Using the Latest Artificial Intelligence Image Algorithm
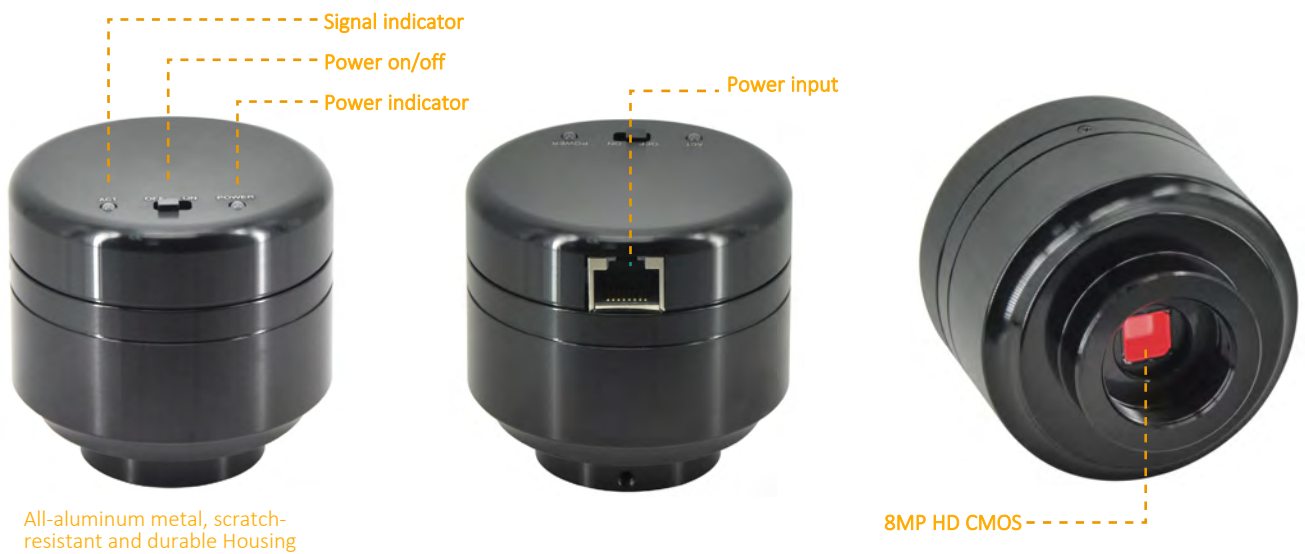# Full Digital Image Processing

Highlights

The comparison microscope BD1601 is built by the police college trace identification experts and technical experts with more than 20 years of experience in optical industrial. It incorporates the practical experience of many years of trace identification and breaks through the old-fashioned use of traditional comparison microscopes.

It adopts high-magnification dual-lens, dual-channel ultra-high-definition cameras and ultra-high-definition image display on computer (4K×3K), and relies on the latest AI intelligent image algorithm to fully process the image in time and cooperate with the newly optimized mechanical support platform and multiple color light source, objects observation are easy and convenient. Through the use of powerful soft-ware, users can quickly obtain high-definition real contrast images, gain higher work efficiency and accuracy.

The camera uses SONY IMX274 8.0MP HD CMOS sensor which features with ultra-wide dynamic range (128dB) and ultra-low illumination (0.001Lux). The frame rate output is 25 fps in full output, easy to capture high dynamic range 4K video with more detail.

