

ESC[®]
MEDICAMS



ENT-2000P-USB

INSTRUCTION MANUAL

 **IMPORTANT** 

IMPORTANT SAFETY NOTICE: Before operating this device, please read this operating manual thoroughly and carefully. When using this device with a light source, fire and/or severe injury may result to the patient, user, or inanimate objects if the instructions in this manual are not followed. All light sources can generate significant amounts of heat at the scope tip, the scope light post, the light cable tip, and/ or near the light cable adapter. Higher levels of brightness from the light source result in higher levels of heat. Always adjust the brightness level of the camera and the monitor before adjusting the brightness level of the light source. Adjust the brightness level of the light source to the minimum brightness necessary to adequately illuminate the surgical site. Avoid touching the scope tip or the light cable tip to the patient, and never place them on top of the patient, as doing so may result in burns to the patient or user.

In addition, never place the scope tip, the scope light post, the light cable adapter, or the light cable tip on the surgical drapes or other flammable material, as doing so may result in fire. Always place the light source in standby mode whenever the scope is removed from the light cable or the device is unattended. The scope tip, scope light post, light cable adapter, and light cable tip will take several minutes to cool off after being placed in standby mode, and therefore may still result in fire or burns to the patient, user, or inanimate objects.

WARNINGS

To avoid potential serious injury to the user and the patient and/or damage to this device, please note the following warnings:

1. Read this operating manual thoroughly, especially the warnings, and be familiar with its contents before connecting and using this equipment.
2. Be a qualified physician, having complete knowledge of the use of this equipment.
3. Test this equipment prior to any procedure. This unit was fully tested at the factory before shipment. Never use this equipment in the presence of flammable or explosive gases.
4. Avoid disassembling any part of the camera head, as doing so may break the seals, causing leakage and/or electric shock.
5. To avoid the risk of electric shock, this equipment and other connecting equipment must only be connected to a supply mains with protective earth ground.
6. Portable multiple socket-outlets shall not be placed on the floor. Additional portable multiple socket-outlets or extension cords shall not be used with the equipment.
7. Attempt no internal repairs or adjustments not specifically detailed in this operating manual.
8. This camera can only be used with Rigid Endoscopes.
9. PLEASE NOTE: This camera is not waterproof.
10. Before each use, check the outer surface of the endoscope to ensure that there are no rough surfaces, sharp edges, or protrusions.

Contents

1	Set - Up	3
1.1	Preparation	3
1.1	Connecting Control Unit to Monitor - Video Output.....	4
1.2	Connecting Control Unit to PC / Laptop	5 - 8
1.3	Connecting Camera to Android	9
2	Switching On	10
2.1	Setting up the camera	10
2.2	Switching on the system	10
3	Using the camera	11
3.1	Focusing the camera	11
3.2	White Balance	11
5	Cleaning & Maintenance	12
6	Specifications	13

1 Set-Up

1.1 Preparation

NOTE !

It might cause malfunctions to disconnect and connect the camera plug during operation. Disconnect and connect after powering off. Power on after confirming properly connected the camera head.

IMPORTANT !

Make sure the protection cap is installed if you don't want to use this camera in a short time.

Do not squeeze, compress or pinch, pull or kink the camera cable.

WARNING !

HF current may interfere with video images. To prevent such interference, HF equipment and video imaging equipment should be connected to different power supply circuits.

1.1 Connecting Camera Head to Monitor



Connect the camera to a video monitor by plugging the Yellow color socket on the camera cable to the Video input option in your TV.

Connect Power Adapter to AC power socket. Camera unit does not have any extra protection to prevent it from any type of electric shock or Electro-magnetic interferences. It is recommended to use voltage stabilizer or UPS to get maximum safety.



IMPORTANT !

