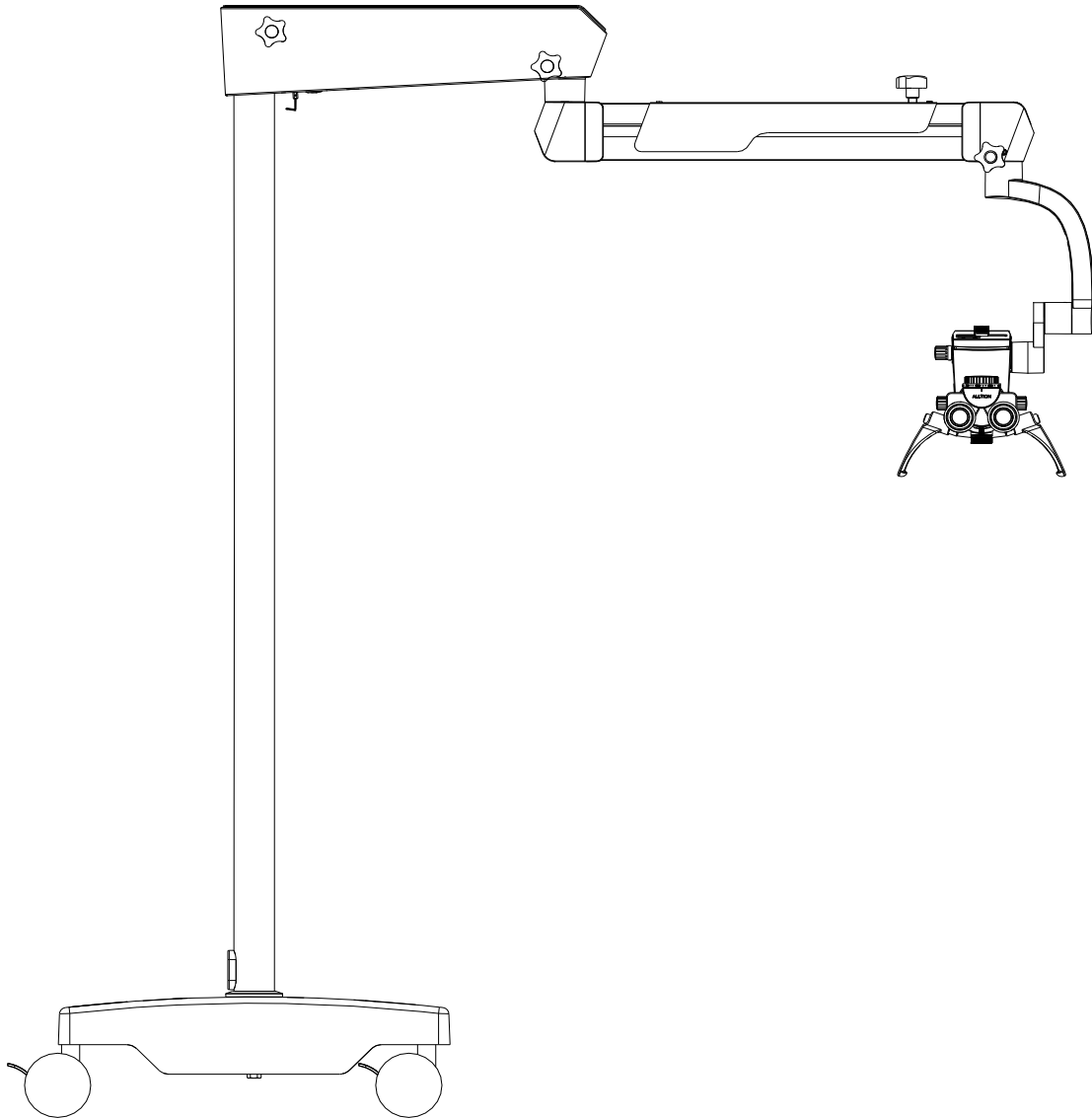


MODEL 2 Surgical Microscope



User's Manual

(Please read the instruction carefully before using it)



PA1910-UM03-EN

Version: A1

2022-08-01

Prosidio Inc.

Product Information:

Name: Surgical Microscope

Model: MODEL 2

Production Date: See the instrument label for details

Manufacturer:

Prosidio

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Safety Caution

When using the instrument, you must observe the safety instructions, and the meanings of these symbols are as follows:

Prompt Symbols

The following safety information has been incorporated into the user manual. Please note this information and be particularly careful in these cases, especially the contents with the following symbols.



Warning, indicating that there is potential hazard, failure to follow the instructions may pose a risk of harming users or product failure!



Note, promoting the user of the instrument, or providing the useful information to the user.



In case of serious incident related to this equipment, please report to PROSIDIO and the competent authority.

Information Symbols

The item symbols used in this User's Manual are defined as follows:

- The content of the upper and lower items is equal, there is no sequence or subordination relation.
- ✓ The precondition of operation, the precondition that the product must meet before performing a certain operation.
- ▶ There is a sequential relationship between the upper and lower items, and the next step can be carried out after the previous step is completed.
- Results occurred after completion of related operations.

The Meaning of Other Figures, Symbols and Contractions



Please refer to the User's Manual.



Manufacturer

PD Date of manufacture



Authorized representative in the European Community



CE label



Power Switch



No pushing



Upward



Keep dry



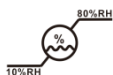
Handle With Care



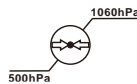
The number of stacked layers must not exceed 2 layers



Ambient temperature range: -40°C~55°C



Relative humidity range: 10%~80%



Atmospheric pressure range: 500 hPa~1060 hPa

Structure and Composition

MODEL 2 Surgical Microscope consists of support bracket (floor-mounted mobile bracket (standard)/optional floor-mounted bracket, ceiling bracket, high wall-mounted bracket and low wall-mounted bracket (optional)), cross arm bracket (including electric installation) and microscope head (including visual optical component, microscope body, objective lens and illuminating system).

Range of Application

The MODEL 2 surgical microscope is a manual microscope for surgical microsurgery amplification, illumination, etc. It can assist you in microsurgery and fine examination in departments such as otolaryngology and dentistry.

Contraindication

- Patients with light allergy
- Shall not be used in ophthalmology
- Do not directly radiate it to the human eyes

Working Environment

- Ambient temperature range: 5°C ~ 40°C
- Relative humidity range: 10% RH ~ 80% RH

- Atmospheric pressure range: 700hPa ~ 1060hPa

Storage Environment

- Ambient temperature range: -40°C ~ 55°C
- Relative humidity range: 10% ~ 60% RH
- Atmospheric pressure range: 500hPa ~ 1060hPa
- Well ventilated indoor environment free of corrosive gas or other harmful substances.

Safety Characteristics

- Adaptor: Input: AC100~240V, 50-60Hz / 1.5A Output: DC 12V / 5A
- Classification according to the degree of protection of the liquid: IPX0;
- Standard IEC60601-1 Type II Equipment.

Safety Requirements on Installation and Use

Safety Requirements

- ✓ This instrument can be used only for the purposes described in the User's Manual.
- ✓ Only trained and instructed personnel are allowed to use this instrument. The customer or the organization operating the equipment has the responsibility to train and guide all personnel using the equipment.
- ✓ Before starting the instrument, please completely comprehend the User's Manual, including the User's Manual for accessories and other system components.
- ✓ Keep the User's Manual in order to facilitate the operator to read at any time.
- ✓ Please observe all symbols and labels of the instrument!
- ✓ The modification and repair of this instrument can only be performed by the PROSIDIO service personnel or others authorized by PROSIDIO.
- ✓ Do not place any container filled with liquid over the instrument. Confirm that no liquid can penetrate into the instrument.



No modification of this equipment unless authorized by the manufacturer.



Although the equipment conforms to the intent of the standard IEC 60601-1-2 in relation to electromagnetic compatibility, electrical equipment may produce interference. If interference is suspected, move equipment away from sensitive device or contact us.



Do not store or use the instrument in a damp room. Do not expose the instrument in the place with splashing, dropping or water mist.



When the instrument is generating smoke, electric spark or a strange noise, please immediately cut off power supply of the instrument. Do not use this instrument until it has been repaired by our service agent.



Please note that local regulations take precedence over the requirements of the above mentioned criterions. If you have any enquiry, please contact the local PROSIDIO dealer.

Requirements on Installation



The installation of the product will be completed by our service representative or by professional personnel authorized by us. Please make sure that the following operational requirements have been met:

- ✓ All the safety-related mechanical connections (please find the Manual for details) are properly connected and all screws have been tightened.
- ✓ All wires and plugs work normally.
- ✓ The adopted power wires meet the design requirements of this instrument.



Please do not place the equipment in a difficultly operation position.

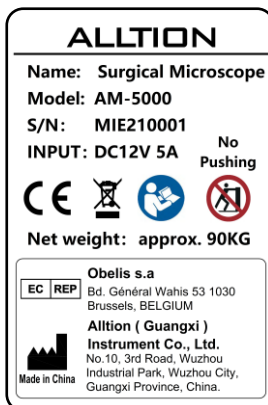
Operating Requirements

- ✓ Please pay special attention to the PROMPT symbols on the instrument (Especially Warning sign).
- ✓ Avoid to watch the light source of the microscope directly, for example, the objective lens of the microscope.
- ✓ Do not disassemble and assemble the binocular head barrel and objective lens during use to prevent falling and injuring the patient.
- ✓ Do not disassemble or assemble the supporting components during use to prevent the Support system from being out of balance, damaging the components or hurting the patient.



This surgical microscope cannot be used for ophthalmic examination and surgery.

Safety Signs on the Instrument



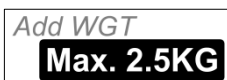
- 1 Product label
It contains basic information of the product.



- 2 Warning
Make sure that the binocular tube is safely installed and the screw has been tightened, otherwise the binocular tube has the risk of falling.



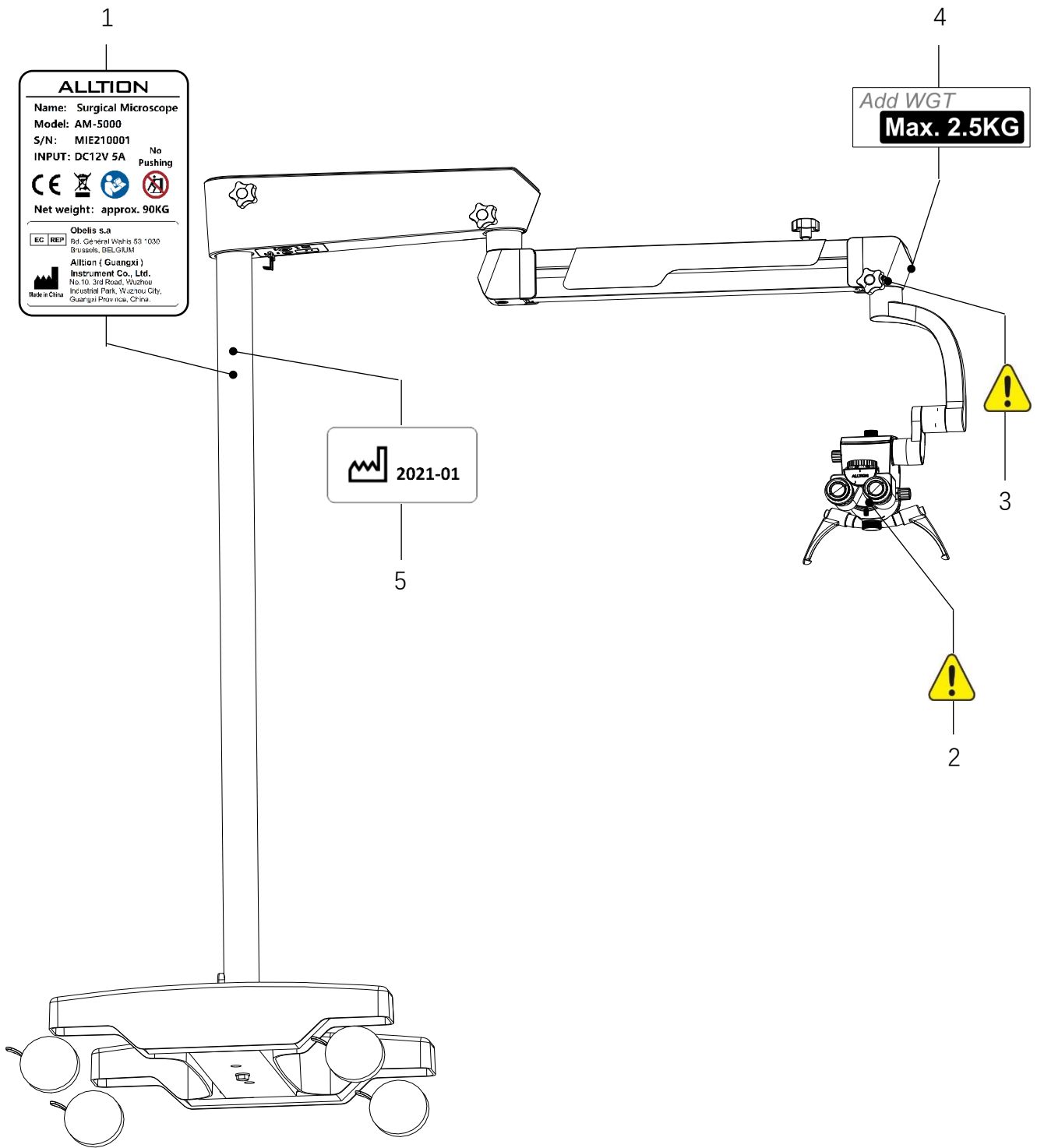
- 3 Warning
Make sure that the safety screw has been tightened, otherwise the arm support has the risk of falling.



