LANOPTIK

HDMI Microscope Camera

DM350C

User Manual

Content

Chapter 1 Notes and Safety Requirements

1.1 Cautions and Notes

1) To avoid danger or damage incurred to the lens, do not touch the lens or sensor directly with your fingers.

2) To avoid failure or electric shock hazard and so on, do not disassemble or modify the internal structure of the device.

3) Do not plug in or unplug the Power connection port when hands are wet.

4) Do not use alcohol and other organic solvents to clean.

5) If the lens or sensor is dirty or damp, you should better use dry and non-linen fabric or professional lens tissue to wipe them. To avoid scratches on the surface, do not touch the lens with your fingers. Wipe the lens or sensor lightly.

6) The products are not specifically designed for an outdoor use. Do not expose it to outdoor environment without any protection. Excessive temperature and humidity will damage the lens. Please avoid using the product under the following environment: high temperature or high humidity environment, places with direct sunlight, dirt or vibration and places near heat source.

7) Please use and store in the following environment:
   Operating temperature： 0℃～40℃
   Storage temperature：-20℃～60℃
   Operating Humidity：30~60%RH
   Storage Humidity：10~80%RH

8) If any foreign matter, water or liquid enter into the device by accident, disconnect the Power line immediately. Please send it to the maintenance center and do not use the hair dryer to dry it by yourself.

9) To prevent microscope from being tripped over or dropped, please put away the device's connect cable in use or standby.

10) To avoid electric shock by accident, please power off microscope before you move your display or equipment.

11) The cleanliness of the device lens will directly affect clarity degree of contents from the computer screen during preview. Problems like various circles or spots on the screen may mostly be incurred by dirt on the lens. When cleaning, please use professional lens tissue or other professional detergent to clear the dirt on the lens.

Chapter 2 Software System Requirements

2.1 System Requirements for HDMI Work Mode

- Displayer: for best observation effects, 1080P or higher resolution with HDMI A interface, screen of 19 or higher inches with size proportion 16:9 should be used.

2.2 System Requirements under USB Work Mode

- Windows XP SP3，Windows 7（32 or 64 bits），Windows 8（32 or 64 bits），Windows8.1（32 or 64 bits），Windows10（32 or 64 bits）.

- Dual core 1.6 GHz or higher CPU

- USB 2.0 high-speed interface or USB2.0 compatible interface

- At least 4 GB available hard-disk space

- 2G or more memory

- DVD-ROM driver (only needed when installing software)

Chapter 3 Packing List

1. Main body

2. HDMI Line
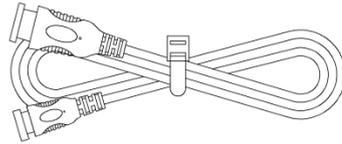
3. USB Line
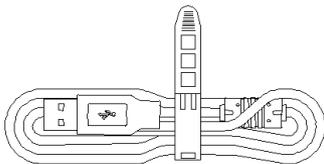
4. Adapter

5. Reset pin

6. Installation disk
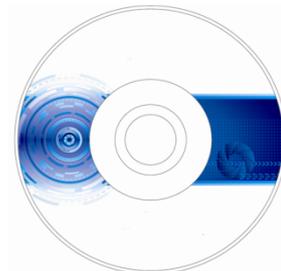
Chapter 4 Function Introduction of Each Part

4.1 Name and Function for Each Part of the Camera Eyepiece Body

1. Work Indicator	1) Red and green light on when the device is power on but not been started up. 2) Green light is on when the machine is started up; Green light flashes when recording is processed. 3) Red and green light flashes when the card (including no card insertion, maximum card storage capacity and card recognition error) is wrong.
2. Menu/WB button	Menu/automatic white balancing function.
3. Microphone	Record sound when video is recording.
4. Toggle switch for machine on/off	Machine on, machine off.
5. Zoom in/upward button	Zoom in/ upward/ freeze/ video fast backward.
6. Photograph/ Record button	Record/ photograph/ backward play.
7. Mode/Yes/AE button	Mode/ yes/ automatic exposure function. Mode includes photograph, backward play and record.
8. Zoom out/ downward button	Zoom out/ downward/ fast forward.

9. Micro USB port	The connection port of the USB line Micro.
10. Reset pole	Re-start the machine.
11. Mini HDMI port	The connection port of the HDMI line Mini port.
12. Port C thread	Port C thread can be directly connected with port C, CS port microscope and telescope. Connected with eyepiece (accessories), the port C thread can realize the connection with microscope with different ports.(thread specifications: 1"X1/32")
13. Dust cover	Dust cover is for covering dust and protecting chips.
14. Eye-height adjustment ring	It is for the adjustment of the eye height. The adjustment range of the back focal length is BFL=11.6-36mm.
15. TF card slot	TF card slot supports the maximum capacity of 64G. TF card doesn't support hot swap. If the recording files or photos are required to be stored, TF card needs to be inserted before recording or photography. Before photography and recording, if the TF card isn't been detected, the machine will remind users to insert TF card. If the TF card reaches its maximum storage capacity, the recording will automatically stop and process saving, and also reminds users to replace new TF card at the same time. When the machine is connected to computer by USB, users can access the file of the TF card by simultaneously press buttons "menu"and "mode", and again press the two buttons to exit accessing the TF card.

