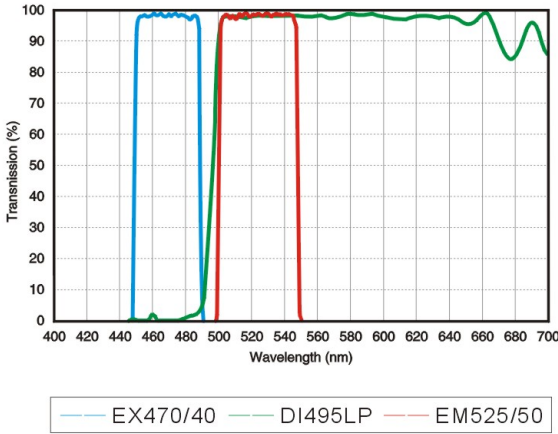
UV1: DAPI/Hoechst 33342/33258 AMCA/AMCA-X Blue/ Alexa Fluor® 350



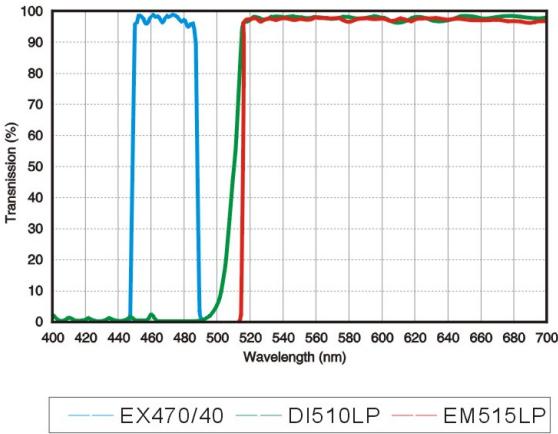
UV2: DAPI/Hoechst 33342/33258 AMCA/AMCA-X Blue/ Alexa Fluor® 350



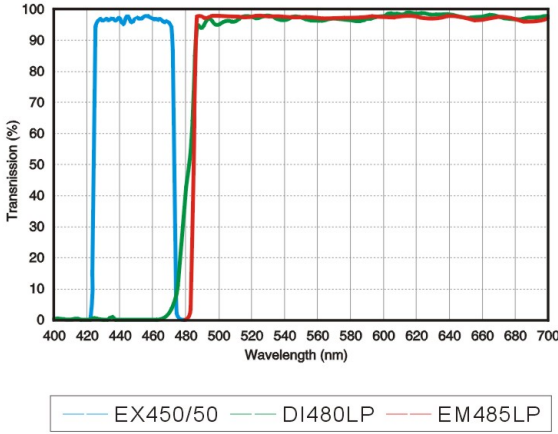
B1: EGFP/GFP/FITC /Alexa Fluor@488 Cy2@/DIO/Fluo-4



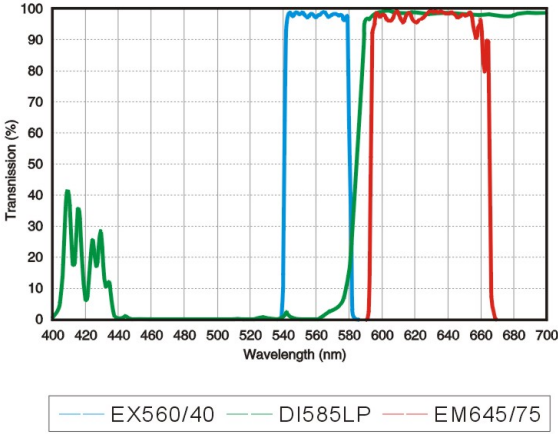
B2: EGFP/GFP/FITC /Alexa Fluor@488 Cy2@/DIO/Fluo-4