- 4 Load-bearing tip of cross arm bracket
The balance arm would fail in case of an added weight of greater than 2.5 kg.



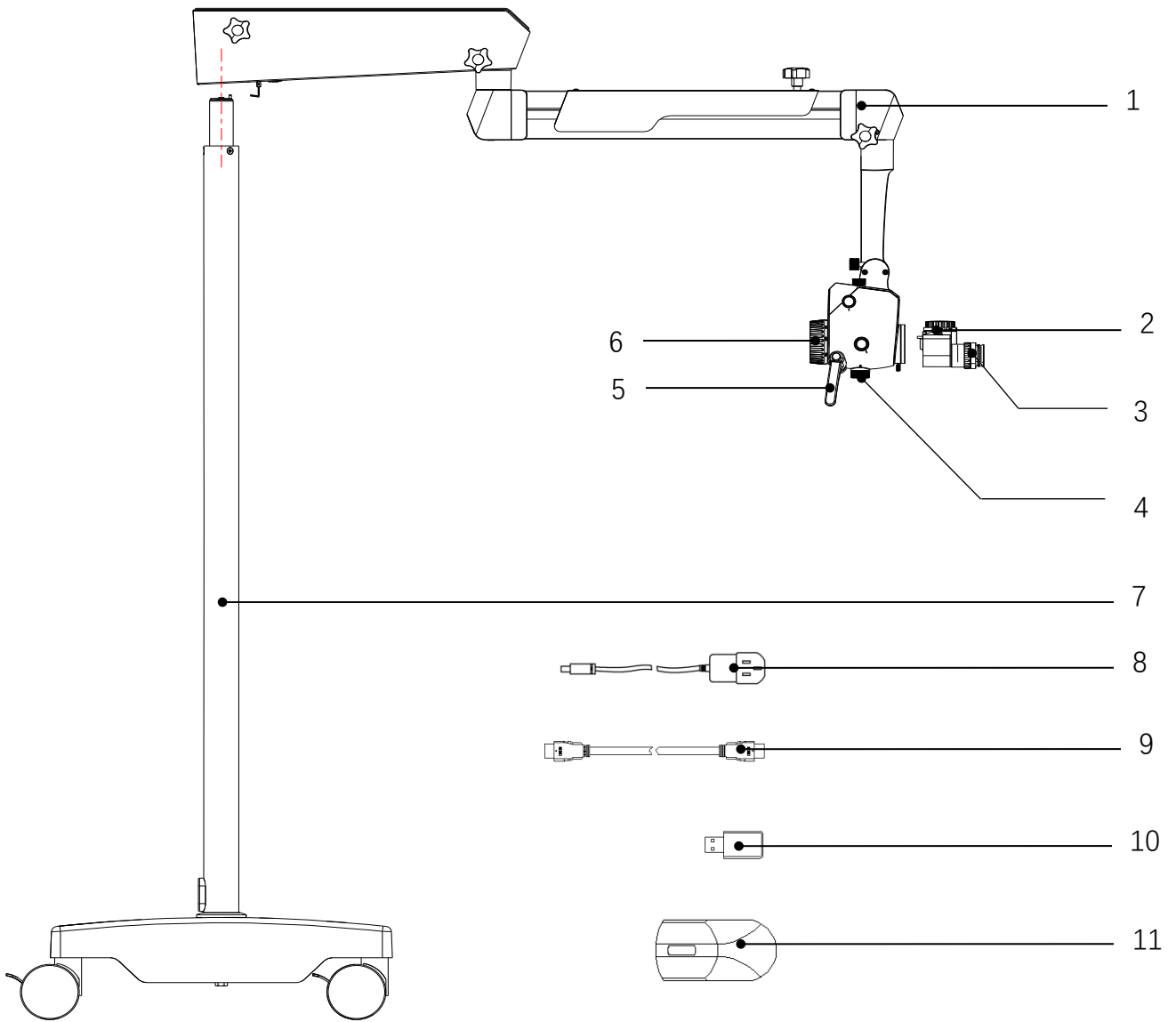
- 5 Product Date
The production date is changed according to the actual date.



Product Assembly

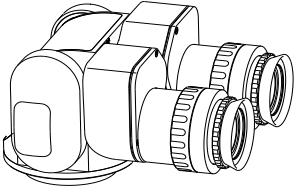
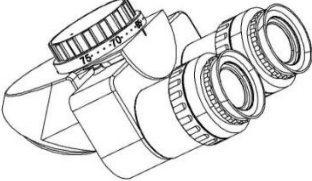
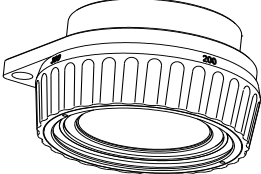
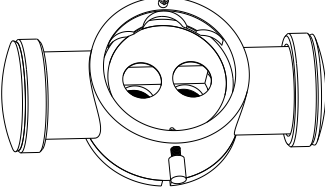
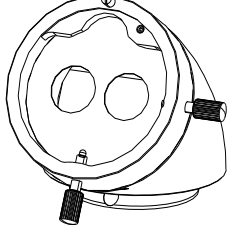
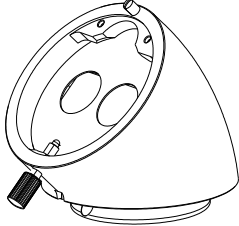
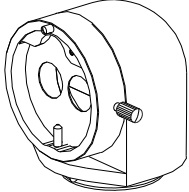
Standard Configuration

	Name of Components	Specification	Quantity
1	Cross arm bracket	Length:650mm	1
2	Binocular tube	Available in 180° variable-angle, straight or 45° bevel.	1
3	Eyepiece	12.5X or 10X	2
4	Magnification pod	six-range zooming	1
5	Control handle		1
6	Objective lens	F250 objective lens, optional F198-455 variable objective lens (please find the Optional Accessories List)	1
7	Floor stand	Other installation modes are available for option, please find the Optional Accessories List	1
8	Power adapter	Chinese standard, USA standard and Europe standard are available for option, subject to the order	1
9	HDMI high definition video transmission wire	3m	1
10	U-disk(full electronic instructions is saved in U-disk)	64G	1
11	Mouse	2.4G wireless mouse	1

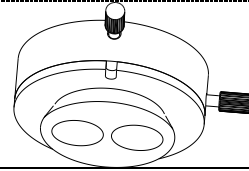


Supporting Components

Supporting Components List

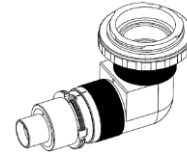
Name	Specification	Picture
1 180° binocular head	Available in 180° variable-angle	
2 45° binocular head	45° inclined	
3 F198-455 variable objective lens	198-455	
4 F300 objective lens	F300	
5 F400 objective lens	F400	
6 Beam splitter	2:8 beam splitting, optional 5:5 beam splitting	
7 30° Binocular Extender	30° angle	
8 45 Binocular Extender	45 Angle	
9 90° binocular extender	90° angle	

10 Angle Rotation Device

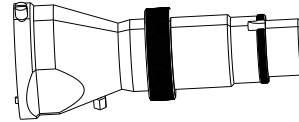


11 Camera adapter

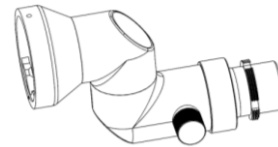
Interfaces with Sony,
Canon, Nikon cameras
optional



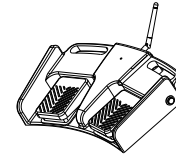
12 2-D Rotation Binocular
Assistant Scope
Connector



13 3-D Rotation Binocular
Assistant Scope
Connector



14 FS-1 Wireless Foot Used to control the
Control Panel built-in video camera

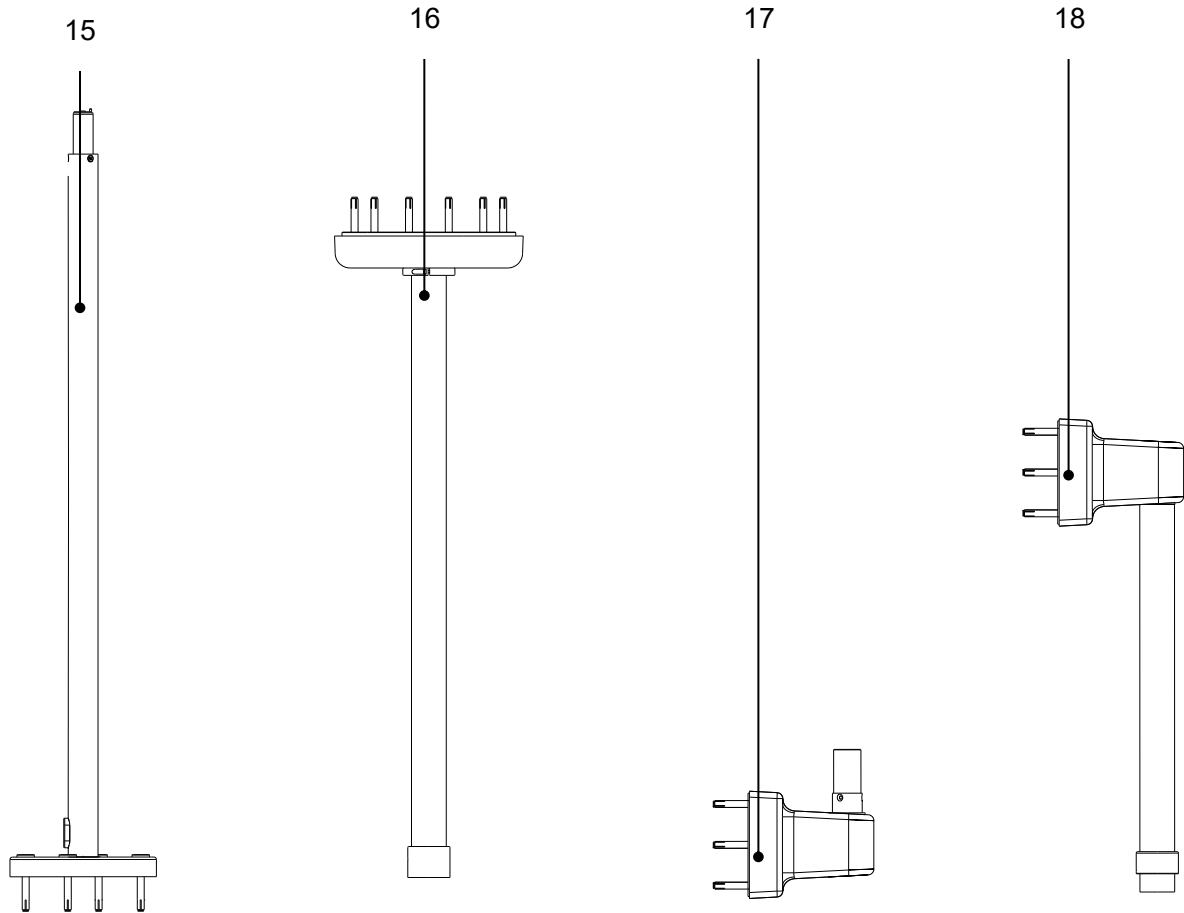


15 Fixed Stand Mount

16 Ceiling Mount Stand

17 Low-position Wall Mount
Stand

18 High-position Wall
Mount Stand



Inspection before Assembly



After opening the packaging box, find the packaging list, check the parts with the real objects one by one according to the package list, check if any component is not provided; if any component is not provided, please contact the local dealer in time;



Please check the product if there's any damage, especially the optical components, if any, please contact the local dealer in time;



