

## BS-2081 Research Biological Microscope



BS-2081



BS-2081F



BS-2081L

### Introduction

BestScope continues to explore the research needs of specialized fields such as pathology, cytology and virology, and continuously optimizes and upgrades the BS-2081 series of scientific grade upright microscopes to have near-perfect optical performance and mechanical structure design. NIS Infinity Optical System has precise imaging and chromatic aberration correction capabilities. The illumination system with high color reproduction, high-quality optics and full-featured accessories makes these microscopes ideal for cutting-edge life science research where darkfield of view, differential interference contrast or high-performance fluorescence are required. In addition, a wide range of motorized and intelligent components and powerful imaging software meet the needs of quick sample overview and detailed sample inspection, making repetitive tasks easy and greatly increasing ease and comfort for maximum productivity. No matter in a clinical laboratory or a research laboratory, the BS-2081 series microscopes provide the ideal microscopy imaging solution.

## Features

### 1. Sapphire Glass Stage is optional.



Mechanical stage with sapphire glass insert is optional, it is durable, never could be scratched and allows users to clear the stage easily.

### 2. Put Slide by One Hand.



It is easy for users to put slides by one hand due to the special designed slide clip.

### 3. Tilting Trinocular Head is optional.



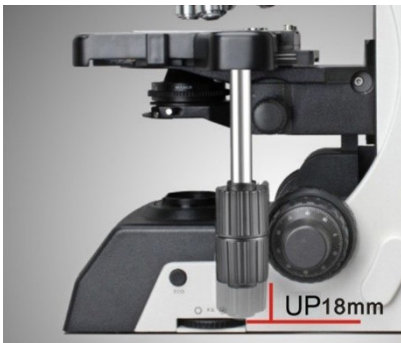
- (1) The eye tube can be adjusted from 0°-35°.
- (2) Digital cameras or DSLR cameras can be connected to the trinocular tube.
- (3) The beam splitter has 3-position (100:0, 20:80, 0:100).
- (4) The splitter bar can be assembled on the either side according to user's requirements.

### 4. ECO Function.



The transmitted light would be off automatically after 30 minutes from operators leave. It can not only save energy, but also keep the lamp life longer.

### 5. Low Position X-Y Knobs.

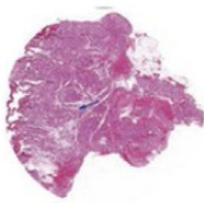


The height of the stage control knobs can be adjusted up or down by 18mm to ensure a comfortable hand position, the tension of X-Y control knob also can be adjusted.

### 6. BS-2081L has Intelligent operating system.

(1) Coded Nosepiece with light intensity memory function.

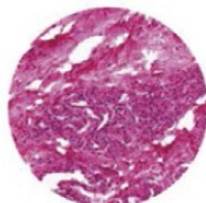
The BS-2081L microscope can memorize the illumination brightness when using each objective. When the objective has been changed, the light intensity will be automatically adjusted to reduce visual fatigue and improve work efficiency.



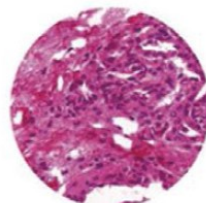
4X



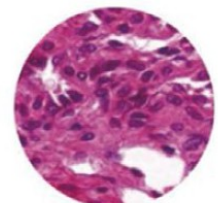
10X



20X



40X



100X

(2) Use a dimming knob to achieve multiple functions.

One Click: Enter standby status

Double Clicks: Light lock or unlock

Rotation: Adjust brightness

Press + Up-spin: Switch to the upper light source

Press + Down-spin: Switch to the under light source

Press 3 seconds: Set the time of turning off the light after leaving.

(3) The display of microscope working status.

The LCD on the front of the microscope can display the



working status of the microscope, including magnification, light intensity, sleep mode and so on.



Start & working mode



Lock mode



ECO mode



Sleep mode

#### (4) Color temperature adjustment function.

The color temperature can be adjusted from yellow to white, which can lead to a better contrast and meet the requirements of various research.

## Application

BS-2081 series research microscopes are ideal instrument in biological, histological, pathological, bacteriology, immunizations and pharmacy field and can be widely used in medical and sanitary establishments, laboratories, institutes, academic laboratories, colleges and universities.