B4: Auramine O/wtGFP

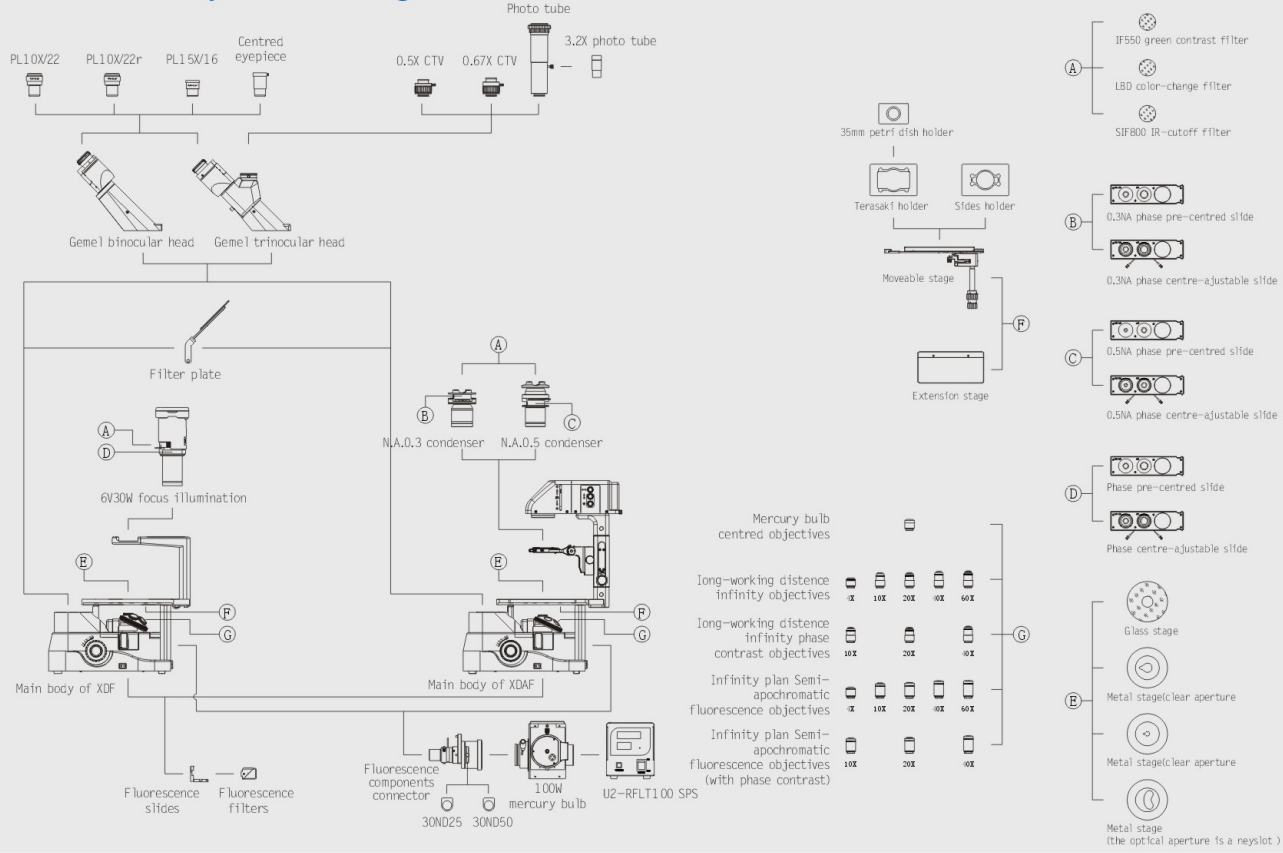


G1: TexasRED@/TexasRed@-X/Cy3.5 Mito Tracker@Red





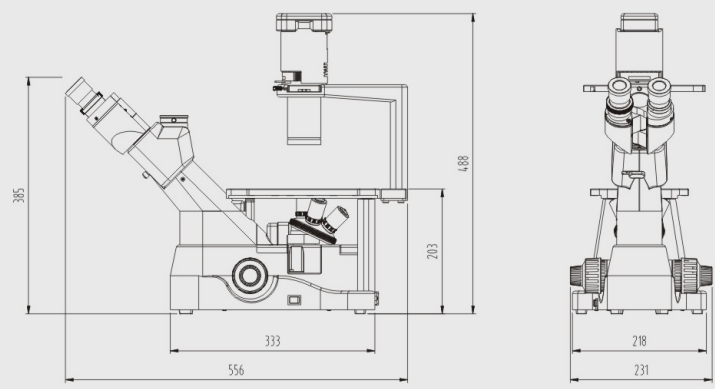
XD series system diagram



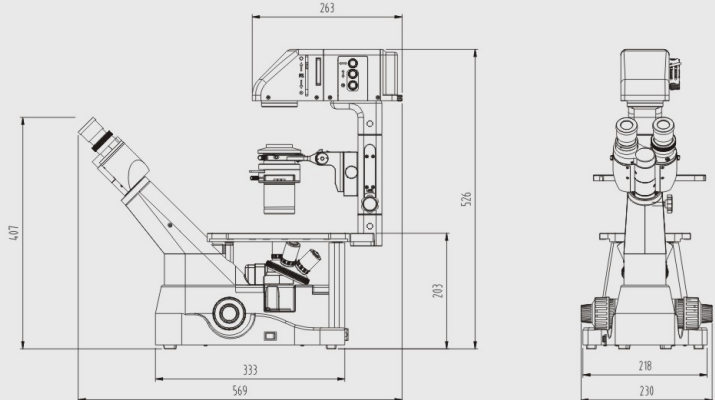
XD series specifications

Optical system	Infinity color corrected optical system	
Eyeiece	PL10X/22、PL15X16 High eye-point wide field plan eyepiece	
Objective	Long working distance infinity plan achromatic/ phase contrast/ fluorescent objective; long working distance infinity plan semi-apochromatic phase contrast fluorescent objective	
Viewing head	45° inclined gemel binocular/ trinocular viewing head(erect image), splitting ratio for binocular:trinocular= 80% :20%(biological model), 100:0 or 0:100 (fluorescence model)	
Nosepiece	Revolving quintuple nosepiece	
Stage & related accessories	Fixed stage, size: 250X160mm; movable rule, travel range:120x78mm; extension plate; slides holder; Terasaki holder; glass plate; metal plate(kidney slot);  φ35mm Petri dish holder.	
Body	Coaxial focus system with tension adjustment; coarse adjustment range: 9mm, fine adjustment precision: 0.002mm; 90–240V built-in transformer wide voltage range.	
Reflected fluorescence illumination system	XDRFA reflected illuminator (Koehler illumination), with iris field diaphragm (centering adjustable).	