1

Signal indicator
Power on/off
Power indicator
Power input

All-aluminum metal, scratch-resistant and durable Housing
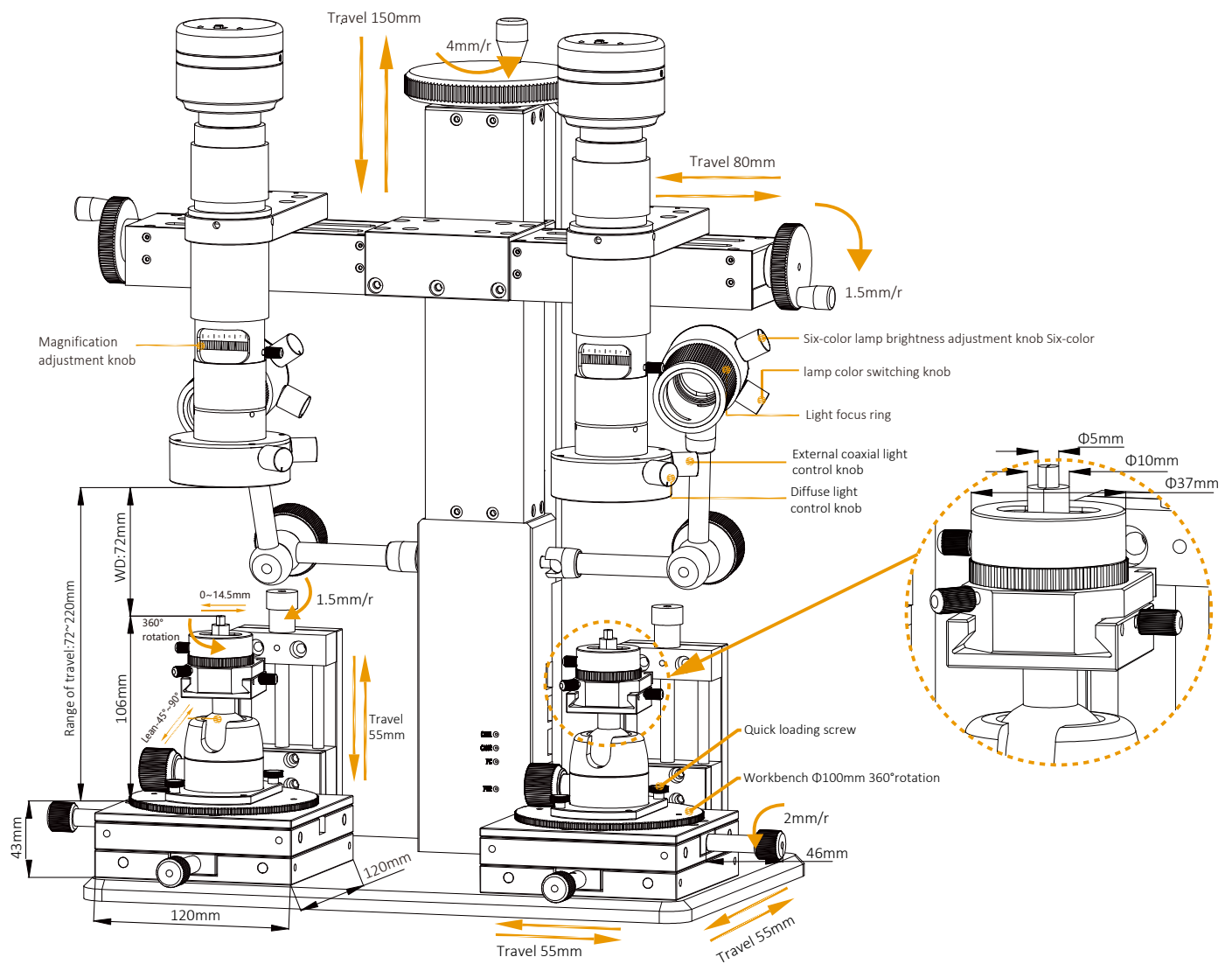
8MP HD CMOS

0.83X~10X continuous zoom, full-range HD optical lens. Special coating technology for excellent achromatic effects while ensuring a clear, bright and flat image.

2

Lens optical magnification	0.83X~10X
Lens Optical resolution	5um
Working distance	72mm
Observation Range	0.65x0.36~8.2x4.6mm
Overall magnification	When full displayer on a 21 inch 16:9 screen：57X~715X
	When full displayer on a 17 inch 16:9 screen：46X~578X

1X eyepiece

0.83X~10X

1X objective lens

Super-hard alloy design, independent adjustment mechanism, can adjust the XYZR axis for personal use habits, use scene and the characteristics of the detector, make the operation more comfortable and more humanized

Travel 150mm

4mm/r

Travel 80mm

1.5mm/r

Magnification adjustment knob

Six-color lamp brightness adjustment knob Six-color

lamp color switching knob

Light focus ring

External coaxial light control knob

Diffuse light control knob

Φ5mm

Φ10mm

Φ37mm

WD:72mm

0~14.5mm

1.5mm/r

360° rotation

Lean -45°~90°

Range of travel:72~220mm

106mm

Travel 55mm

Quick loading screw

Workbench Φ100mm 360°rotation

2mm/r

43mm

46mm

120mm

120mm

Travel 55mm

Travel 55mm

A variety of fixture matching solutions, whether it is moving, rotating, tilting, positioning observations, to meet various obser-vation and measurement needs.