## Specification

Item	Specification	BS-2081	BS-2081L	BS-2081F	BS-2081F (LED)	
Optical System	NIS60 Infinite Color Corrected Optical System	●	●	●	●	
Viewing Head	Seidentopf Trinocular Head, 30° inclined, interpupillary distance: 47mm-78mm; splitting ratio Eyepiece: Trinocular=100:0 or 20:80 or 0:100	●	●	●	●	
	Ergo Tilting Trinocular Head, adjustable 0-35° inclined, interpupillary distance 47mm-78mm; splitting ratio Eyepiece: Trinocular=100:0 or 20:80 or 0:100	○	○	○	○	
	Seidentopf Binocular Head, 30° inclined, interpupillary distance: 47mm-78mm	○	○	○	○	
Eyepiece	Super wide field plan eyepiece SW10X/25mm, diopter adjustable	●	●	●	●	
	Super wide field plan eyepiece SW10X/22mm, diopter adjustable	○	○	○	○	
	Extra wide field plan eyepiece EW12.5X/17.5mm, diopter adjustable	○	○	○	○	
	Wide field plan eyepiece WF15X/16mm, diopter adjustable	○	○	○	○	
	Wide field plan eyepiece WF20X/12mm, diopter adjustable	○	○	○	○	
Objective	N-PLN Plan Objective	N-PLN 2X/NA=0.06, WD=7.5mm	○	○	○	○
		N-PLN 4X/NA=0.10, WD=30mm	●	●	●	●
		N-PLN 10X/NA=0.25, WD=10.2mm	●	●	●	●
		N-PLN 20X/NA=0.40, WD=12mm	●	●	●	●
		N-PLN 40X/NA=0.65, WD=0.7mm	●	●	●	●
		N-PLN 100X(Oil)/NA=1.25, WD=0.2mm	●	●	●	●
		N-PLN 50X(Oil)/NA=0.95, WD=0.19mm	○	○	○	○

		N-PLN 60X/NA=0.80, WD=0.3mm	○	○	○	○
		N-PLN-I 100X (Oil, with Iris Diaphragm)/ NA=0.5-1.25, WD=0.2mm	○	○	○	○
	N-PLN PH Plan Phase Contrast Objective	N-PLN PH 10X/NA=0.25, WD=10.2mm	○	○	○	○
		N-PLN PH 20X/NA=0.40, WD=12mm	○	○	○	○
		N-PLN PH 40X/NA=0.65, WD=0.7mm	○	○	○	○
		N-PLN PH 100X(Oil)/NA=1.25, WD=0.2mm	○	○	○	○
	N-PLFN Plan Semi- apochromatic Fluorescent Objective	N-PLFN 4X/NA=0.13, WD=17.2mm	○	○	○	○
		N-PLFN 10X/NA=0.30, WD=16.0mm	○	○	○	○
		N-PLFN 20X/NA=0.50, WD=2.1mm	○	○	○	○
		N-PLFN 40X/NA=0.75, WD=1.5mm	○	○	○	○
		N-PLFN 100X(Oil)/NA=1.4, WD=0.16mm	○	○	○	○
	N-PLFN PH Plan Semi-apochromatic Fluorescent Phase Contrast Objective	N-PLFN PH 10X/NA=0.30, WD=15.8mm	○	○	○	○
		N-PLFN PH 20X/NA=0.50, WD=2.7mm	○	○	○	○
		N-PLFN PH 40X/NA=0.75, WD=1.35mm	○	○	○	○
		N-PLFN PH 100X(Oil)/NA=1.40, WD=0.18mm	○	○	○	○
	N-PLPN Plan Apochromatic Objective	N-PLPN 10X/NA=0.45, WD=4.0mm	○	○	○	○
		N-PLPN 20X/NA=0.75, WD=1.1mm	○	○	○	○
		N-PLPN 40X/NA=0.95, WD=0.21mm	○	○	○	○
		N-PLPN 60X(Oil)/NA=1.42, WD=0.25mm	○	○	○	○
		N-PLPN 100X(Oil)/NA=1.45, WD=0.13mm	○	○	○	○
Nosepiece	Backward Sextuple Nosepiece (with DIC slot)	●	○	●	●	
	Backward Coded Sextuple Nosepiece (with DIC slot)	○	●	○	○	
Condenser	Swing-out type condenser N.A.0.9/0.25	●	●	●	●	
	Turret Phase Contrast Condenser	○	○	○	○	
	Dark-field Condenser (Dry), used for objectives lower than 100X	○	○	○	○	
	Dark-field Condenser (Oil), used for 100X objective	○	○	○	○	
Transmitted Illumination	3W S-LED lamp, center pre-set, intensity adjustable	●	○	●	●	
	3W S-LED lamp, center pre-set, intensity adjustable. LCD screen with illumination management system	○	●	○	○	
	12V/100W halogen lamp, center pre-set, intensity adjustable	○	○	○	○	
Focusing	Low-position coaxial coarse and fine focusing, fine division 1μm, Moving range 35mm	●	●	●	●	
Stage	Double layers mechanical stage, size 190mmX152mm; moving range 78mmX54mm (double slide holder, Right or left handle); precision: 0.1mm, with Ultra-hard Glass Insert	●	●	●	●	
	Double layers mechanical stage, size 190mmX152mm; moving range 78mmX54mm (double slide holder, Right or left handle); precision: 0.1mm; with Sapphire Crystal Glass Insert	○	○	○	○	
DIC Kit	Polarizer for DIC Kit	○	○	○	○	