	U–LH100HG mercury lamp house, filament center and focal distance adjustable. With mirror, mirror center and focal distance adjustable.	
	U1–RFLT100 digital power control box, wide voltage range 90–245VAC	
	Imported OSRAM 100W DC mercury bulb	
	Centered objective for mercury bulb	
Transmitted illumination system	Band-pass fluorescent filter(integrated):  B/G/V/UV	
	30ND25 attenuation plate	
	Critical illumination with iris aperture diaphragm; 6V30W halogen bulb, pre-centered, intensity adjustable.	
	Koehler illumination with iris aperture and field diaphragm, 6V30W halogen bulb, pre-centered, intensity adjustable.	
Accessories	N.A.0.3long working distance condenser, WD=72mm. bracket can be removed from optical path (Koehler illumination).	
	LBD color temperature change filter/ IF550 green interference filter	
Camera adapter	φ 30mm centering telescope	
	XDSL center-adjustable phase contrast plug-board for 10X–40X	
Camera adapter	1X & 1/2X & 1/3X C-mount; Photo tube 3.2X photo eyepiece (with PK mount); Relay lens with C-mount	
	XDSL1 center-adjustable phase contrast plug-board for 10X–40X	

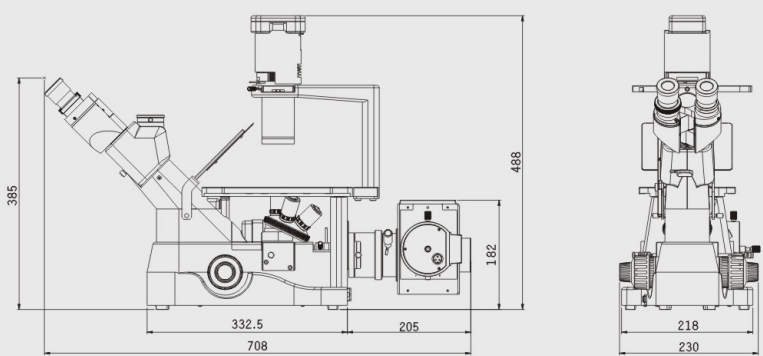
XD trinocular model dimensions



XD binocular model dimensions (with Kohler illumination)



XD fluorescence model dimensions



XD fluorescence model dimensions (with Kohler illumination)