Universal ball head

Ball head fastening bolt : Rotate and swing to quickly adjust the position of the ball head

Universal ball head clamp x 2

Quick mounting rail x 2

Chuck clamp : Shrink and clamp the object, the expansion can support the ring.

Clip holder x 2

Chuck adjustment screw: Adjust the collect expansion and contraction.
Rotating adjustment screw: Clipper 360° rotation

Easy to clamp thinner objects such as business cards.

Tabletting fixture x 4

Object distance increase fixture x 2

☑ Workbench
☑ Universal ball head clamp
☑ Clip holder

☑ Workbench
☑ Quick mounting rail
☑ Clip holder

☑ Workbench
☑ tabletting

In the case of insufficient object distance, the lens can be raised and the object distance is increased by 45mm.

BD1601 is equipped with the external coaxial light, which can uniformly illuminate the surface of the plane and the shiny surface, and enhance the features of marking, recessing or embossing. It can highlight the uneven surface of the object, overcome the interference caused by the reflection of the surface, and highlight more details that cannot be displayed by traditional microscopes.

Power	＜3W
Input voltage	DC 5V
Dimming method	0~100% Linear adjustment
Center brightness	External coaxial：≥12000LX （Height 100mm）
	Diffuse emission：≥4200LX （Height 100mm）
Number of LEDs	External coaxial light：13 small angle highlighting beads
	Diffuse light：27 bright white lights
Color temperature	5000K~5500K
Adjustment method	Separate control (one knob controls one light)

Diffuse emission LED ring lights to reduce glare. Contains 27 diffuse light beads.

The external coaxial LED ring light is more conducive to the observation of the smooth surface, high reflective and hard-to-reach areas. It contains 13 coaxial lamp beads.
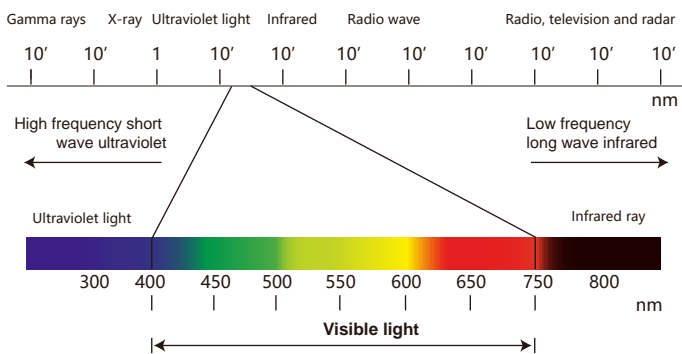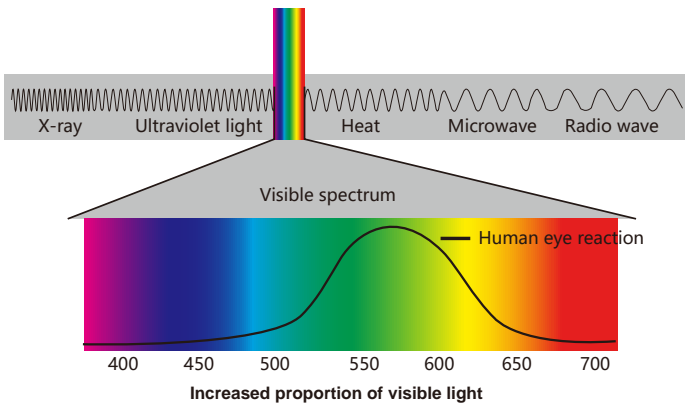
The two ring lights are independently controlled, and the brightness can be freely combined and adjusted according to actual observation condi-tions.