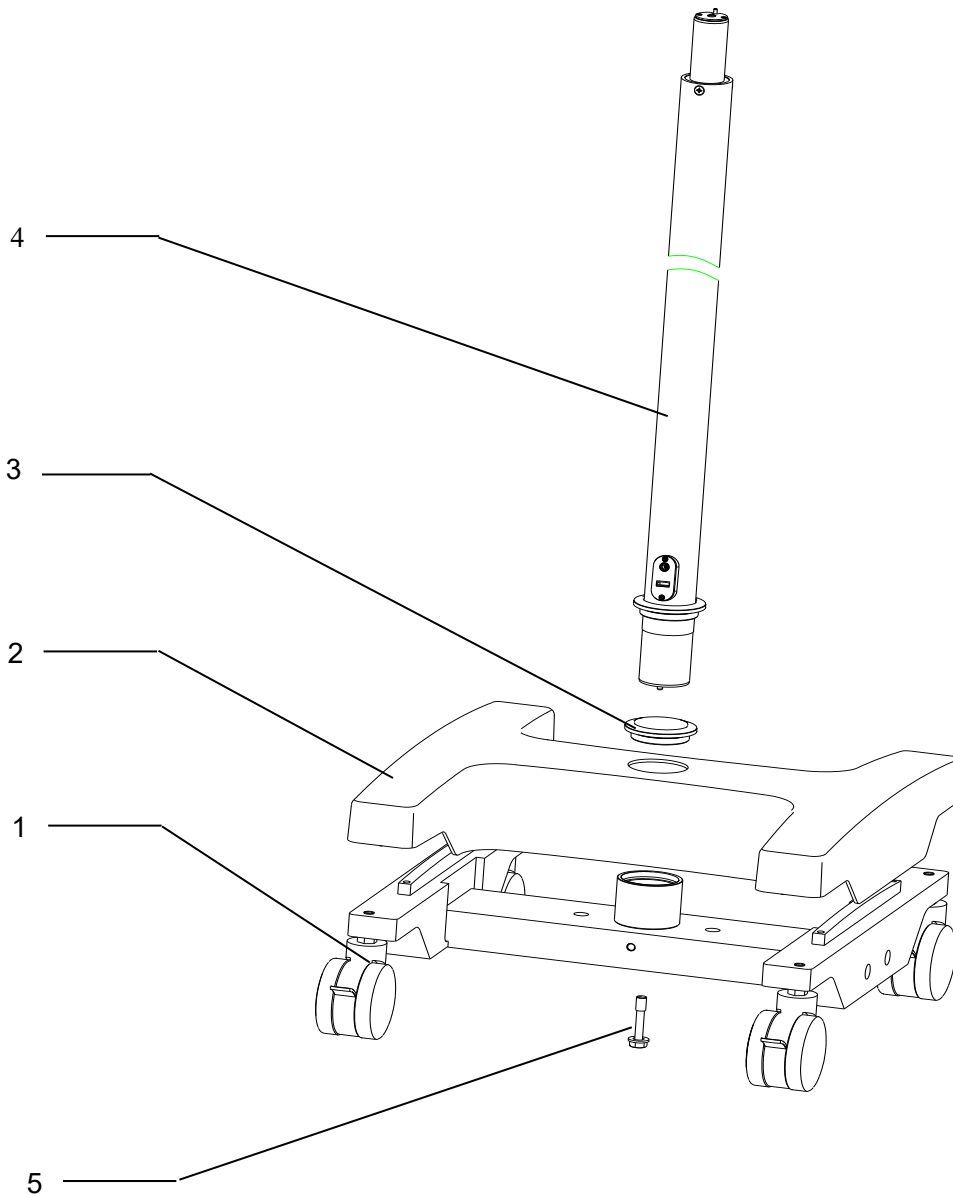
The product is the high precision instrument, please handle with care when taking it out, and make sure the components are put at the safe place.

✓ Before assembly, make sure the staffs have carefully read the User's Manual and well know the assembly steps.

Installation of Support System

Installation of Mobile Floor Stand

- ✓ Move the base (1) from the wood pallet, take away the plastic cover and the compression ring (3) firstly and put it aside;
- ▶ Put base (1) on the horizontal ground and lock four casters;
- ▶ Fit the plastic cover (2) onto the base (1) and tighten the compression ring (3);
- ▶ Insert the upright post (4) in the installation hole of base (1), the positioning pin and the positioning hole need to be aligned to ensure that the upright post is installed in place;
- ▶ After the upright post is installed in place, tighten the screw (5) ;
- ▶ Finish the assembly of the mobile floor stand.



Installation of Fixed Floor Stand

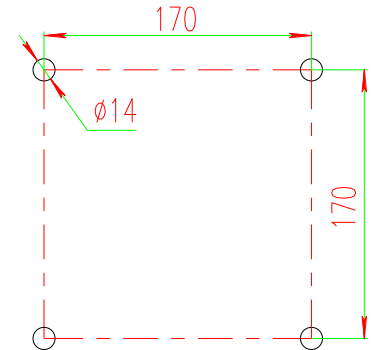


The floor to assemble the fixed floor stand must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of tipping over.



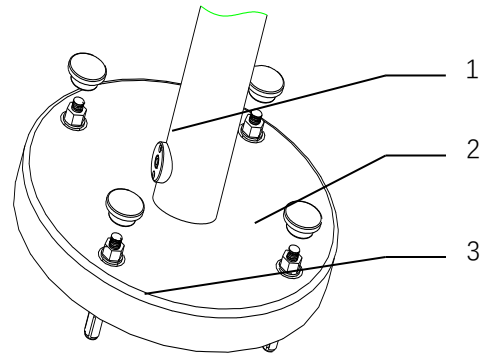
The ground to install the fixed floor stand must be horizontal enough, otherwise, it will cause the product to be tilted after installation.

- ▶ Drill 4 holes in the ground with $\Phi 14$ driller, the holes depth is 75mm, and the holes position is as shown on the right diagram.

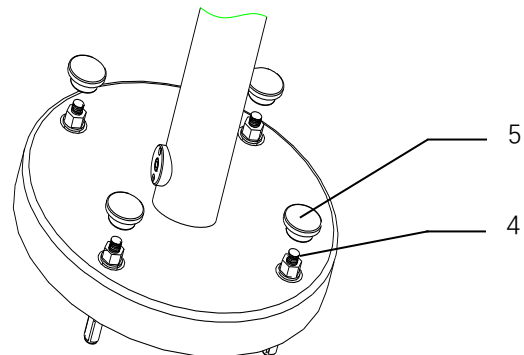


If the position and dimension of the installation hole are incorrect, the stand can't be installed.

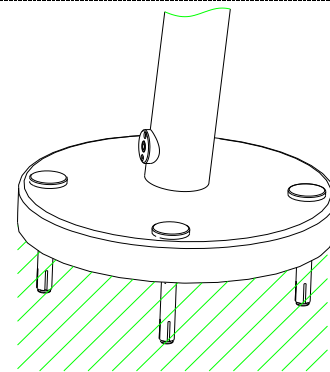
- ▶ Install the pole assembly (1) into the installation hole of the ground fixing plate (2), lock it with two M10 screws (3), and the positioning pin must align with the positioning hole during assembly;



- ▶ Take out the socket spanner from the tool box, insert the M10 expansion bolt (4) in the installation hole, align the stand with the bolts, and tighten, assemble the decorative cover (5);



- ▶ Finish the installation of the fixed floor stand.

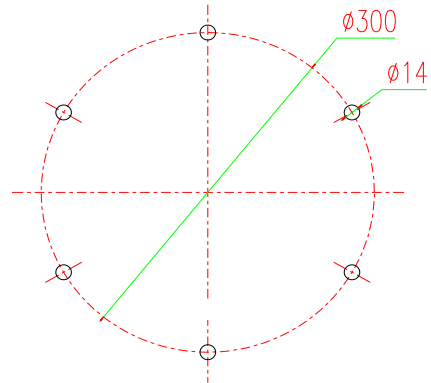


Installation of Ceiling Mount



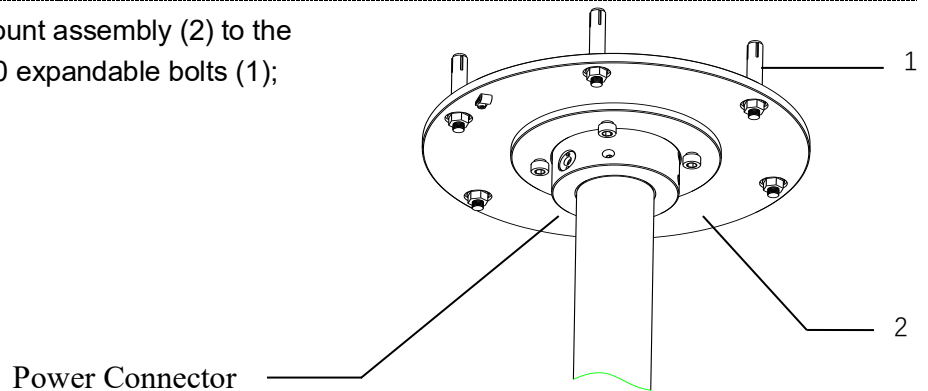
The ceiling to assemble the ceiling mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.

- ▶ Drill 6 holes in the ground with $\Phi 14$ driller, the hole depth is 75mm, and the position dimension of the hole is as shown on the right diagram;

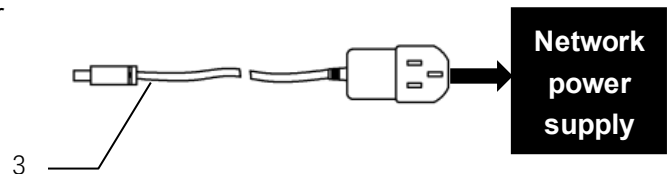


When drilling, please note the direction of power cord connection, The power connector is along same direction with the pre-installed socket on the ceiling.

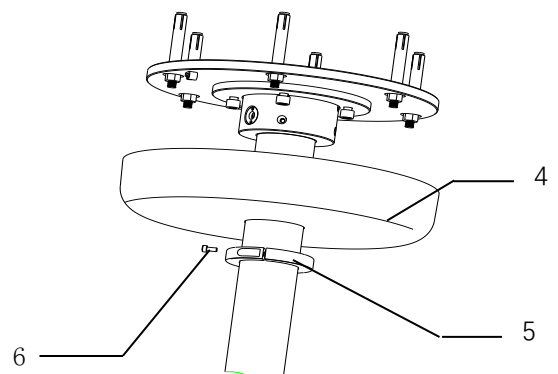
- ▶ Lock the ceiling mount assembly (2) to the ceiling with six M10 expandable bolts (1);



- ▶ Connect the power cable (3) to the power connector, and then plug it into an externally installed power socket.



- ▶ Install the decorative cover(4) from the bottom of the pole and bottom cover limit block(5), tighten the bolts(6)of the locking limit block after installation.



- ▶ Finish the installation of the ceiling mount.

Installation of Low-Position Wall Mount

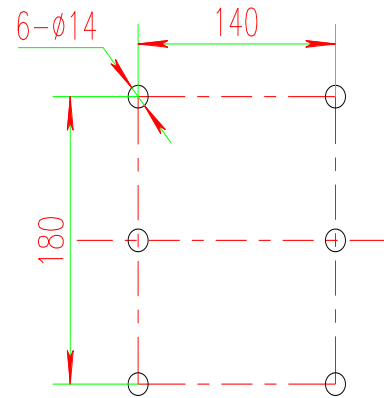


The wall to install the low position wall mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.



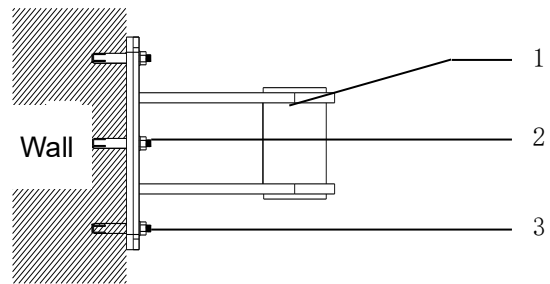
The wall to install the low-position wall mount shall be smooth enough, otherwise, it will cause the product to be tilted after installation.

- ▶ Drill 6 holes in the wall with $\Phi 14$ driller, the hole depth is 75mm, The position and dimension of the hole is as shown on the right diagram;

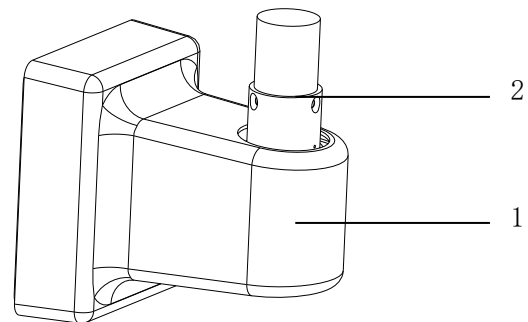


If the position and dimension of the installation hole are incorrect, the installation could not be done.

- ▶ Install the low-position wall mount (1) to the wall with hole by M10 expandable bolts (2), then tighten the nuts (3).



- ▶ After the appearance cover, load the column into the bracket.



- ▶ Finish the installation of the low-position wall mount.

High-Position Wall Mount



The wall to install the high-position wall mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.

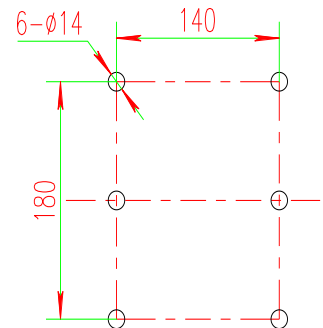


The wall to install the high-position wall mounted support shall be smooth enough, otherwise, it will cause the product to be tilted after installation.