	DIC insert plate(10X/20X), can be inserted into the DIC slot on nosepiece	○	○	○	○
	DIC insert plate(40X/100X) can be inserted into the DIC slot on nosepiece	○	○	○	○
	DIC Turret Condenser (10X, 20X/40X, 100X Warrior Prism inside)	○	○	○	○
Reflected Fluorescence Illuminator (with mercury lamp)	Turret with 6 filter block cubes position, with iris field diaphragm and aperture diaphragm, central adjustable; with filter slot; with fluorescence B, G filters	○	○	●	○
	100W mercury lamp house, filament center and focus adjustable; with reflected mirror, mirror center and focus adjustable.	○	○	●	○
	Digital power controller, wide voltage 100-240VAC	○	○	●	○
	ND6/ND25 Filter	○	○	○	○
	U, V, R, FITC, DAPI, TRITC, Auramine, mCherry, FL-BG fluorescent filters	○	○	○	○
Reflected Fluorescent Attachment (with LED lamps)	LED Reflected Fluorescent Attachment, Turret with 6-position for filter block cubes, including B, G fluorescent filters and B, G, U, R LED lamps (the LED lamps can be used for B, G, U, R, FITC, DAPI, TRITC fluorescent filters), there are 4 positions for the LED lamps	○	○	○	●
	U, R, FITC, DAPI, TRITC fluorescent filters	○	○	○	○
Filter for Transmitted Illumination	Green Filter 45mm	○	○	○	○
	Blue Filter 45mm	○	○	○	○
	Yellow Filter 45mm	○	○	○	○
	Red Filter 45mm	○	○	○	○
	ND6 Filter	○	○	○	○
	ND25 Filter	○	○	○	○
Other Accessories	0.5X C-mount Adapter	○	○	○	○
	1X C-mount Adapter	○	○	○	○
	Dust Cover	●	●	●	●
	Power Cord	●	●	●	●
	Cedar Oil 5ml	●	●	●	●
	Simple Polarizing kit	○	○	○	○
	Calibration slide 0.01mm	○	○	○	○
	Multi Viewing Attachment for 2/3/5/7/10 person	○	○	○	○

Note: ● Standard Outfit, ○ Optional

## Accessories

### 1. N-PLN Series Plan Objectives.





The plan objectives can provide flat high transmittance image from visible light to NIR light. They are usually used for bright-field viewing as the high signal-to-noise, high resolution and high contrast features.

## 2. N-PLN PH Series Plan Phase Contrast Objectives.



These plan phase contrast objectives are specially designed for phase contrast observation. They are good choice for clinic and scientific research. These objectives can provide advanced flat image of 25mm FOV under transmitted bright field.

## 3. N-PLFN Series Plan Semi-APO Fluorescent Objectives.



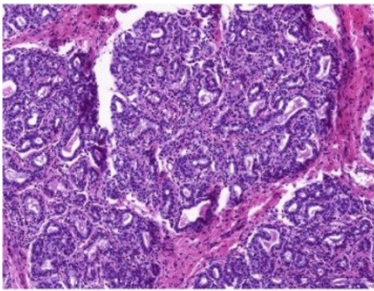
Owe to the multilayers coating technology, these Semi-APO objectives can compensate the spherical aberration and the chromatic aberration from ultraviolet and infrared light. High-sensitive fluorescence performance of the objectives ensures the sharpness, definition and color rendition of images.

## 4. N-PLPN Plan Apochromatic Fluorescent Objective



The newly developed advanced apochromatic objective lenses have high level of chromatic aberration correction capability and high resolution, ensuring a high level of wave-phase contrast correction with full field of view, these APO objectives are ideal for routine laboratory observation work and digital imaging.

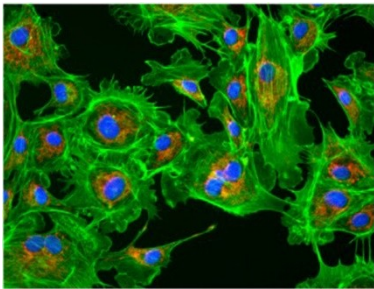
## 5. Bright field Viewing.



Brighter image, high resolution and flatness, suitable for all the magnifications.