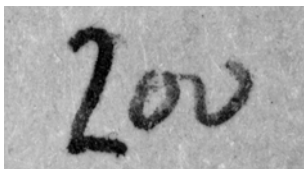|	Bullet	Fingerprint	Handwriting
Diffuse light			
External coaxial light & diffuse light			

Unique multiple color light, users can choose different wavelengths of light to observe according to different observation charac-teristics or applications. With low voltage, ultra low energy consumption, safe, stable, long life, high brightness, low light decay and other characteristics. Whether it is trace comparison, text comparison or seal comparison, it is easy to use.
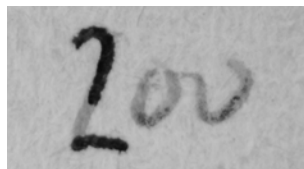
Focus Adjustment Ring
Rotate clockwise to make the light spreads；Rotate counterclockwise to make the light gathers.

Brightness Adjustment Knob
Turn clockwise to turn on the light source and increase the brightness；Turn counterclockwise to reduce brightness or turn off.

Light Switch Knob
Each time a gear is rotated, the color of the light is switched once; cycle switching

Adjusting Knob
Loosen, can swing the position of the support in a certain range; Tighten to secure the current position of the holder (Note: When you need to swing the position of the lamp, you must first loosen the knob, otherwise it will damage the articulated arm).

Articulating Arm
It consists of multiple sets of movable joints; after loosening the adjustment knob, the position of the light source can be arbitrarily oscillated.

Power	＜3W
Input voltage	DC 5V
Dimming method	0~100% Linear adjustment
LED wavelength	Red：620~625um
	Yellow：590~595um
	Green：520~525um
	Blue：460~465um
	Purple：390~400um
	White：6000K

X-ray　Ultraviolet light　Heat　Microwave　Radio wave

Visible spectrum

—— Human eye reaction

400　450　500　550　600　650　700

Increased proportion of visible light

Gamma rays	X-ray	Ultraviolet light	Infrared	Radio wave				Radio, television and radar		
10′	10′	1	10′	10′	10′	10′	10′	10′	10′	10′

nm

High frequency short wave ultraviolet

Low frequency long wave infrared

Ultraviolet light

Infrared ray

300　400　450　500　550　600　650　750　800　nm

Visible light

Handwriting identification: Original number 100

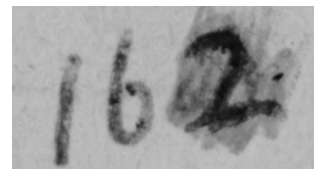External coaxial light & diffuse light

Six-color lamp: Blue light

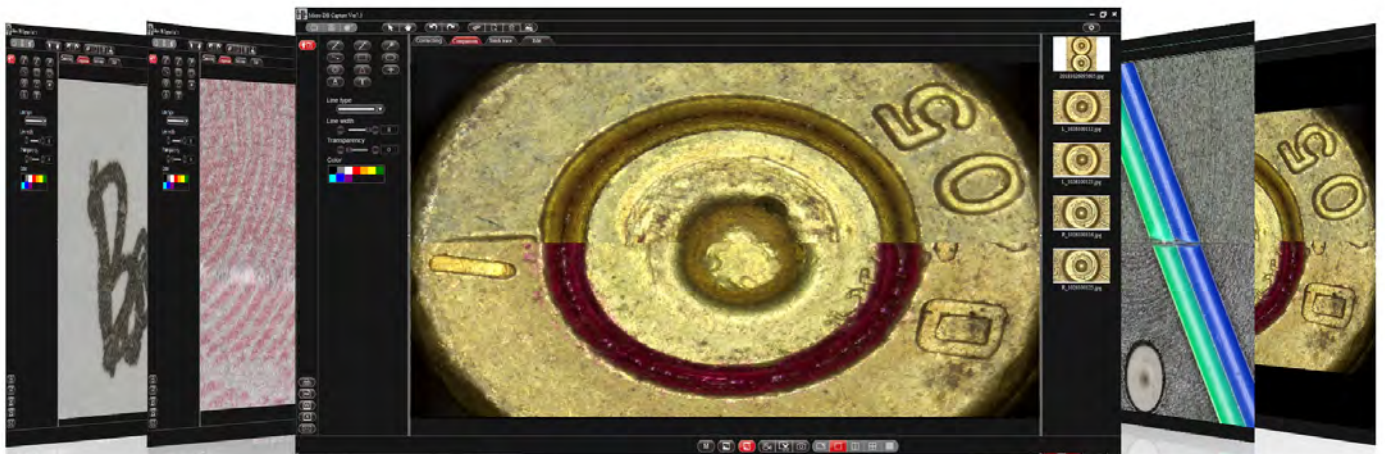Handwriting identification: Original number 162
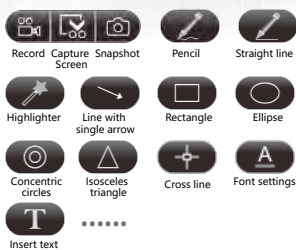
External coaxial light & diffuse light