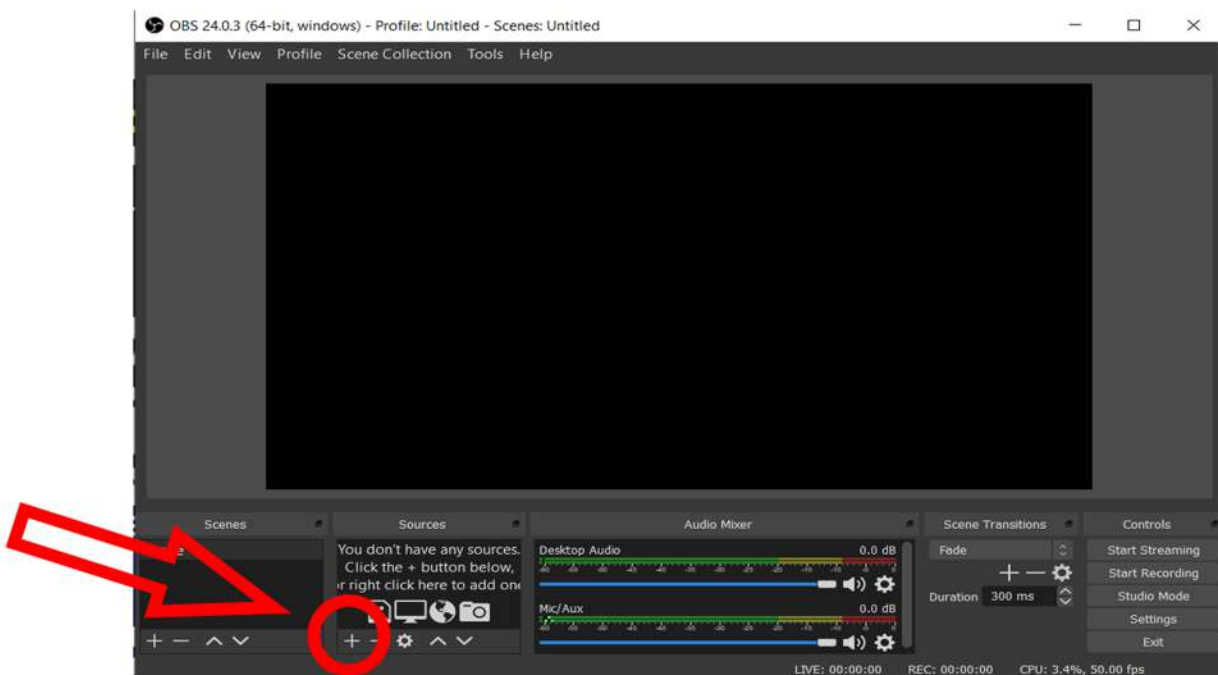
If using any Third party Video to HDMI Converters or Video to USB Converters to connect it to laptop, Compatibility of the camera is completely dependant upon that third party converter and you have to contact the provider of the converter in case camera does not support on it.