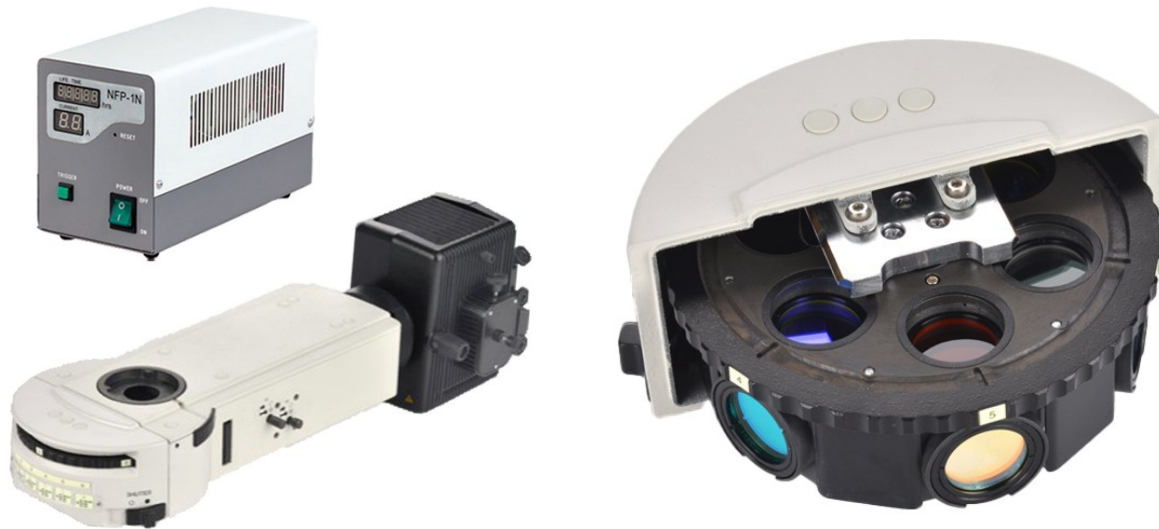
Mammary Gland (active stage)

### 6. Fluorescent Viewing.



The compact epi-fluorescent components include noise elimination feature which ensures images captured are bright, with high contrast and high signal-to-noise ratio.

Arterial Cell



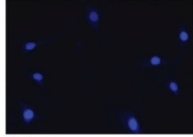


Fluorescence Filter Cubes

Perfect Fluorescence Images

Under the same conditions of exposure time, gain and others, compare to benchmarking products:

1. Dapi channel, Exposure time 200ms, Gain 1x, 40x Plan Fluor

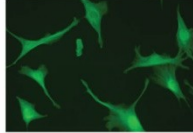


BestScope

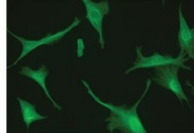


International well-known brand

2. FITC channel, Exposure time 1s, Gain 2.3x, 40x Plan Fluor

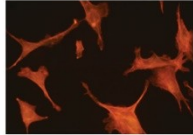


BestScope

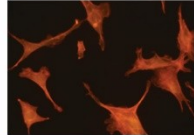


International well-known brand

3. TRITC channel, Exposure time 1s, Gain 5.1x, 40x Plan Fluor

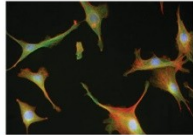


BestScope

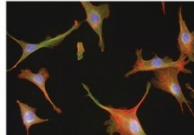


International well-known brand

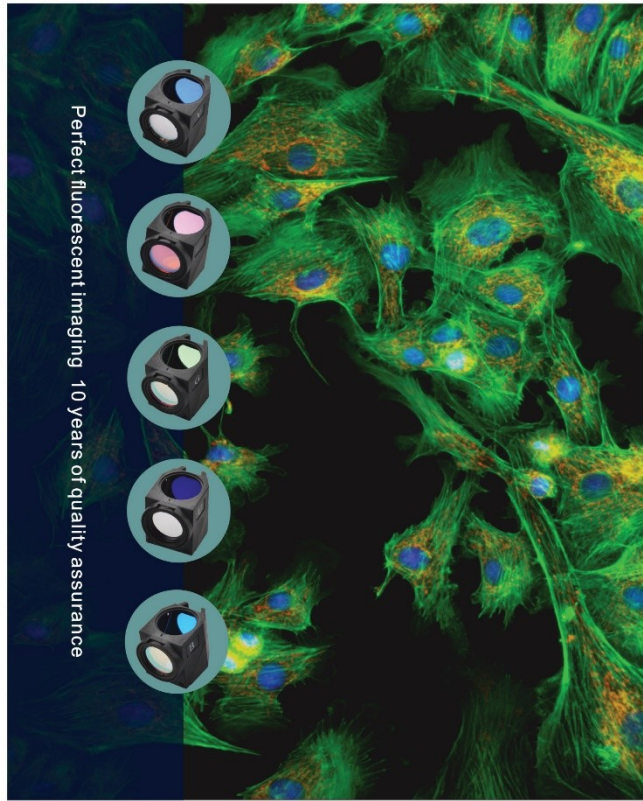
4. Three-colour additive



BestScope

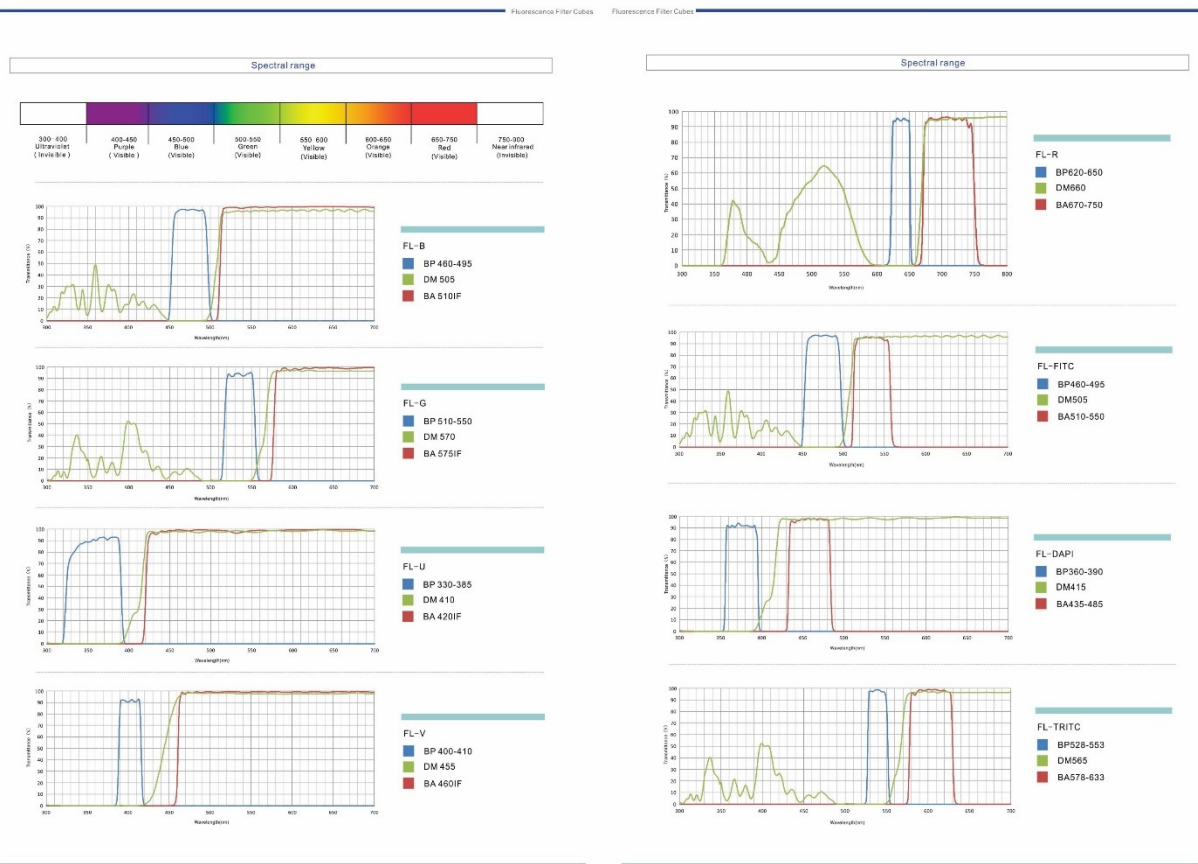


International well-known brand



Perfect fluorescent imaging 10 years of quality assurance

Fluorescence Filter Cubes Product Manual



Excitation	Excitation Filter	Dichroic Mirror	Barrier Filter	LED lamp Wave Length	Application
B	BP460-495	DM505	BA510	485nm	<ul style="list-style-type: none"> <li>·FITC: Fluorescent antibody method</li> <li>·Acidine orange: DNA, RNA</li> <li>·Auramine: Tubercle bacillus</li> <li>·EGFP, S657, RSGFP</li> </ul>
G	BP510-550	DM570	BA575	535nm	<ul style="list-style-type: none"> <li>·Rhodamine, TRITC: Fluorescent antibody method</li> <li>·Propidium iodide: DNA</li> <li>·RFP</li> </ul>
U	BP330-385	DM410	BA420	365nm	<ul style="list-style-type: none"> <li>·Auto-fluorescence observation</li> <li>·DAPI: DNA staining</li> <li>·Hoechst 332528, 33342: used for Chromosome staining</li> </ul>
V	BP400-410	DM455	BA460	405nm	<ul style="list-style-type: none"> <li>·Catecholamines</li> <li>·5-hydroxy tryptamine</li> <li>·Tetracycline: Skeleton, Teeth</li> </ul>
R	BP620-650	DM660	BA670-750	640nm	<ul style="list-style-type: none"> <li>·Cy5</li> <li>·Alexa Fluor 633, Alexa Fluor 647</li> </ul>
FITC	BP460-495	DM505	BA510-550	485nm	<ul style="list-style-type: none"> <li>·FITC: Fluorescent antibody method</li> </ul>