4.2 Accessory Introduction
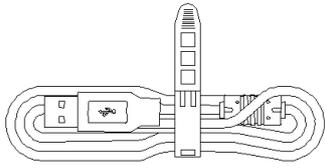
USB Cable

Two functions:

1) Under the state of HDMI: USB can be used as the power line.
2) When connected with PC port: USB can be used as the connection line between Camera Eyepiece and computer data.
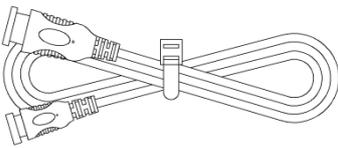
HDMI Cable

Data connection line between machine body and displayer.

4.3 Introduction of Optional Accessories
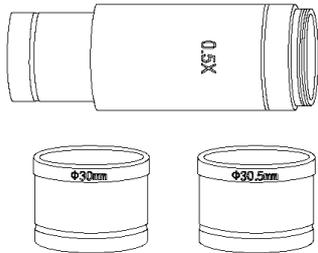
Adaption ring and eyepiece (Optional Accessories)

Through adaption ring and eyepiece, Camera Eyepiece can be adapted to microscope with different calibers. The Camera Eyepiece itself can be adapted to port C or CS. Under different magnification ratio, the caliber of eyepiece 0.5X is 23.2mm, adaption ring 23.2/30mm and 23.2/30.5mm. According to different assembly ways, the adaption ring and eyepiece can realize the connection between the device and eyepiece with different port size.

Chapter 5 Product Assembly Guide

5.1 Camera Eyepiece Assembly

5.1.1 Camera Eyepiece and Other Microscope Assembly

1. Connect to Microscope with standard port C

(1) Twist off the dust cover plastic cap under the Camera Eyepiece. (See picture 1)

(2) Twist the Camera Eyepiece onto other microscope (standard port C) (See picture 2)

(3) Connect the Micro USB port of USB line with Camera Eyepiece. Under HDMI mode, connect the other port to power adapter. Under USB mode, connect the other port with USB output port of the computer.

(4) Connect the Mini HDMI port of the HDMI to Camera Eyepiece, and the other port to displayer with HDMI port.(This step can be skipped under USB work mode.)
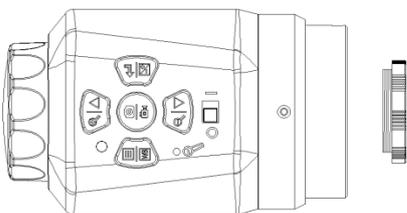
Picture 1
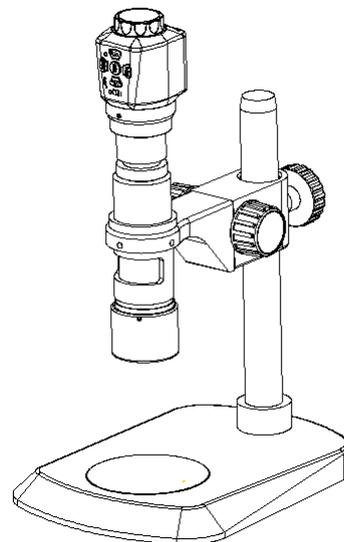
Picture 2