1.2 Connecting Camera Head to Laptop

**CONNECT TO PC WITHOUT
ANY POWER SOURCE**

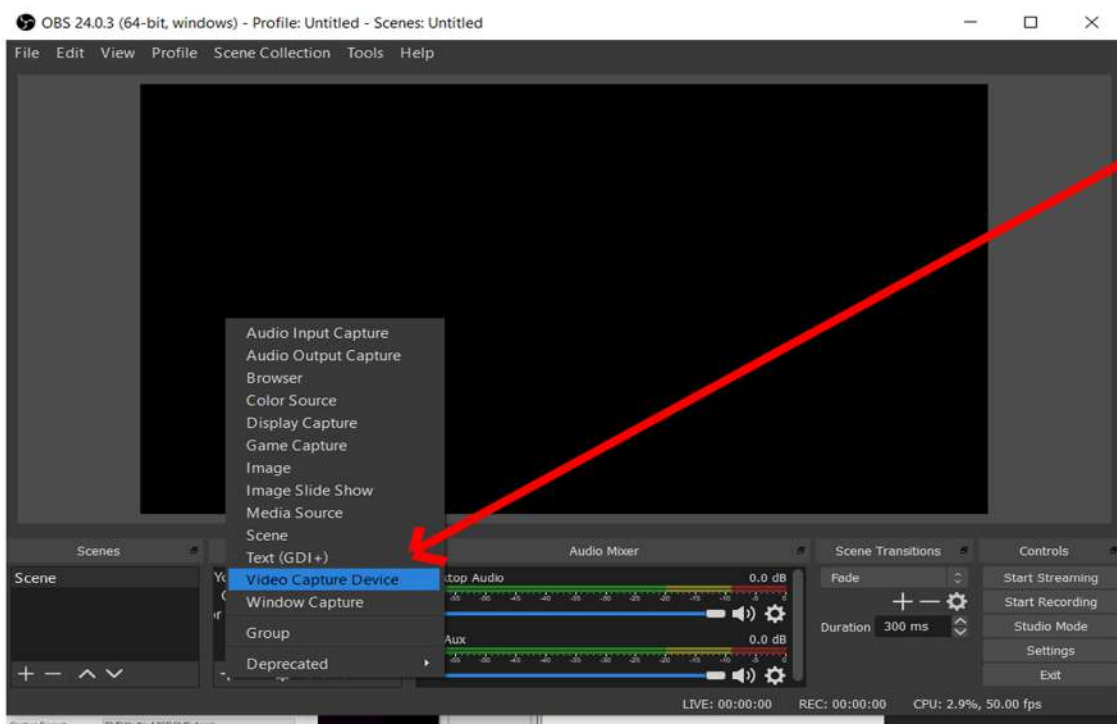


- 2.) Connect USB Port of USB Adaptor to PC/Laptop. Your camera will get powered on.
DO NOT CONNECT ANY EXTERNAL POWER SOURCE FOR CAMERA
- 3.) Open the CD provided. Open "Driver" folder and click on setup to install the drivers
- 4.) Open the Software provided in the CD along with the camera. Click on Setup and install the software.
- 5.) After finish installation, open the software from the desktop with name "OBS Studio".
- 6.) You will see the main window of software. Click on "+" Button in Sources section at bottom of window.