DAPI	BP360-390	DM415	BA435-485	365nm	DAPI: DNA staining
TRITC	BP528-553	DM565	BA578-633	535nm	·TRITC: Fluorescent antibody method
FL- Auramine	BP470	DM480	BA485	450nm	·Auramine O, Testing for tuberculosis
Texas Red	BP540-580	DM595	BA600-660	560nm	It is commonly conjugated to antibodies and proteins for cellular imaging applications.
mCherry	BP542-582	DM593	BA605-675	560nm	Molecular labeling and cellular component localization
FL-BG	BP 453-490/533-588	DM 495-548/595-705	BA 500-540/603-664	485nm/525nm	<ul style="list-style-type: none"> <li>·FITC: Fluorescent antibody method</li> <li>·Acidine orange: DNA, RNA</li> <li>·Auramine: Tubercle bacillus</li> <li>·EGFP, S657, RSGFP</li> <li>·Rhodamine, TRITC: Fluorescent antibody method</li> <li>·Propidium iodide: DNA</li> <li>·RFP</li> </ul>

Note: 1. All the above fluorescent filters can be used on BS-2081F.

2. Filters Size in fluorescent block: Excitation and Barrier Filters is  $\Phi 24.8\text{mm} \times 3.6\text{mm}$  (thickness with metal edge), Dichroic Mirror is  $37.5 \times 28.5 \times 1\text{mm}$ , the filters can be installed in the block.

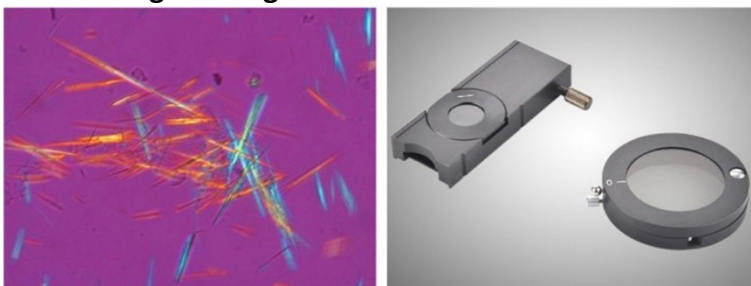
### 7. Phase Contrast Viewing.



Rat Ovarian Cell

Users can get high contrast image of neutral background color whatever the magnification is. It is suitable for viewing non-stained specimen.

### 8. Polarizing Viewing.



Uric Acid Crystal

It is quite suitable for viewing collagen, amyloid and crystal etc., double refracting specimens.

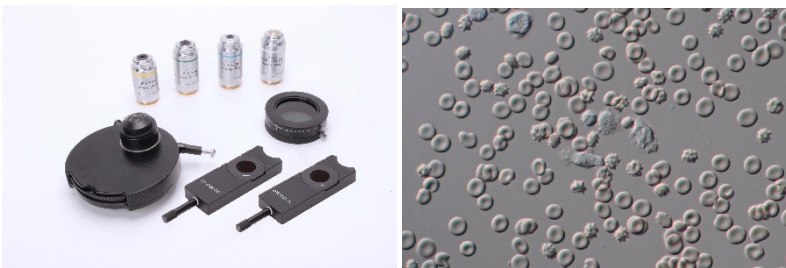
### 9. Dark-field Viewing.



Spirogyra

It can be used for clearly viewing of blood or flagellum etc., fine structure.

### 10. DIC Attachment.



The DIC attachment can be used to observe unstained specimens. It including:

1. Semi-APO objective
2. Turret DIC condenser
3. Polarizer
4. DIC Plate

### 11. Multi Viewing Heads.



BS-2083MH4A (For 2 users, Face to Face)



BS-2083MH4B (For 2 users, Side by Side)





BS-2083MH6(For 3 users)



BS-2083MH10(For 5 users)



BS-2081MH20 (For 10 users)

Note: We have not captured images with BS-2081, so we use BS-2083 to illustrate, BS-2081MH series are different with BS-2083 series on main microscope body.