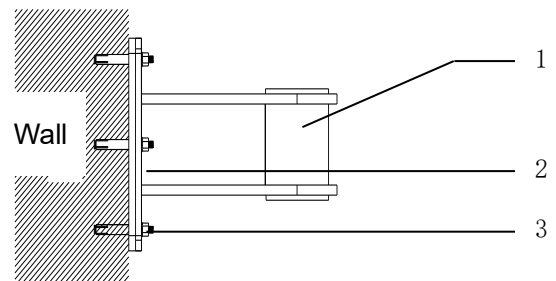
▶ Drill 6 holes in the wall with $\Phi 14$ driller, the hole depth is 75mm, The position and dimension of the hole is as shown on the right diagram;



If the position and dimension of the installation hole are incorrect, the installation could not be done.

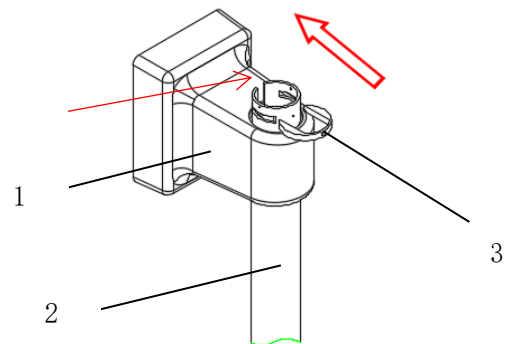


▶ Install the high-position wall mount (1) to the wall with hole by M10 expandable bolts (2) and tighten the nuts (3).

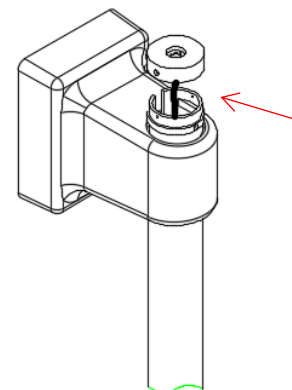


▶ After the appearance cover, put the column (2) from the bottom of the bracket, pay attention to the direction of the column (Refer to the right).

▶ Insert the anti-pendant copper circle (3) according to the specified such as shown on the right, fixed the anti-pendant copper circle with M3X6 hexagon lobular socket countersunk head screws.



▶ Put the cover into the column, be careful in the column on the column on the column. After the cover is installed in place, lock with 2 M3x6 hexagon lobular socket countersunk head screws.



▶ Finish the installation of the high-position wall-mount.

Installation of Cross Arm System

Upright Installation of Cross Arm

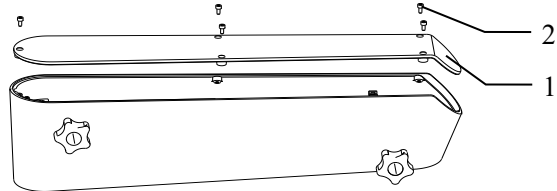


The upright installation of cross arm is applicable to mobile floor stand, fixed floor support and low-position wall mount.



Because the cross arm is heavy and long, please install by two operators for safety.

- ▶ Loosen five fastening bolts (2) on the cross arm, remove the plastic cover (1) and put it aside;



- ▶ Lift the cross arm over the pole, cross the power cable (3) and HDMI cable (4) from the mounting hole of cross arm (5), as shown by the bellow arrow.

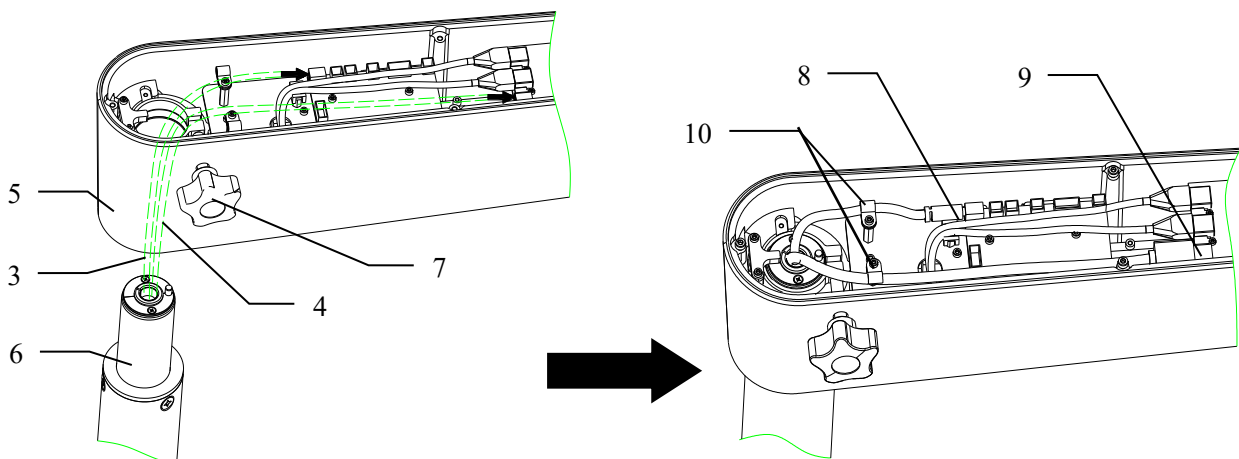
- ▶ **Note: Low-Position Wall Mount without HDMI cable(4).**

- ▶ Install the cross arm (5) to the pole (6)



In order to install it in place, completely loosen the locking knob (7) before inserting the cross arm into the pole.

- ▶ Once the cross arm bracket is installed in place, insert the power plug into the power connector (8), insert the HDMI plug into the HDMI connector (9), and fix the power cable and HDMI cable to the cable holder (10).



- ▶ Install the plastic cover (1) on the cross arm (5), finish installation.

Suspending of Ceiling Mount

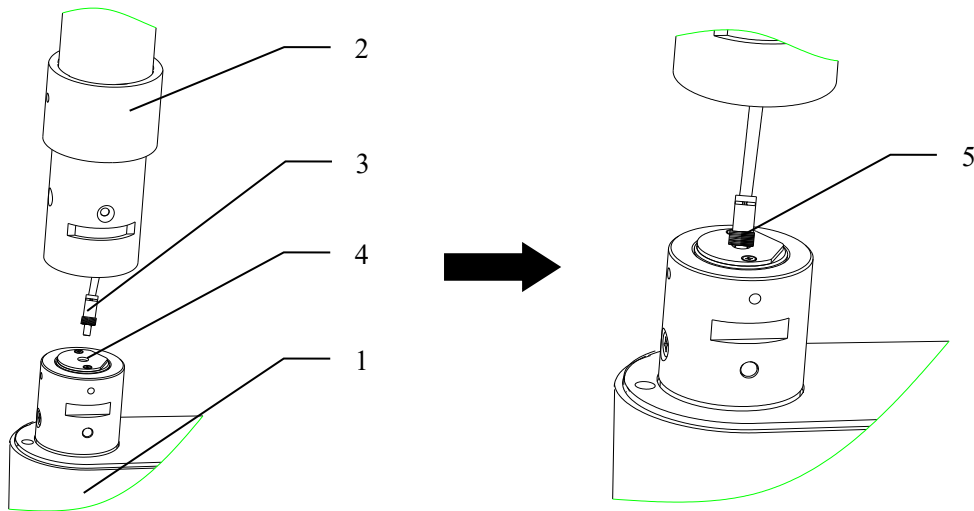


The suspending installation of first arm is applicable to ceiling mount System and high-position wall mount system.

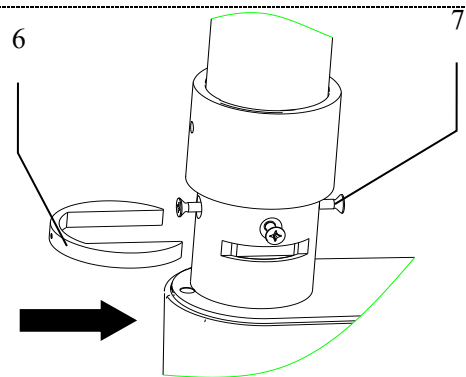


Because the first arm has certain weight and is long, please install by two operators together for safe installation.

- ▶ Lift the cross arm bracket (1) to a position under the column, insert the decorative ring (2) into the column, insert the power plug (3) on the column into the power connector (4) tighten with the nut (5) on the power plug.

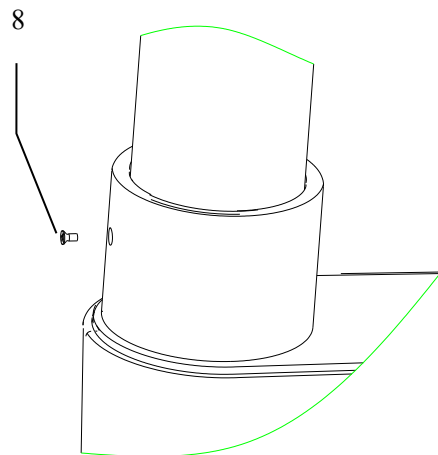


- ▶ Insert the connecting shaft on the first arm support into the upright post, align at the clamping groove and insert the limit block (6); tighten four M6 × 16 hexagon socket countersunk head screws (7) around four sides.



After the limit block (6) is inserted in place, the first arm support can be loosened;

- ▶ Put the decorative ring (2), lock the side edge with M3 × 6 hexagon socket countersunk head screws (8), finish installation.

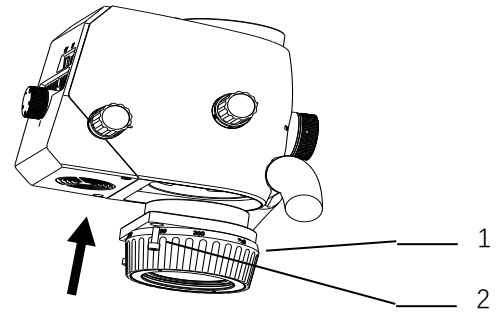


Installation of Objective Lens



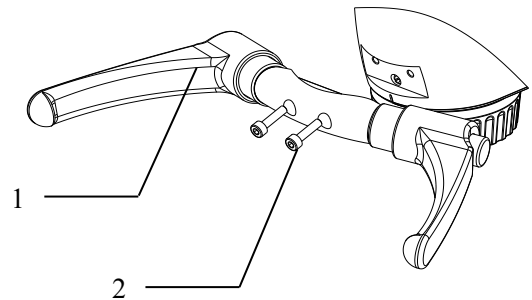
The installation methods for the 250mm objective lens, 300mm objective lens, 400mm objective lens and 198-455mm objective lens are the same.

- ▶ Mount the large objective (1) into the microscope mount with two M4 screws (2).



Installation of Control Handle

- ▶ Mount the control handle (2) into the microscope mount with two M4 screws (1).

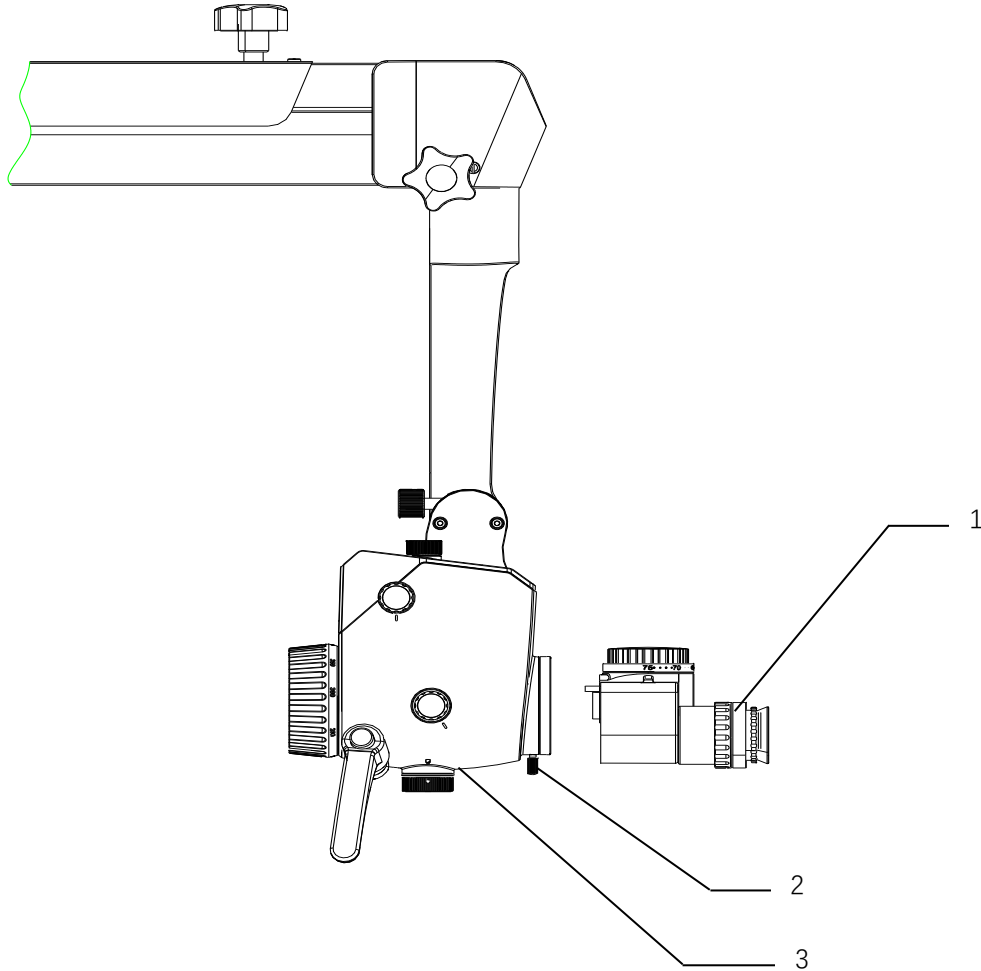


Installation of Binocular Head Barrel

- ✓ Make sure that the locking screw (2) is completely loosened before installation;
- ▶ Align the binocular tube (1) at the positioning pin, and install it in the bayonet of microscope body (3);
- ▶ Tighten the locking screw (2);



Before loosening the grip, please make sure: ① the binocular head barrel has been fully installed in place and has been completely clamped in the bayonet; ② the locking screw has been tightened. Otherwise, the binocular head barrel will be at risk of falling.