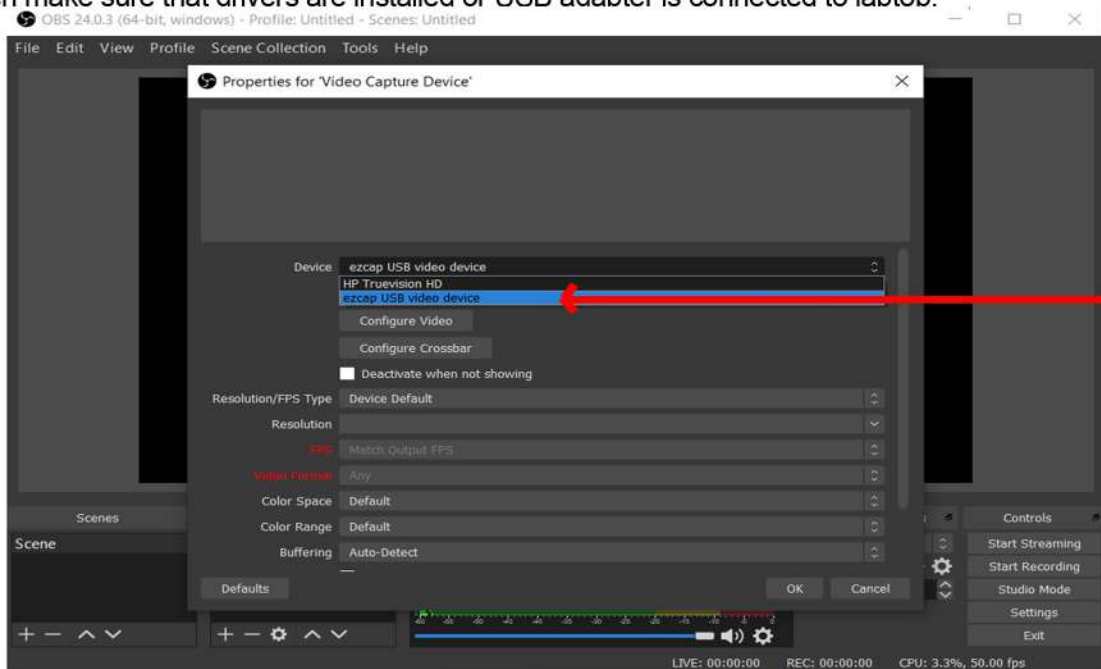


1.2 Connecting Camera Head to Laptop

7.) Click on Video Capture Device. Then Click “OK” to add the device. Make sure that USB Card is connected to your PC / Laptop and camera is connected to it and switched on like mentioned in previous steps)

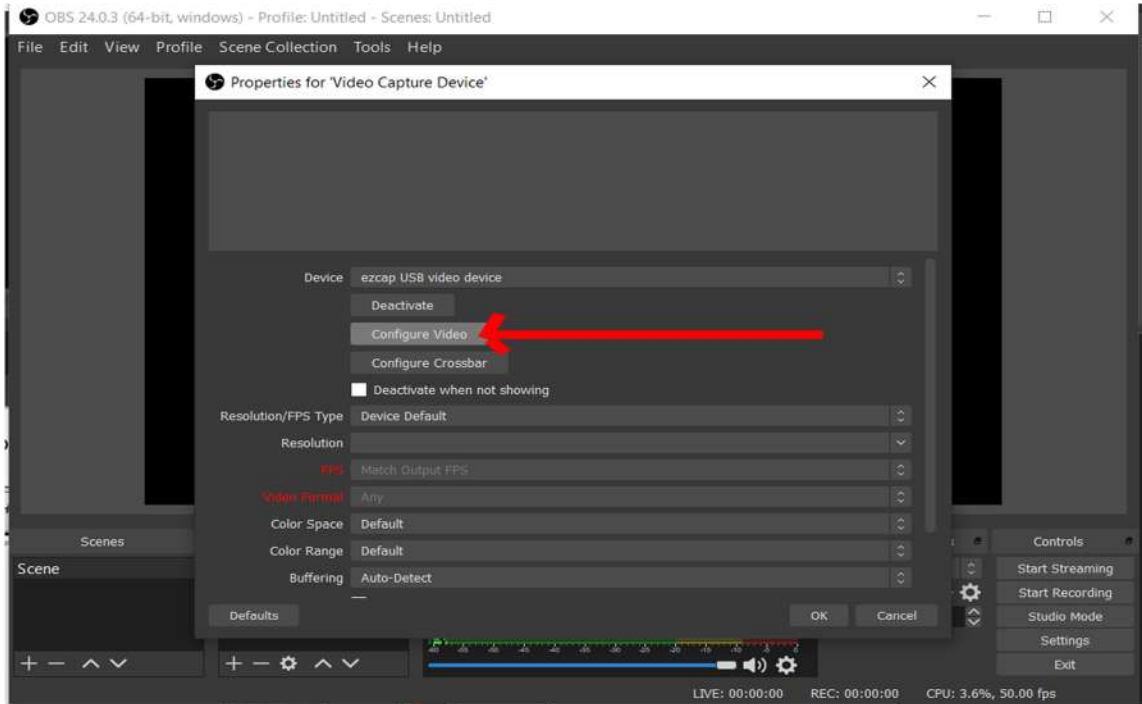


8.) From Device Option, Click on “AV to USB” . If this option does not show in Device Option then make sure that drivers are installed or USB adapter is connected to laptop.