### 11. LED Fluorescent Attachment.

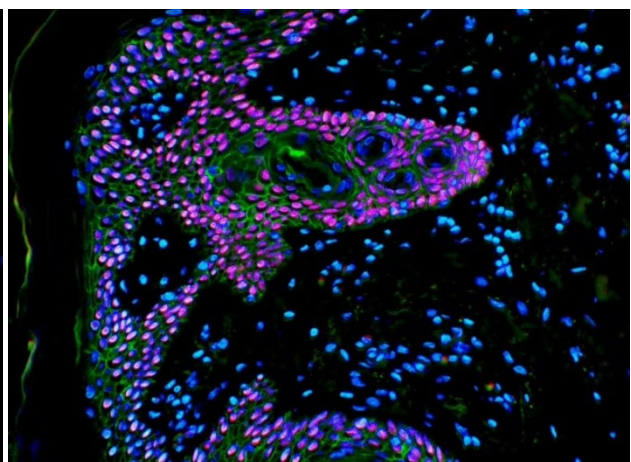
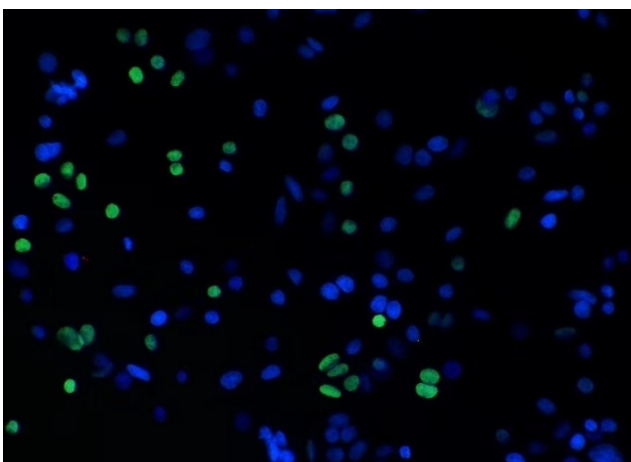
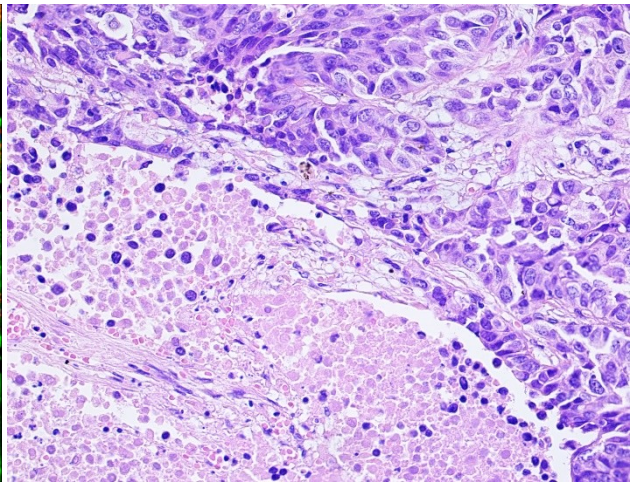
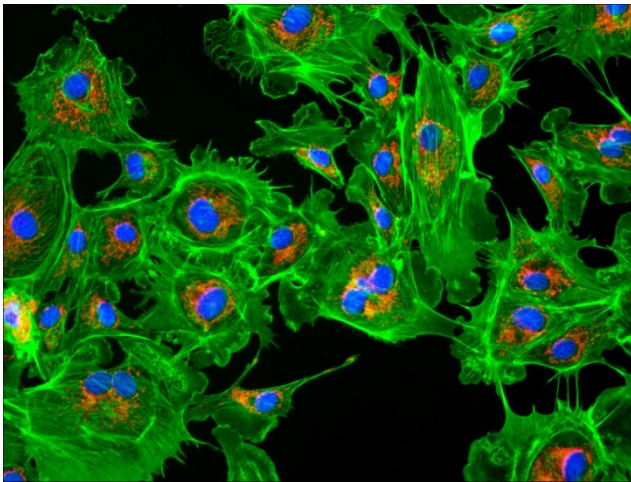