Six-color lamp: Purple light

Exclusively comparison software, bringing unprecedented efficiency and precision to users by many years of practical experience and software developers' hard work.
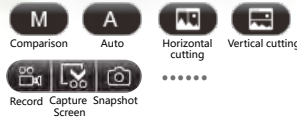
- Horizontal comparison of each pair of pixels, the results are qualitative and quantitative to avoid human interference.
- full field of view displayed on double-screen can be arbitrarily overlapped, cut, and arbitrarily setting transparency, which is intuitive for everyone.
- Support dynamic and static image contrast.
- Dual screen can be freely and independently adjust parameter settings, including white balance, exposure, brightness, contrast, saturation and more.
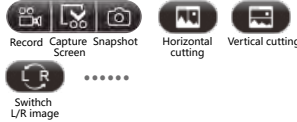- Software menu supports English and Chinese (simplified).

Correcting Images
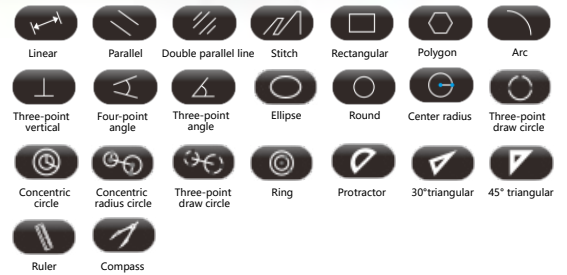preview window functions

Record	Capture Screen	Snapshot	Pencil	Straight line
Highlighter	Line with single arrow	Rectangle	Ellipse
Concentric circles	Isosceles triangle	Cross line	Font settings
Insert text	......

Similarity Comparison
preview window functions

Comparison | Auto | Horizontal cutting | Vertical cutting
Record | Capture Screen | Snapshot | ......

Trace Stitching Composite Image
preview window functions

Record | Capture Screen | Snapshot | Horizontal cutting | Vertical cutting
Switch L/R image | ......

Rich Measuring Functions

Linear | Parallel | Double parallel line | Stitch | Rectangular | Polygon | Arc
Three-point vertical | Four-point angle | Three-point angle | Ellipse | Round | Center radius | Three-point draw circle
Concentric circle | Concentric radius circle | Three-point draw circle | Ring | Protractor | 30°triangular | 45° triangular
Ruler | Compass

Correcting Images - preview window

Similarity Comparison - preview window
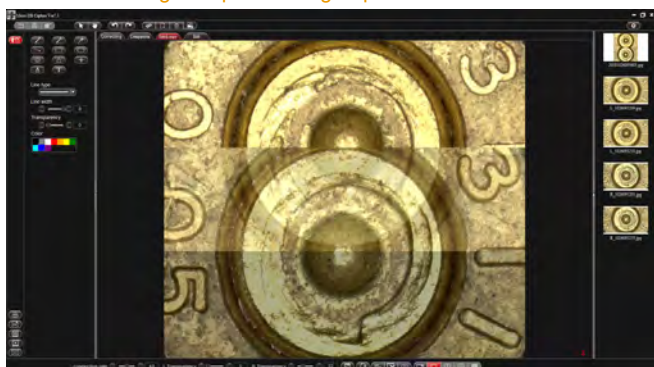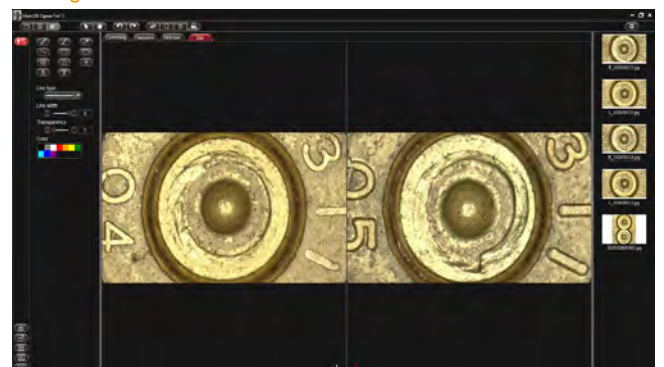