2. Connect the stereoscopic microscope

Twist off the dust cover cap of the Camera Eyepiece.
Connect the Camera Eyepiece with appending eyepiece (see picture 3 and 4).
Embed the minifier (or hollow cylinder) into adapter ring 23.2/30mm (or 23.2/30.5mm).
Embed the adapter ring with Camera Eyepiece to stereoscopic microscope(See picture 5).
Connect the Micro USB port of USB line with Camera Eyepiece. Under HDMI mode, connect the other port to power adapter. Under USB mode, connect the other port with USB output port of the computer.
Connect the Mini HDMI port of the HDMI to Camera Eyepiece, and the other port to displayer with HDMI port.(This step can be skipped under USB work mode.)
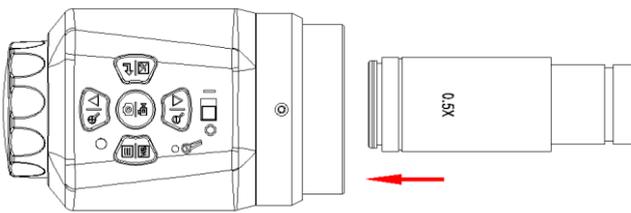
Picture 3
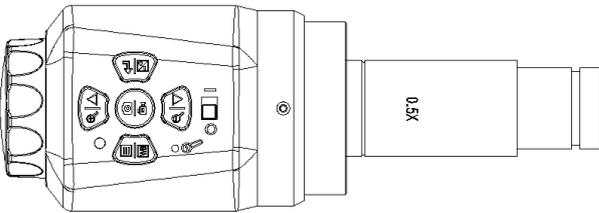
Picture 4
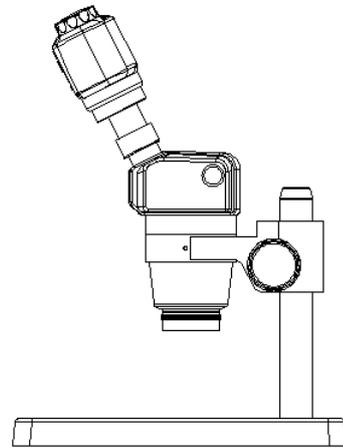
Picture 5

5.1.2 Camera Eyepiece Detachment

1. Detach with eyepiece of standard C port

1) The machine is under shutdown condition.
2) Pull out USB cable and HDMI cable.
3) Twist off the Camera Eyepiece from the microscope.
4) Screw on the dust cover plastic cap.
5) Place the Camera Eyepiece to avoid being dropped.

2. Detach with Stereoscopic Microscope

1) The machine is under shutdown condition.
2) Pull out USB cable and HDMI cable.
3) Take out the product with the adapter ring from the stereoscopic microscope.
4) Detach the adapter ring and eyepiece from the product.
5) Screw on the dust cover plastic cap.
6) Place the Camera Eyepiece to avoid being dropped.

Chapter 6 Instructions

Use under different modes:

1. HDMI Mode

2. USB Mode

Note: when connection with computer and HDMI is simultaneously detected, USB port output of the PC will be first processed.

6.1 HDMI Mode

6.1.1 Use of the back focal length eye height of the Camera Eyepiece

1. Connect the relevant accessories such as Camera Eyepiece, microscope and displayer, etc. (For detailed operation, please refer to Chapter 5)

2. Switch the toggle key to status of power on.

3. Rotate the eye height adapter ring clockwise or anti-clockwise to adjust the eye height until the image is clearly displayed.

   (1) Clockwise: BFL gets smaller.
   (2) Anti-clockwise: BFL gets larger.
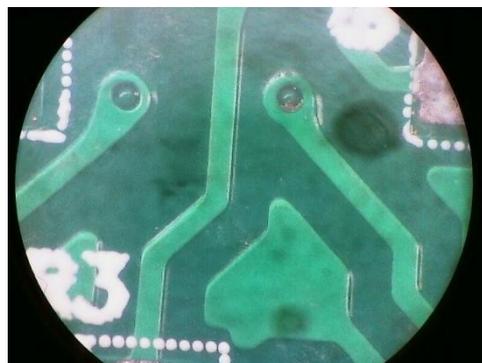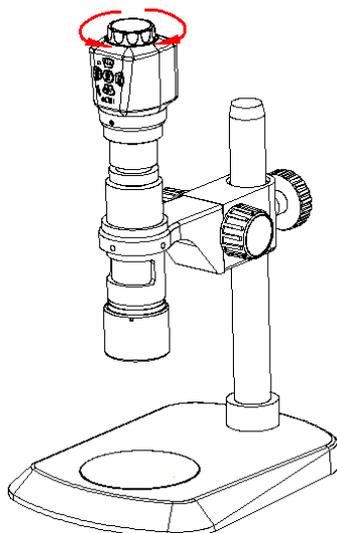
Note: For the magnification ratio and optical parameter of each eyepiece are different, chances are that the image might not been adjusted clearly through eye height adapter. In that case, coordinating adjustment operation distance can be tried to achieve clearer image effects.

6.1.2 Introduction of buttons functions

a) 5 buttons are set on the machine body.

b) Short press refers to press time 0.2s~1s. Long press refers to press time more than 2s or above. (Without special reference, press below all means short press).

c) For 10 seconds without operation, the system will automatically hide the icon on the desktop on the screen for users to watch the video more conveniently. Users can press any button to wake up the desktop icon. (The following operations are performed after waking up the desktop icon)

d) Zoom in button, the maximum magnification ratio: x4. Zoom out button can only be available when being zoomed in first.

e) The highest resolution picture is 2304x1536.

f) Record: when connect with HDMI cable, the highest resolution of recording is 1280x720.