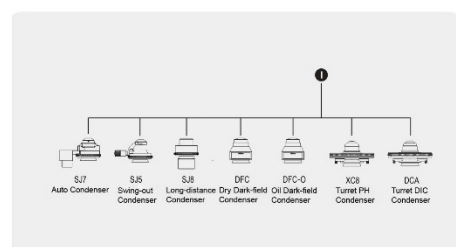
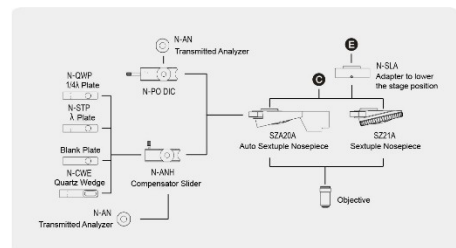
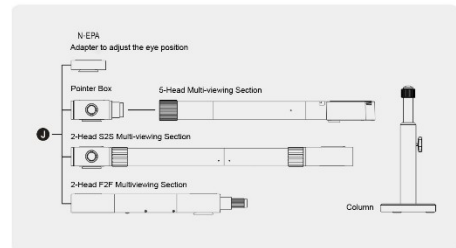
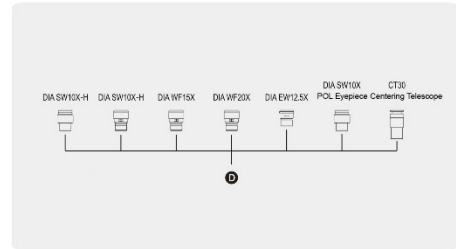
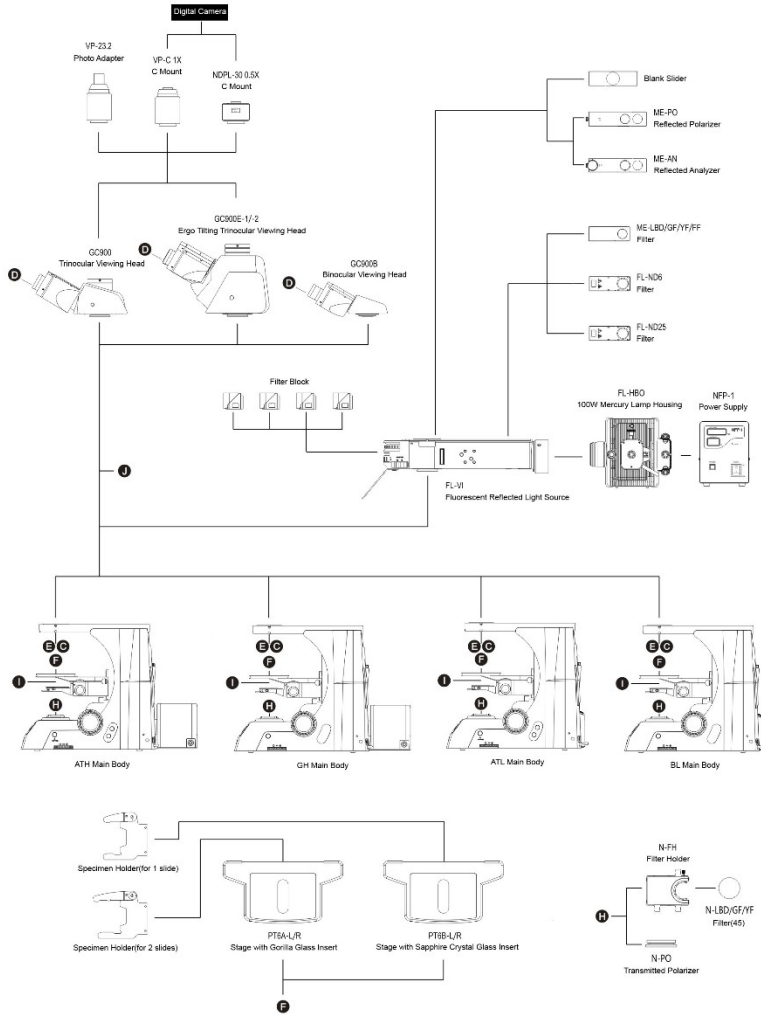


The LED Reflected Fluorescent Attachment has turret with 6-position for filter block cubes, standard configuration including B, G fluorescent filters and B, G, U, R LED lamps, the LED lamps can be used for B, G, U, R, FITC, DAPI, TRITC fluorescent filters (U, R, FITC, DAPI, TRITC fluorescent filters are optional), there are 4 positions for the LED lamps. The fluorescent filters are reliable and precise, which offers high performance for various demands.

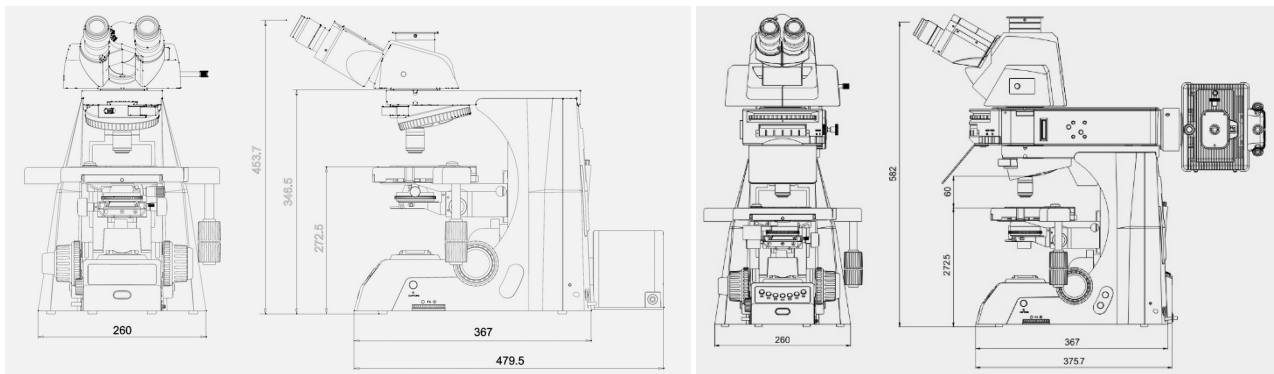
### Sample Image



### System Diagram



### Dimension



BS-2081L

BS-2081F

Unit: mm