Wiring

▶ Connect the attached HDMI cable according to the following picture;

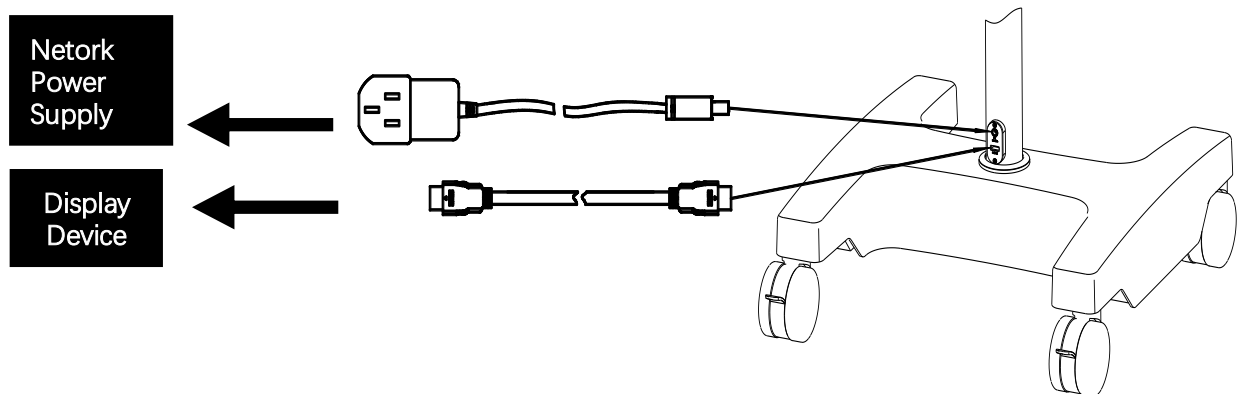


Please check whether the input channel of the HDMI cable is consistent with the display channel of the monitor, otherwise, it will cause the display to have no image output.

▶ Connect the attached power wire according to the following picture;



If the specification of power cord plug does not match the local socket standard, please contact your local dealer or store for replacement.



Installation Confirmation

- Check whether the threaded connection of all assembled positions have been tightened, judge whether the whole machine has completed installation;
- Loosen all locking knobs, check if the rotation and movement of all joints of the whole machine are smooth, judge whether the mechanical function is normal;
- Check whether the locking knob of each joint is valid, judge whether the locking function is normal;
- Turn on the power switch, observe whether the indicator of the power switch turns on, whether the light is illuminated from the microscope body, judge whether the power is supplied;



When the suspension arm moves to the highest point, there is no illumination light; when the dimming knob is adjusted to the minimum, there is no illumination light;

- Turn the dimming knob to observe whether the lighting spot changes bright and dark, judge whether the dimming function is normal;

If the above functions are normal, it can be confirmed that the product is well installed.

Installation of Supporting Components

Installation of Straight Binocular Head and 45° Binocular Head

The installation method is the same as the Installation of Binocular Head Barrel, see Page 20.

Installation of Objective Lens

For objective lens of other specifications, the installation methods are the same as “Large Objective Lens Installation”, as shown in Page 19.

Installation of Other Parts

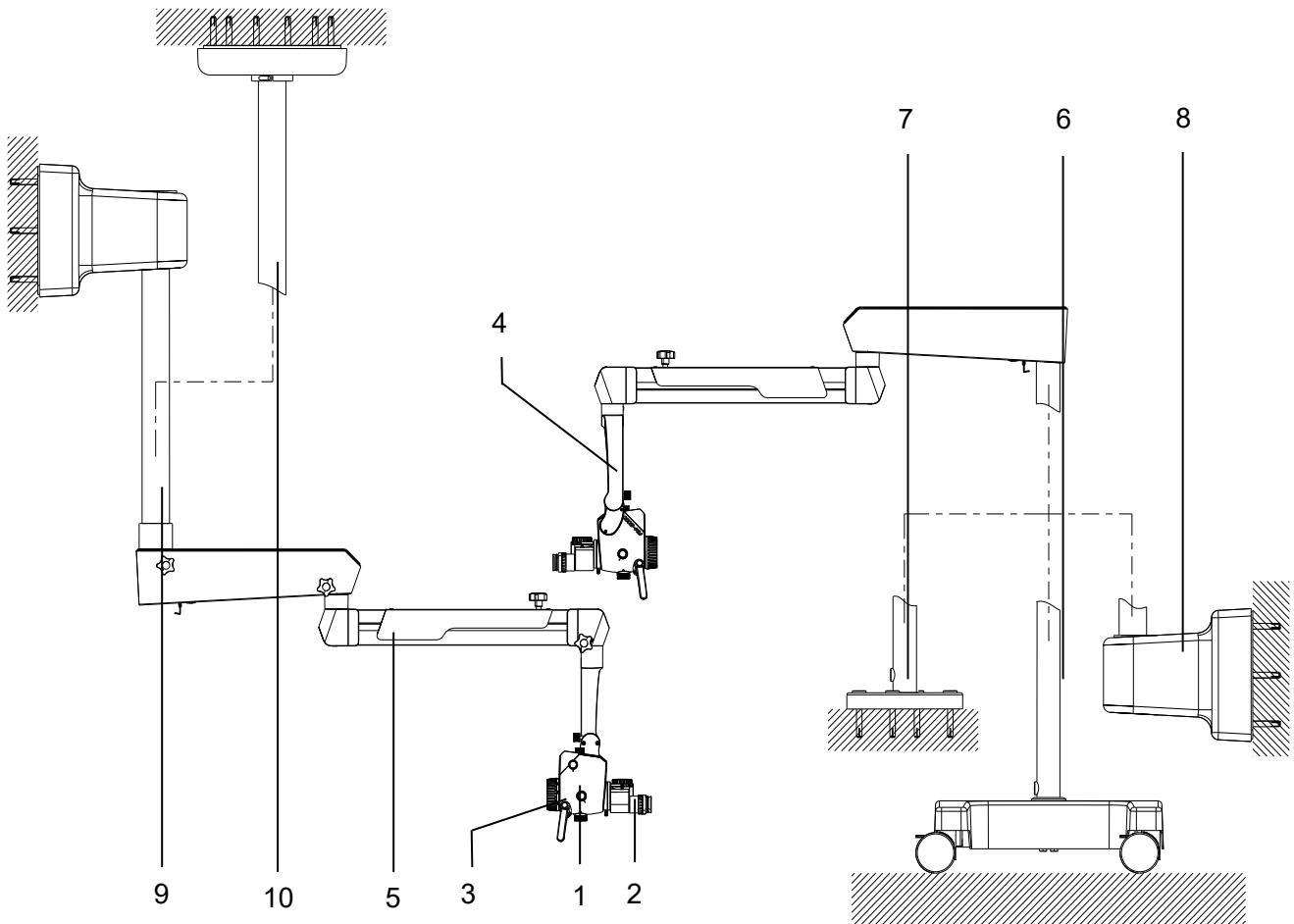


For the installation methods of other accessory parts, please refers to the user manual of corresponding component.

Product Functions

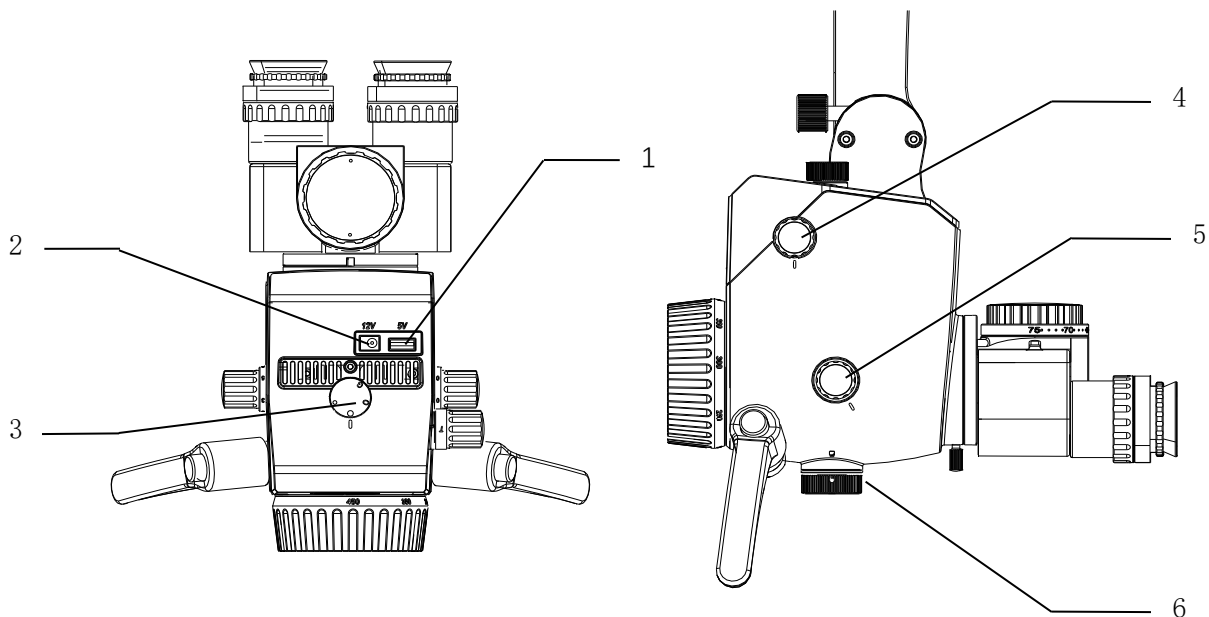
Product Components

1	Main body of microscope
2	Straight Binocular Head
3	Objective lens
4	hanger bracket
5	Cross arm bracket
6	Mobile floor stand
7	Fixed Stand Mount
8	Low-position wall mount stand
9	High-position wall mount stand
10	Ceiling mount stand



Main Body Lens of Microscope

5V	1 USB 5V power supply interface
	For 5V/2.0A DC output.
12V	2 12V power supply interface
	For 12V/1.0A DC output.
G	3 Lighting shift knob
O	For switching different illumination, "●" means large spot without color filter, "●" means medium spot without color filter, "●" means small spot without color filter, "G" means green filter, "O" means orange filter.
	4 Light source switch knob
	Used to switch 2 different light sources, "W" is white mode LED light source, "F" is fluorescence mode LED light source
	5 Optical zoom knob
	For manual adjustment of the optical magnification, and the numbers on the knob are magnification factors.
	6 Multifunction button
	<ul style="list-style-type: none"> Rotating knob adjusts the brightness of the lighting; Press the knob to the left side to enter the video, press it again to exit the video; Press the knob to the right side to frozen screen, press it again to exit the frozen screen; Press the knob to the lower side to achieve photo.



Straight Binocular Head and Eyepiece

1 Pupillary distance adjustment

Adjust the pupillary to make two images through both of eyepieces into one. The number on the knob is the pupillary distance.