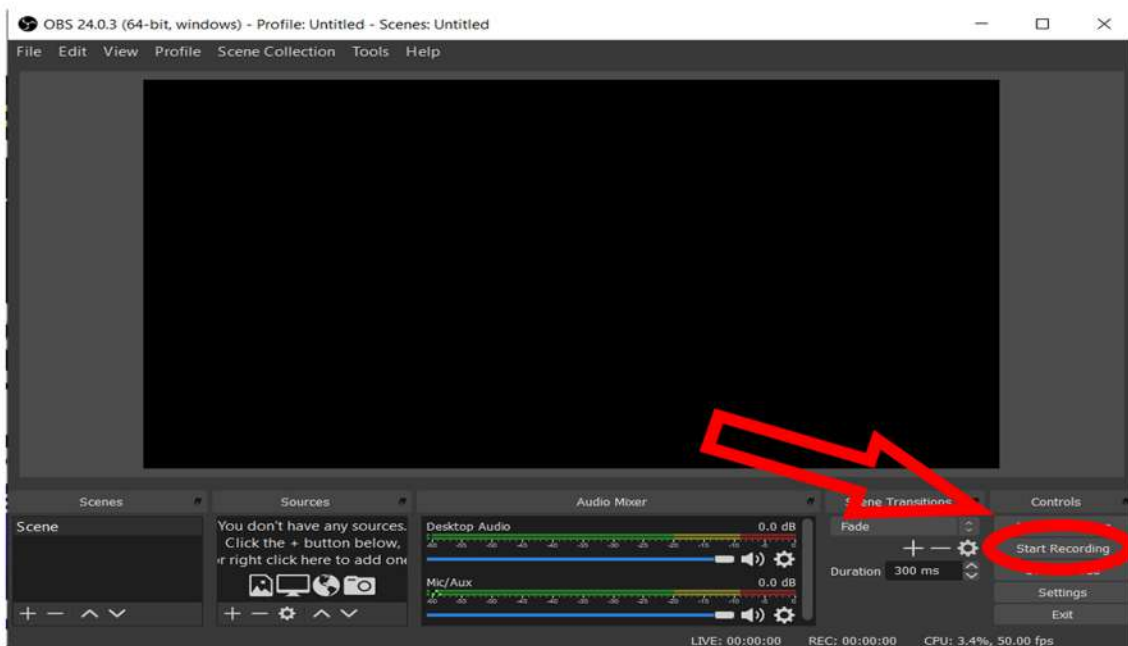


1.2 Connecting Camera Head to Laptop

9.) To adjust the brightness, contrast, color etc. click on configure video and then click on “video proc amp”



10.) To record the video, Click on “START RECORDING” button. To check where recording is being saved. Click on Settings button below START RECORDING button. Go to Output, and in Recording, you will see the folder where your videos will be saved.



1.2 Connecting Camera Head to Laptop

- 11.) To capture snapshot, Press “ Windows + Prt Screen” button on your laptop, images will be captured and saved in C:\Users\HP\Pictures\Screenshots.
- 12.) You can adjust the scale of the window and also to move to full screen , right click then Fullscreen projector , then display.

1.3 Connecting Camera Head to Mobile Phone



Connect the Yellow Socket and power socket of camera head to Video input & power input plug of USB adapter.

Connect USB output of the USB adapter with suitable OTG cable for your android device. OTG cable is used to connect the USB device to android device .

Download FPviewer app or USB camera app from Play store and open the app. On the top right corner , it will show connected. If it shows disconnected, then USB adapter is not supported on your device.



IMPORTANT !

Compatibility of USB adapter with all android device is not guaranteed. Some android devices might not supported usb adapter. You may try using different OTG cable as per your device. If still it doesn't work, then it cannot be used on your android device.

2.1 Setting-up the camera



IMPORTANT !

Before connecting the endoscope to the camera, confirm the lens surface and endoscope surface are dry and clean. Remove any contamination or soiling with optical cleaning paper or cleanroom cloth soaked with alcohol.

There are two knobs on the camera head lens. One is spring knob and other is screw knob.

To connect the Endoscope to the camera head, Loosen the screw knob, then Pull the spring knob on the camera lens adapter to fit the rigid endoscope into the camera. Then tighten the screw knob back again.

WARNING !

Do not remove the lens on the camera head as camera sensor can catch the dust. Remove only if required

2.2 Switching on the system

Switch on the power socket where Power adaptor is connected.