1) Picture

The top right corner icon " 🔲 " displays for photo mode(Press ⬅️ button, and switch to Photo Mode). Please ensure insert the TF card before operation, press button 📷 for picture capture. Pictures will be automatically saved into the Photo folder under TF card of Microscope folder.

2) Record

The icon 🎥 on the top right corner of the screen displays for recording mode to record sound and video files (Press ⬅️ button, and switch to REC Mode). Please ensure insert the TF card before operation, press button 📷 for recording and press 📷 again to exit recording. Records will be automatically saved into the Video folder under TF card of Microscope folder.

3) Playback

Press ⬅️ button, and switch to Playback Mode (the top right shows 🖼️ or ▐█▌ Flip over for observation by pressing button ⊕|△ or ⊖|▽ . Pressing button 📋 can enter the file property interface, which includes three operation functions such as delete, protect and slide show.

The icon 🖼️ on the top right corner means the picture is a photo.
The icon ▐█▌ on the top right corner means the picture is a video. Press 📷 to play/pause recording. Press ⊕|△ or ⊖|▽ can fast forward or rewind during playing.

4) Freeze

Under photo or recording mode, long press [icon] to freeze the picture and press [icon] to unfreeze it. When the picture is frozen, press [icon] to save the frozen on screen as picture.

5) Menu Setup

Pressing [icon] to enter the menu bar interface. Through button [icon] and ¨ to move the cursor up and down for selecting the required function. Press [icon] to enter into setup. After setup, press button [icon] to exit menu bar.

Note: Parameter settings including exposure, white balance, resolution, Sequence, image quality, sharpness, Capture mode, color, ISO,quick review, beep sound and language and other common function. .

6) Exposure Setup

Long press [icon] to enter the exposure setup interface. The icon displayed on the screen is **AE** **TE** **EV** 0 When the icon flashes, the moving cursor is at current position. Press [icon] for Top-down cycle selection. Press [icon] to exit the exposure setup interface.

(1) With the cursor pointed to **AE** , through button [icon] or [icon] to start up or close the real-time automatic exposure function. Red icon AE stands for starting real-time automatic exposure and black AE for closing real-time automatic exposure.

(2)　With the cursor pointed to TE , through button ⊕|△ or ⊖|▽ to process single automatic exposure. Red icon TE stands for ongoing real-time automatic exposure and black TE for none automatic exposure or completed single automatic exposure.

(3)　With the cursor pointed to EV , through button ⊕|△ or ⊖|▽ to change the current value. The valuable adjustment range is -6~+6 with default value 0.

7) White Balance Adjustment

Long press ⬛ to enter AWB mode interface. The screen displays icon **AWB** **TWB** **R** 128 **G** 128 **B** 128 . When the icon flashes, the cursor is at current position. Press ⬛ for Top-down cycle selection. Press ⬛ to exit AWB mode.

（1）　With the cursor pointed to **AWB** , through button ⊕|△ or ⊖|▽ to start up or close the real-time white balance. Red icon AWB stands for starting real-time white balance and black AWB for closing real-time white balance.

（2）　With the cursor pointed to **TWB** , through button ⊕|△ or ⊖|▽ to process TWB. Red icon TWB stands for processing single white balance and black AWB for none single white balance or completed single white balance. Note: since the time of processing automatic white balance is very short, the icon TWB will not display red sign.

（3）　With the cursor pointed to **R** , through button ⊕|△ or ⊖|▽ to change current value. The effective adjustment range is 0~255 with default value 128.

（4）　With the cursor pointed to **G** , through button ⊕|△ or ⊖|▽ to change current value. The effective adjustment range is 0~255 with default value 128.

（5）　With the cursor pointed to **B** , through button ⊕|△ or ⊖|▽ to change current value. The effective adjustment range is 0~255 with default value 128.

6.2 USB Mode

6.2.1 Install Micro Capture Software

Put the accessory disk into the DVD of the computer, click the file Micro Capture Install and complete the installation of the application software according to the software prompts. For detailed installation methods, please refer to User Manual of Micro Capture English.

6.2.2 Connect the Device

(1) Connect the Camera Eyepiece to the microscope or telescope.

(2) Connect the USB port of the Camera Eyepiece to the USB port of the computer.

(3) For detailed operation methods, please refer to Chapter 5.

6.2.3 Open the Software

(1) Place the eyepiece and focus the camera on the observed object.

(2) Pull the toggle keys on.

(3) Execute the software Micro Capture in computer. Through adjusting the eye height or operation distance to observe the object.

6.2.4 Read TF card

After connected the Camera Eyepiece to the USB port of the PC, press to switch the USB mode to TF card mode. Meanwhile a disk icon will be created on the computer and the file in TF card of the Camera Eyepiece can be read through computer.