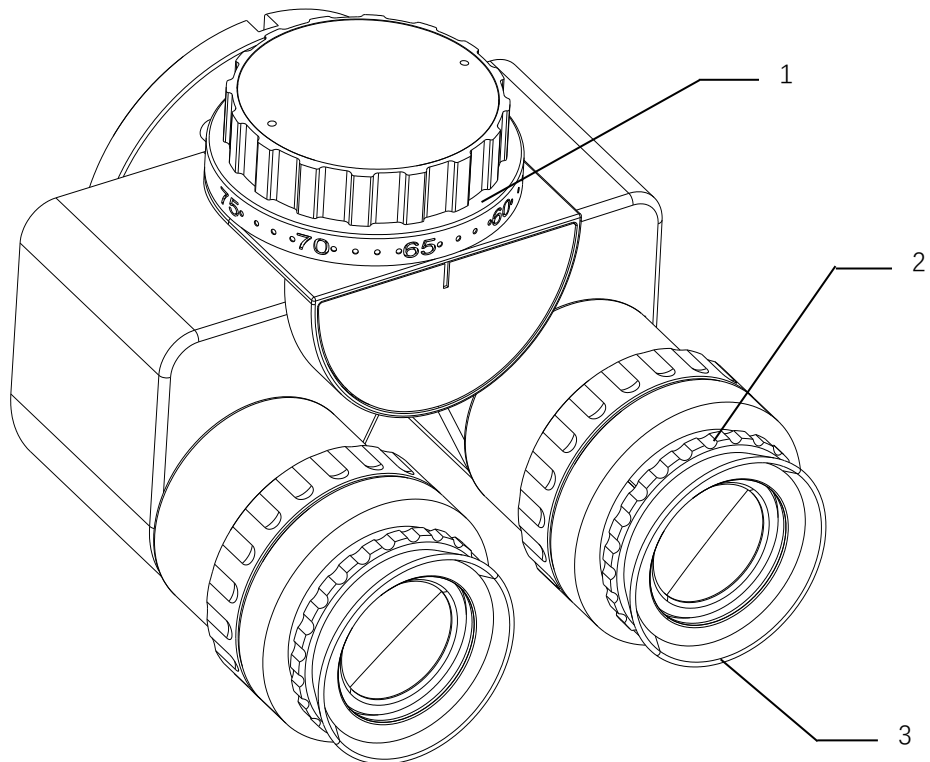
2 Diopter adjustment

The eyepieces provide diopter compensation at -6D and +6D. Setting the diopter adjustment at 0D if the operator wear glasses. Rotating the diopter adjustment to the best position till you see the most clear view if the operator doesn't wear glasses. In the positioning device, the built-in brake can keep the diopter adjustment still.

3 Eyecup

Adjust the eyecup to the right place till you can see the whole field of view.

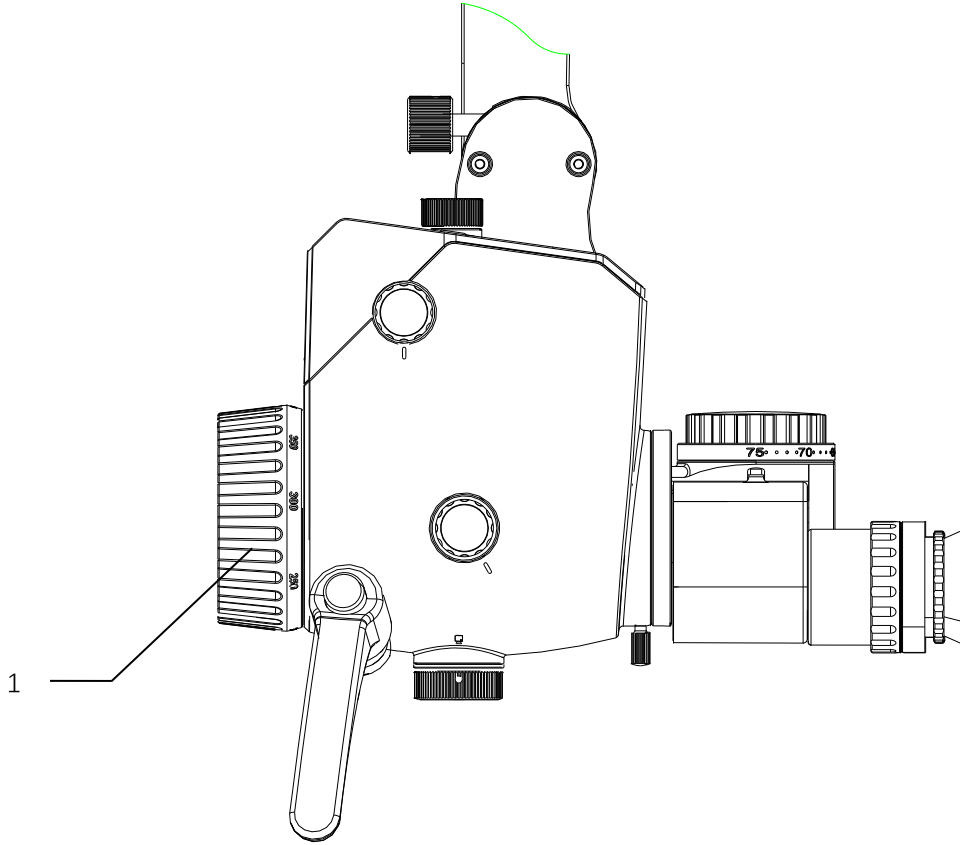
- View with glasses: turn the eyecup inwards
- View without glasses: turn the eyecup outwards until you see the whole field of view.



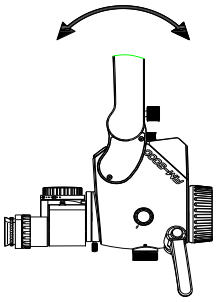
Objective Lens

1 Focusing knob

It is used for manually setting the image definition (focusing, working distance).

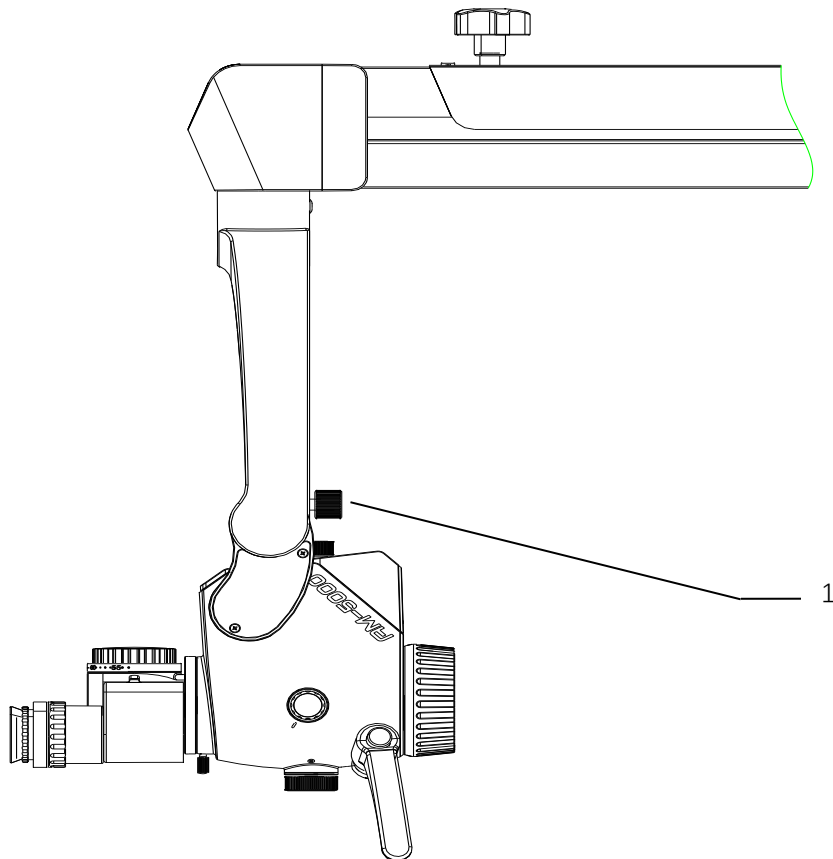


Hanger Bracket

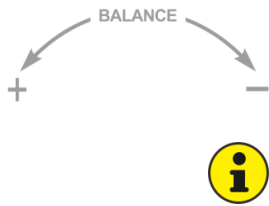


- 1 Friction adjustment knob for tilting motion (forwards/backwards) of the main lens of the microscope

Used to adjust the friction of the pitching rotation of the main lens of the microscope (as indicated by the arrow on the left).



Cross Arm and Mobile Floor Stand /Fixed Floor Stand /Low-position Wall Mount Stand



- 1 Rotation friction adjustment of 120° hanger bracket
For adjusting the rotation friction of 120° hanger bracket.

- 2 Friction adjustment of balance arm
For adjusting the rotation friction when moving the balance arm up and down.

- 3 Balance adjusting knob
For adjusting the spring force for balancing. After installing the surgical microscope with all accessories, adjust the balance of the balance arm with the knob, the adjusting identification as the one in the left picture.
For rotating the knob easily, the balanced arm shall be in the horizontal position when adjusting balance.

- 4 Balanced arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the balanced arm.

- 5 Load-bearing arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the load-bearing arm.

- 6 Power switch with green indicator
It is used for starting and stopping the power supply of the instrument, when the instrument is started, the green indicator of the power switch turns on.

- 7 Camera switch with green indicator
It is used for starting and stopping the camera of the instrument, when the instrument is started, the green indicator of the switch turns on.

- 8 Power supply interface
Power supply interface, Input: DC12V5A

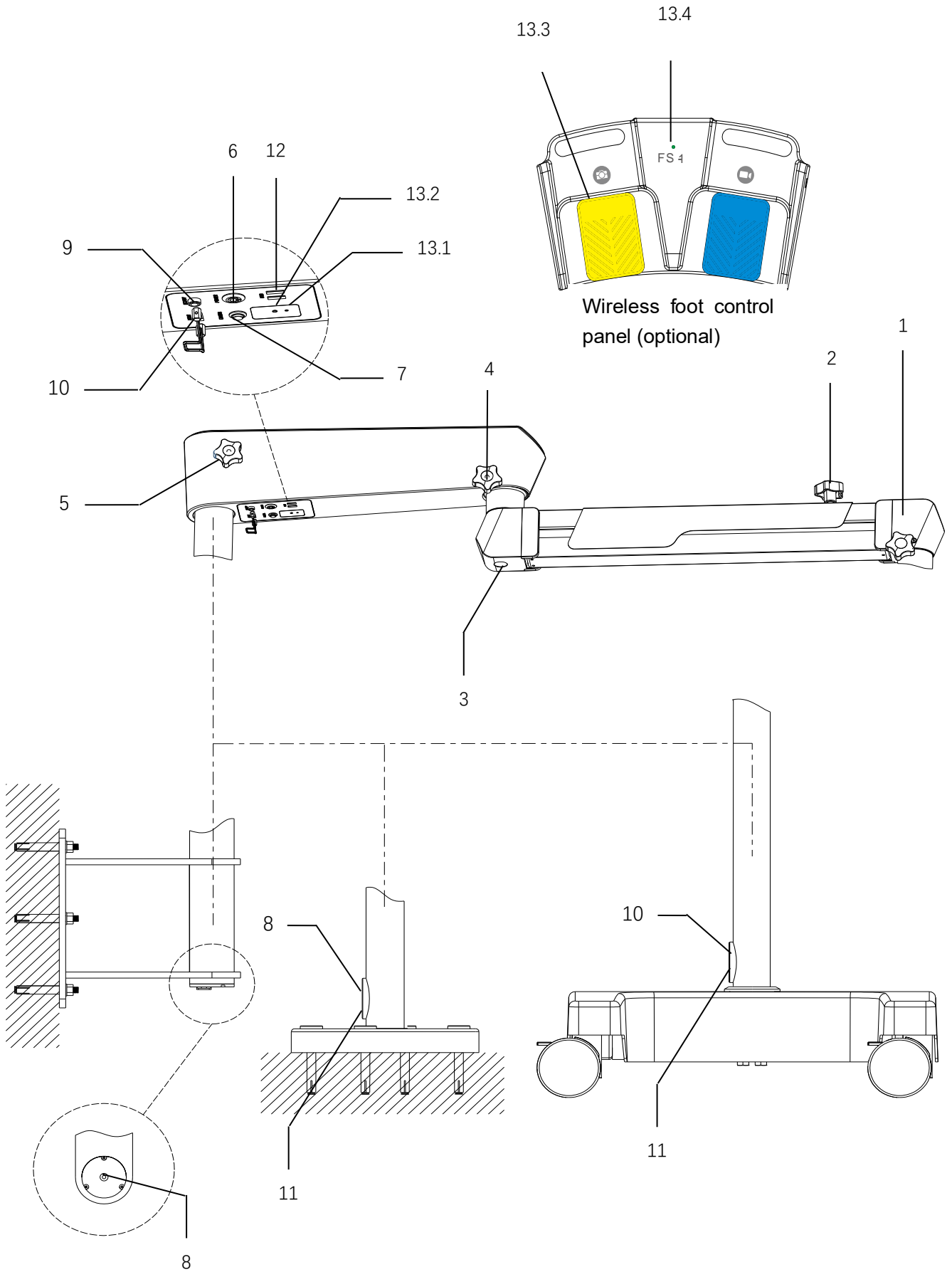
- 9 Display device supply interface
Display device supply interface, Output: DC19V1.5A

- 10 HDMI video output interface 1
It is used for outputting high definition video.