To avoid any shock due to leakage current, make sure power adaptor of the camera is connected to protective earth ground.

The image will be shown on the monitor. If not, confirm that illumination for imaging is enough.

3 Using the camera

3.1 Focusing the camera

Adjust the focus ring of the lens to get sharp images.



To get the best result adjust the focus before using the camera. Keep any object at a distance from endoscope tip at which you want to observe the actual object. For example, if distance of object under observation from endoscope tip is 1 cm., then keep the object at 1 cm and adjust the focusing knob to get the sharp focussed image.

3.2 White Balance

To obtain a natural image, make sure you carry out a white balance procedure properly after each change of light source.

Make sure the light source is on and the output of the light is stable. (Normally the light source need several minutes to stabilize after it switch on, for more details of the stabilization time, please check the manual of the light source.

Connect the endoscope and light source to the camera, direct the endoscope tip to the white surface, and make sure the white surface have covered the whole image area.

Briefly press the white balance button on the camera head for 1 second and leave the button. White Balance will be performed.

Note : Any indication or message will not be displayed on screen that white Balance has been performed.

4 Cleaning and Maintenance

4.1 Cleaning



WARNING !

*Do not use the camera and its controller in high humidity environment.
Danger of electric shock.*

Before cleaning the camera or control, switch it off completely and disconnect it from the power supply.

Never immerse or sterilize the camera console as this will damage the camera and void the warranty.

Clean the device with a soft cloth moistened with surface disinfectant, alcohol or spirit



NOTE !

This camera head is not waterproof. DO NOT IMMERSE IN LIQUID.

This camera head is non-dustproof. Make sure to cover the lens cap when camera is not in use.

After cleaning with flammable liquids, leave the equipment to dry for one hour, before it is switched on again. For instance, there is danger that an alcohol-air explosive mixture could have been formed after cleaning.

Do NOT expose the camera head with camera cable to temp. above 60c.

Do NOT bring camera head connector in contact with water or any liquid as it is not waterproof.

SPECIFICATIONS

Model	ENT-2000P	
Signal System	PAL	NTSC
Image Sensor	1/3" Super HAD CCD II(Double Scan)	
Effective Pixels Number	976 (H) x 582 (V) 570K	976 (H) x 494 (V) 480K
Scanning System	2:1 Interlace	
Scanning Frequency	H: 15.625 KHz / V: 50 Hz	H: 15.734 KHz / V: 59.94 Hz
Horizontal Resolution	700 TV Lines	
Sensor Resolution	1.2 Megapixel	
Camera Cable Length	3.5 Meter	
Power Adapter Cable Length	1 Meter	
Focal Length of Lens	22 mm.	
Exposure Control	Auto	
Output	1 Video Output (BNC Composite)	
Min. Illumination	Color: 0.1 Lux (50IRE) / 0.0002 Lux (DSS) B/W: 0.08 Lux (50IRE) / 0.00005 Lux (DSS)	
Sync. System	Internal	
S/N Ratio	More than 52dB (AGC Off)	
Video Output Level	1.0V p-p (75 Ohm Unbalanced, Composite)	
Electronic Shutter Speed	Auto	
Lens Mount	CS Mount	
Day & Night System	TDN (with IR-cut filter)	
Super DNR	OFF /2D (Y 0-15)	
White Balance	PUSH LOCK	
AGC	AUTO (OFF, 37dB)	
SENSE-UP (DSS)	Auto x2 ~ Auto x512	
HLC/BLC	BLC, OFF, HLC (High Light Compensation)	
WDR	ON / OFF(HIGH, MID, LOW)	
Connector	Screw Type	
Power Voltage	12VDC (Camera Head)	
Power Consumption	Max. 2W / 170mA	
Operating Temperature	-10°C ~ +50°C	
Operating Humidity	30% ~ 80% RH	
Dimensions	Ø 34 mm. x 67.7 mm. (Camera Head)	
Weight (Net)	Approx. 100 g. (Camera Head without Cable and lens)	