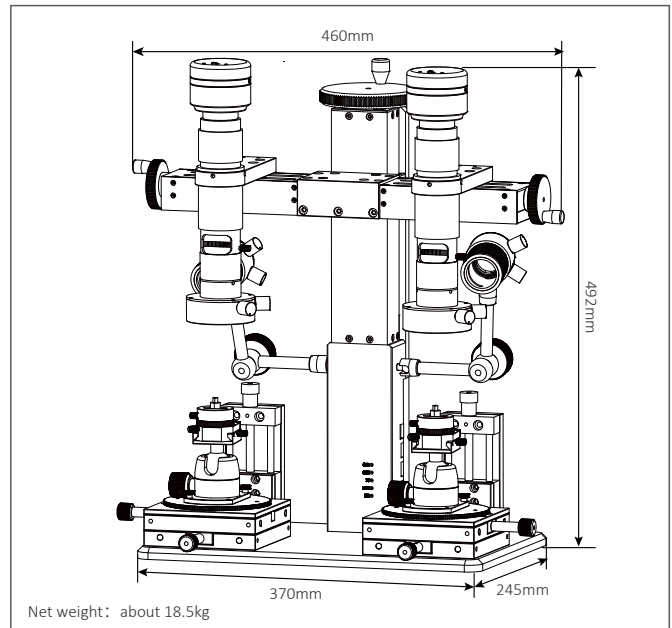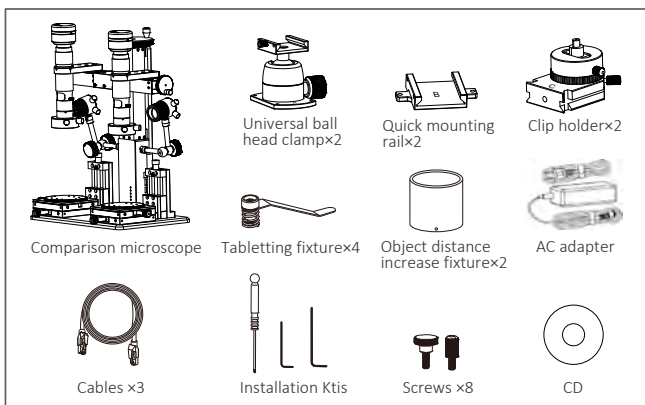### Trace Stitching Composite Image - preview window

Image Edit

Specifications

BD1601 Hardware Configuration	
Image Sensor	SONY IMX274 CMOS Sensor
Shutter Type	Rolling shutter
Maximum Resolution	3840 x 2160 (8,294,400 pixels)
Sensor Size	1/2.5 inch
Pixel Size	1.62μm x 1.62μm
Dynamic Range	＞80dB
SNRmax	≥50dB
Spectral Charactristics	380~650nm
Exposure Capability	Real-time auto, Single auto, Manual adjustment
White Balance	Real-time auto, Single auto, Manual adjust R G B seperately
Record Format	Snapshot Picture Format：JPG Resolution：3840x2160 Record Video Format：MOV Resolution： 3840X2160@25FPS，2592X1944@25FPS, 2048x1536@25FPS

BD1601 Software Environment	
Operating System Requirement	Microsoft® Windows® 7 / 8 /8.1/10(32 & 64 bit)
	CPU: Dual-core 3.0 GHz or more CPU
	Memory: 4G or more
	At least 10 GB available hard disk space
	Network: 10/100/1000Mbps compatitable interface

Dimensions

Net weight：about 18.5kg

Packing List

Comparison microscope

Universal ball head clamp×2

Quick mounting rail×2

Clip holder×2

Tabletting fixture×4

Object distance increase fixture×2

AC adapter

Cables ×3

Installation Ktis

Screws ×8

CD