- 11 HDMI video output interface 2
It is used for outputting high definition video.

- 12 USB interface
It is used for connecting wireless mouse and U-disk.

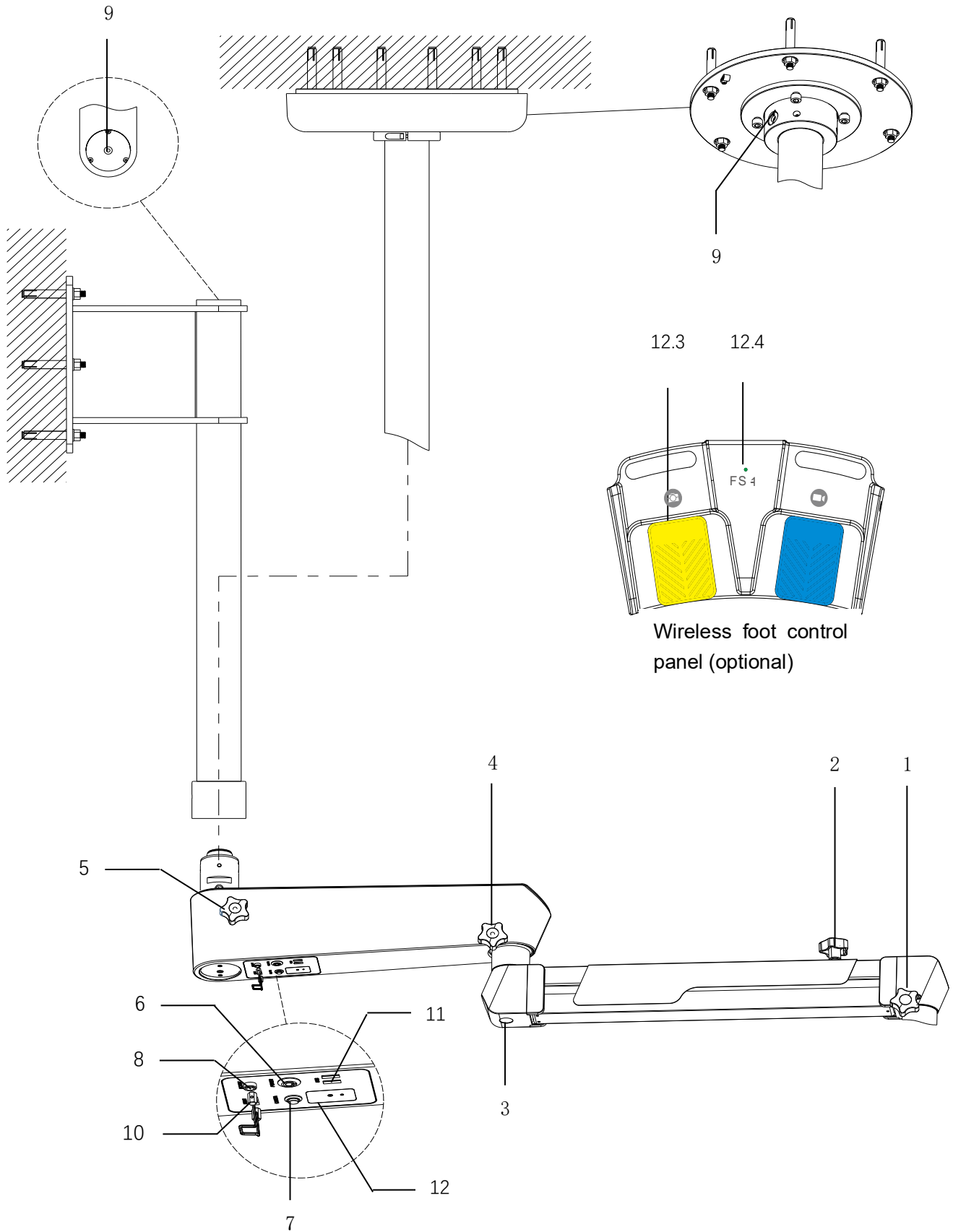
- 13 Wireless remote controller pairing
 - ▶ Under the On state, press the pairing button (13.1) of the wireless module with needle till the wireless pairing indicator (13.2) light on;
 - ▶ Kick the photo button(13.3) 4 second of wireless foot control panel, the indicator (13.4) of wireless foot control panel light on;
 - ▶ The indicator (13.4) light off after 4 second, then indicator (13.2) (13.4) flashes 2 times, and lights off, finish pairing.



Cross Arm and Ceiling Mount Stand /High-position Wall Mount Stand



- 1 Rotation friction adjustment of 120° hanger bracket
For adjusting the rotation friction of 120° hanger bracket.
- 2 Friction adjustment of balance arm
For adjusting the rotation friction when moving the balance arm up and down.
- 3 Balance adjusting knob
For adjusting the spring force for balancing. After installing the surgical microscope with all accessories, adjust the balance of the balance arm with the knob, the adjusting identification as the one in the left picture.
For rotating the knob easily, the balanced arm shall be in the horizontal position when adjusting balance.
- 4 Balanced arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the balanced arm.
- 5 Load-bearing arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the load-bearing arm.
- 6 Power switch with green indicator (Main power switch)
It is used for starting and stopping the power supply of the instrument, when the instrument is started, the green indicator of the power switch turns on.
- 7 Camera switch with green indicator
It is used for starting and stopping the camera of the instrument, when the instrument is started, the green indicator of the switch turns on.
- 8 Power supply interface 1
Power supply interface.
- 9 Power supply interface 2
Power supply interface.
- 10 HDMI video output interface 1
It is used for outputting high definition video.
- 11 USB interface
It is used for connecting wireless mouse and U-disk.
- 12 Wireless remote controller pairing
 - ▶ Under the On state, press the pairing button (12.1) of the wireless module with needle till the wireless pairing indicator (12.2) light on;
 - ▶ Kick the photo button(12.3) 4 second of wireless foot control panel, the indicator (12.4) of wireless foot control panel light on;
 - ▶ The indicator (12.4) light off after 4 second, then indicator (12.2) (12.4) flashes 2 times, and lights off, finish pairing.



Operation of the Microscope

Check before Use

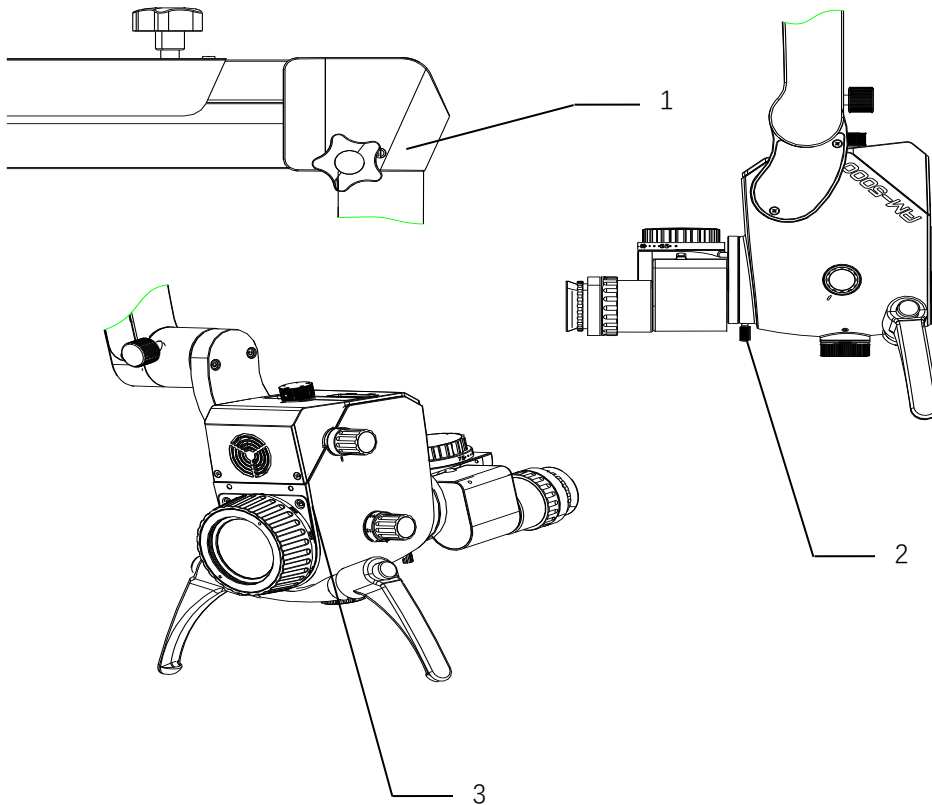


There must be no patient when checking the microscope!



To terminate the operation of the equipment, please turn off the power switch or disconnect from the network power supply!

- ✓ Check if the bolts (1) have been locked;
- ✓ Check whether the binocular and the bolts (2) has been safely installed.
- ✓ Check whether the objective lens and the bolts (3) has been safely installed.



Optical Adjustment of Surgical Microscope

▶ Adjust the surgical microscope to the minimum magnification, move the surgical microscope to the chosen position till the object is observed clearly.

▶ Adjust the pupillary distance of the binocular barrel, and when the images of the two eyepieces merge into one, the correct position is reached.

▶ Adjust the surgical microscope to the maximum magnification and move the surgical microscope to the position that has clearest image.



Clearer image can be obtained by fine adjustment of the focus knob on the objective lens.

▶ Change the surgical microscope to the minimum magnification, and adjust the knob of diopter on the eyepiece until the clearest image is observed.

- User with normal version: adjust the diopter to 0;
 - User with abnormal version and wearing glasses: adjust the diopter to 0;
 - User with abnormal version and not wearing glasses: adjust the diopter till gaining clearest image.
-

▶ Finish optical adjustment.

Built-in Camera

Camera Operating System Introduction

Please refer to **ALL-CAM2 Camera Operating System User's Manual (ALLCAM2-UM03-EN)** in the random U disk for the introduction of the camera operating system.

Camera's Video Showed with Web Browser

Mobile phones or computers can be connected with ALL-CAM2 by WIFI, and then camera's video can be displayed with Web browser. More information refer to the manual **ALL-CAM2 Camera's video show with Web browser User's Manual (ALLCAM2-UM04-EN)** in random U disk. Disk attached to this module if you want to get more detailed information.

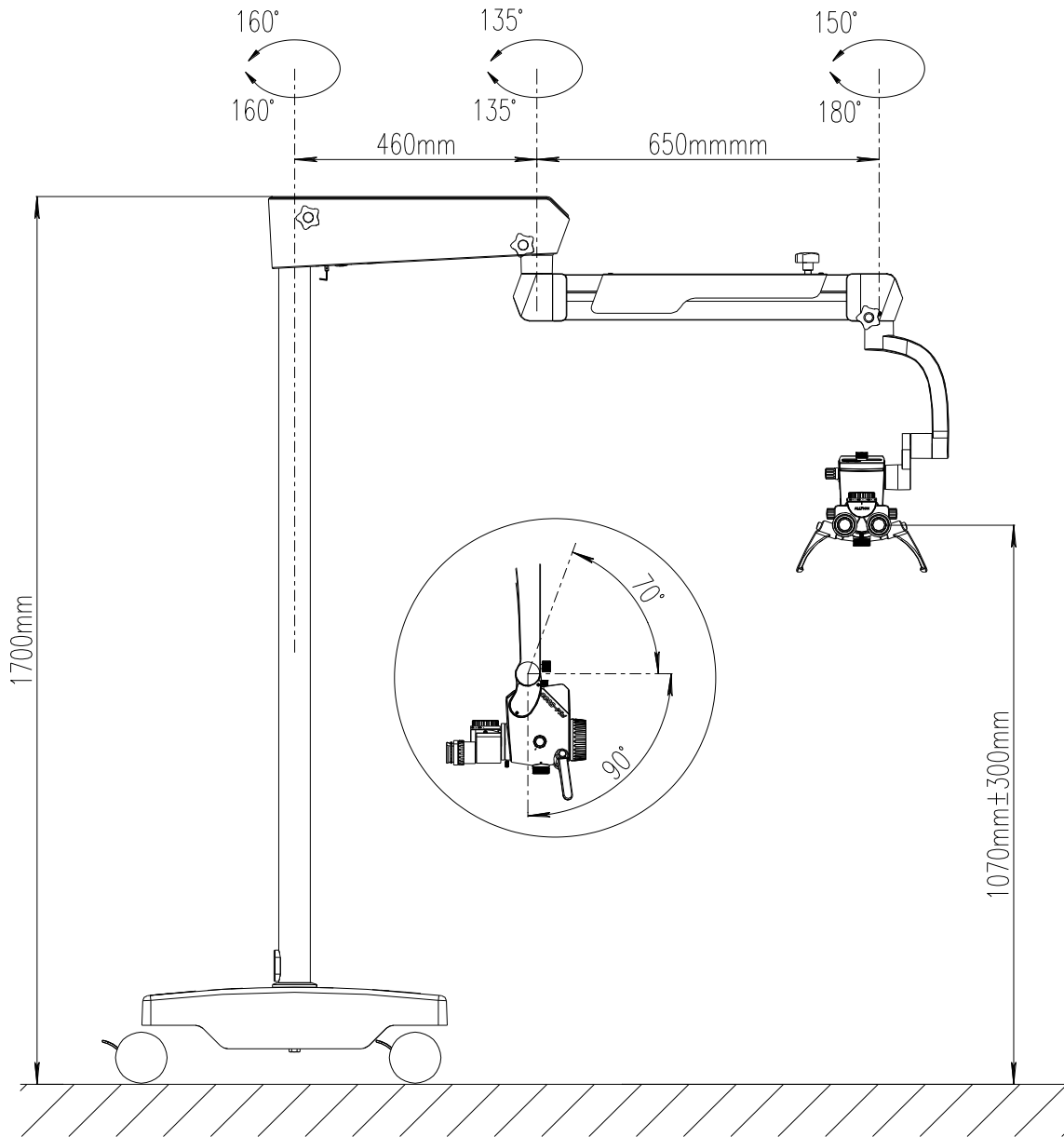
Client APP

Mobile phones or computers can be download and installed APP, then camera's video can be displayed with APP. More information refer to the manual **ALL-CAM2 Camera's video show with client APP User's Manual (ALLCAM2-UM09-EN)** in random U disk. Disk attached to this module if you want to get more detailed information.

Performance Parameters

Basic Dimension

The basic dimensions of the whole machine and the motion range of the joint are shown in the following figure:



Microscope Parameters

Magnification rate	Manual six-range zooming
Large objective lens	Standard configuration: F250 large objective lens (fine focus mechanism range: 16mm), optional: 300, 400 large objective lens and 198-455 variable objective lens.
Binocular barrel	180° variable angle binocular barrel, f=170mm Rang of Pupillary distance:: 50mm~75mm
Eyepiece	12.5X/Φ18mm, diopter adjustment range: ±6D
Object surface illumination (lx)	Maximum illumination > 80000 lx (with F250 large objective lens)
Diameter of illumination spot	Φ72mm (with F250 large objective lens)
Illumination shift	Orange filter, green filter, large spot without filter, medium spot without filter, small spot without filter

Optical Parameters

Large objective lens	F250		F300		F400		
	Variable magnification shift	Total magnification rate[A]	Diameter of the view(mm) [B]	A	B (mm)	A	B (mm)
	0.3	2.8×	77.2	2.4×	92.6	1.8×	123.5
	0.5	4.2×	51.5	3.5×	61.8	2.7×	82.4
	0.8	7.1×	30.9	5.9×	37.1	4.4×	49.4
	1.2	10.2×	21.4	8.5×	25.7	6.4×	34.3
	2	17×	12.9	14.2×	15.4	10.6×	20.6
	3	25.5×	8.6	21.3×	10.3	15.9×	13.7

Variable objective lens	W. D. =198~455					
	W. D. =198mm (f' =279mm)		W. D. =300mm (f' =373.6mm)		W. D. =455mm (f' =513mm)	
Variable magnification shift	Total magnification rate[A]	Diameter of the view(mm) [B]	A	B (mm)	A	B (mm)
0.3	2.3×	86.2	1.9×	115.4	1.4×	158.4
0.5	3.8×	57.4	2.8×	76.9	2.1×	105.6
0.8	6.3×	34.5	4.7×	46.2	3.5×	63.4
1.2	9.1×	23.9	6.8×	32	5×	44
2	15.2×	14.4	11.4×	19.2	8.3×	26.4
3	22.8×	9.6	17.1×	12.8	12.4×	17.6




Built-in Camera

Photosensitive chip	1/2" SONY high sensitivity and low noise CMOS
Output interface	HDMI Network interface USB2.0
Resolution	HD1080P 60FPS (16: 9)
Storage	USB socket to Insert Photo: JPG format, video: MP4 format
WIFI	Built-in WIFI, it can transmit images
Camera optical splitter ratio	2:8
Video setting	1080P
Picture size	2M(1920x1080) / 5M (3072 x 1728) / 8M (3840 x 2160)
Basic functions	Freezing, Snap Image, Video Recording, Automatic Exposure, White Balance, Image Echo, Crosshairs
Image effect	Exposure Value, Best Brightness, Gain, Red Gain, Blue Gain, Saturation, Contrast, Sharpness, ALC, HDR
Advanced functions	Horizontal Flip, Vertical Flip, Enlarge, Reduce, AOI, Image Contrast
System setting	Auto Name/Manu Name, Time Show/Time Hide, Show LOGO/Hide LOGO, Language, Resolution, Name Setting, System Update, Restore Default, Version Information
Measuring function	Ruler, Function: (P2P, P2L, L2L, C2C, P2C, L2C, Angle, Arc, Circle, Rectangle, Polygon, Crease, Text, Del All, Color Settings, To Pictures, To Excel), Information, Ruler Show.

Electrical Parameters

Rated voltage	DC12/5A (Adapter:Input:AC100-240V 50/60Hz, output:DC12V 5A)
Input power	25-60VA
Electrical safety standard	IEC60601-1:2005 + A1: 2012 IEC60601-1-2:2014
Lighting system	LED bulb, life time is over 50,000 hours
Noise	≤65dB
Running mode	Continuous running

Electromagnetic Compatibility


-  Without approval from Prosidio, it may result in the electromagnetic compatibility of the device or other equipment if it is not authorized to change or refit the device.
-  The design and test of MODEL 2 surgical microscope comply with relevant operating instructions on electromagnetic compatibility.
-  The equipment or system shall not be adjacent to or stacked together with other equipment. If it is required, observe and verify whether it can operate correctly in such a configuration.

Requirements on Wire Installation


Name of Wire	Type	Length (m)
The adapter power cord	Non-shielded parallel wire	3m

Key Components for Electromagnetic Compatibility

The electromagnetic compatibility key components of the product include the power adapter and dimming circuit board, It will cause significant decreasingly in electromagnetic compatibility transmission and immunity performance to use or replace with the accessories with non-matched design,

-  Do not replace the components without authorization.

Guidance and Manufacturers Declaration–electromagnetic Emission

-  The MODEL 2 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the MODEL 2 surgical microscope should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR11	Group 1	MODEL 2 surgical microscope uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class A	MODEL 2 surgical microscope is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations /flicker emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer's Declaration – electromagnetic Immunity– for all Equipment and Systems



The MODEL 2 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the MODEL 2 surgical microscope should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment -guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrostatic transient / burst IEC 61000-4-4	± 2 kV for power supply lines	± 2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode	± 1 kV differential mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T ; for 0.5 cycle,(On U_T , > 95% of the drop) 40 % U_T ; for 0.5 cycles, (On U_T , 60% of the drop) 70 % U_T ; for 0.5 cycles, (On U_T , 30% of the drop) <5 % U_T ; for 0.5s,(On U_T , > 95% of the drop)	<5 % U_T ; for 0.5 cycle,(On U_T , > 95% of the drop) 40 % U_T ; for 0.5 cycles, (On U_T , 60% of the drop) 70 % U_T ; for 0.5 cycles, (On U_T , 30% of the drop) <5 % U_T ; for 0.5s,(On U_T , > 95% of the drop)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MODEL 2 surgical microscope requires continued operation during power mains interruptions, it is recommended that the MODEL 2 surgical microscope be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

U_T is the a. c. mains voltage prior to application of the test level

Guidance and Statement from Manufacturer - Electromagnetic Immunity- for Equipment and System that are not Life-supporting



The MODEL 2 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the MODEL 2 surgical microscope should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3Vrms 150kHz ~80MHz	3Vrms	<p>Portable and mobile RF communications equipment should be used no closer to any part of the MODEL 2 surgical microscope, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance</p> $d = \left[\frac{3.5}{V_1} \right] \sqrt{p}$ $d = \left[\frac{3.5}{E_1} \right] \sqrt{p} \text{ 80MHz} \sim \text{800MHz}$ $d = \left[\frac{7}{E_1} \right] \sqrt{p} \text{ 800MHz} \sim \text{2.5GHz}$
Radiated RF IEC 61000-4-3	3V/m 80MHz~ 2.5GHz	3V/m	<p>where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).^b Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol:</p> <div style="text-align: center;"> </div>



- At 80 MHz and 800 MHz, the higher frequency range applies.
- These guidelines may not apply in all situations. Electromagnetic is affected by absorption and reflection from structures, objects and people.
- Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the MODEL 2 is used exceeds the applicable RF compliance level above, The MODEL 2 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the MODEL 2.
- Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the MODEL 2



The MODEL 2 surgical microscope is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the MODEL 2 surgical microscope can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MODEL 2 surgical microscope as recommended below, according to the maximum output power of the communications equipment

Rated maximum output of transmitter W	Separation distance according to frequency of transmitter		
	150kHz~80MHz $d = \left[\frac{3.5}{V_1}\right] \sqrt{P}$	80MHz~800MHz $d = \left[\frac{3.5}{E_1}\right] \sqrt{P}$	800MHz~2.5GHz $d = \left[\frac{7}{E_1}\right] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23



For transmitters rated at a maximum output power not listed above the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

- At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.
- These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

MODEL 2 surgical microscope has been tested in accordance with YY 0505-2012/ IEC 60601-1-2:2014, which cannot be guaranteed against electromagnetic interference in any way, and should avoided to be in a high electromagnetic environment.

Cleaning and Maintenance of the Instrument



If possible, the equipment and accessories shall be cleaned immediately after use.

Contaminants cannot be dried on the object as this will make it more difficult to clean and disinfect.

Preventive Maintenance and Inspection

Operator of preventive inspection, maintenance and calibration: User

Maintenance cycle: 3 months.

Parts for preventive inspection and maintenance: eyepiece and Objective

Clean the Optical Surface



The optical component has a multi-layer laminating (e.g., eyepiece, objective) to ensure optimum image quality, the contaminants attached to the surface of the optical component will reduce the image quality. The internal optical equipment shall be protected from dust, the equipment shall not be stored without objective lens, binocular and eyepiece. After use, cover the dust cover on the surface of the system to avoid dust on the equipment. When the optical components and accessories are not in use, they are always kept in the dust-free box.



Do not use any chemical cleaning agent, corrosive solvent or detergent with scratching effect, which will damage the surface of the optical device.

▶ The stain (blood stains, etc.) on the surface of the optical part shall be removed with distilled water having added an appropriate amount of washing liquid. The surface can only be wiped with humid cloth, and the surface of the component must not be scrubbed with wet cloth;

▶ After removing the stains from surface, use a clean cloth to dip 75% medical alcohol for further cleaning.

Clean the Mechanical Surface

All mechanical surfaces of the instrument can be cleaned by wiping with humid cloth. Do not use any irritative or corrosive cleaning agent. The residual dirt shall be wiped off with the mixture of 50% of normal alcohol and 50% of distilled water and a small amount of household tableware cleaning liquid.



Disconnect the power supply when wiping the instrument.

Disposal of Waste

The wastes generated during use include the sight glass wiping paper or absorbent cotton. Please don't throw it at will. If there is special garbage disposal facility near you, use it as much as possible.

The scrapped instruments shall be handled according to the provisions of local environmental protection laws for avoiding polluting the environment.

Maintenance Related Information

Troubleshooting

Faults	Possible Reasons	Solutions	Refer to
Lighting failure	Power cable is not connected	Connect the power wire	
	Power switch is not turned on	Turn on the power switch	
	The dimming knob is adjusted to minimum position	Adjust the dimming knob	See Page 23
	The instrument is in the non-working area and the balanced arm is at high position	Move the balanced arm to the working area	
	Instrument electrical failure	Contact the local dealer or after-sales service agent	
	LED bulb failure	Contact the local dealer or after-sales service agent	
Illumination fails intermittently during use	The cooling window and the air inlet are covered or blocked by external object	Remove the foreign object and clean the cooling window	
	Failure of cooling fan	Contact the local dealer or after-sales service agent	
	Instrument electrical failure	Contact the local dealer or after-sales service agent	
The instrument cannot stop at any time when it moves up and down	Balanced arm is not adjusted to balance after adding or decreasing accessories of the microscope	Balance the balanced arm	See Page 27
	Spring failure	Contact the local dealer or after-sales service agent	
The instrument is running stiffly	The friction adjustment knob is adjusted too tight.	Loosen the friction adjusting knob, and moderately adjust the friction.	See Page 25
Optical magnification switching failure	Mechanical failure of the instrument	Contact the local dealer or after-sales service agent	

After-sale Service

Any unauthorized maintenance or repair of the instrument can no longer be guaranteed. The duration and scope of the warranty are detailed in the **PROSIDIO Operating Microscope Warranty Clause**. In order to safely transport the instrument back to PROSIDIO company during repairing, please keep the original packing box and packing material of the instrument.

For More Information

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The information needed to identify the device and its manufacturer is available and kept up to the newest IFU on the above website.