OLYMPUS®

OLYMPUS
EP50

安装手册

OLYMPUS EP50

Microscope Digital Camera

Optical Microscope Accessory

为了确保使用者的安全、发挥系统的最佳性能，我们建议您在操作摄像头之前先仔细研读本手册，并在操作摄像头时将手册放在触手可及的地方。
请将安装说明存放在安全的地方

Chinese

服务热线：**021-51602084**

1 OLYMPUS EP50 彩色摄像头

1.1 包装物品清单

- 带有保护盖的摄像头
- 用于保存图像的 SD 卡
- 电源装置
- USB 以太网适配器

- HDMI 线
- USB 鼠标
- 快速入门指南

ℹ	您需要电源装置和电源线才能为摄像头供电。摄像头随附电源装置。未随附特定国家／地区的电源线。有关这方面的问题，请联系 OLYMPUS 销售代表。

ℹ	在 WLAN 模式下，操作摄像头需要用到 USB WLAN 适配器。未随附适配器。有关这方面的问题，请联系 OLYMPUS 销售代表。

纸板箱

快速入门指南

SD 卡

USB 鼠标

HDMI 线

电源装置

USB 以太网适配器

摄像头
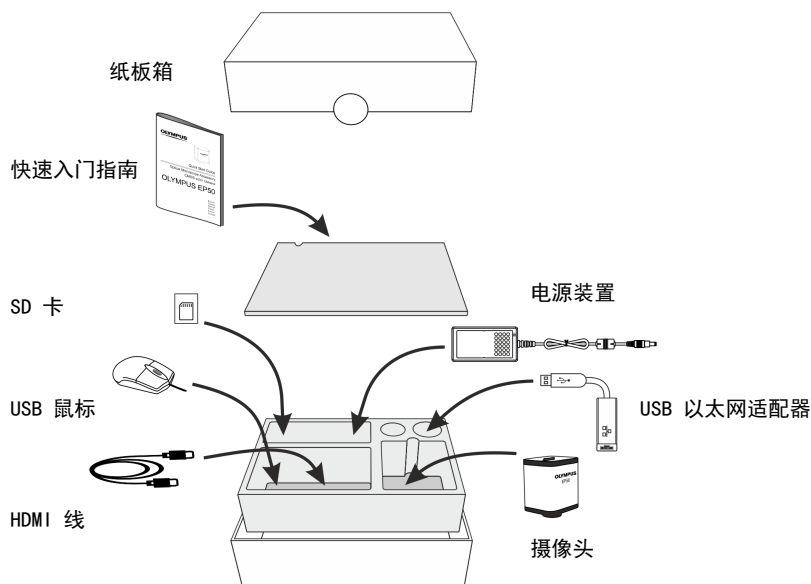
1.2　　　　　预期用途

此摄像头设计用于采集数字图像，但不适用于临床诊断。

1.3　　　　　规格

OLYMPUS EP50 是一款具有高帧速率的 CMOS 彩色摄像头。它经过专门设计，用以使用光学显微镜进行采集。此摄像头外形小巧，可通过 C 接口连接到所有通用类型的光学显微镜上。

在数字教室等教育环境中使用该摄像头时，适合在 WLAN 模式下运行，因为它允许多个学生同时使用同一个 OLYMPUS EP50 摄像头。

技术数据	OLYMPUS EP50
芯片类型	CMOS
芯片大小	1/1.8 英寸
有效面积 （宽 x 高）	7.410 mm x 4.980 mm
像素大小	2.4 μm x 2.4 μm
最大分辨率	2592 x 1944 像素
位深度	24 位
接口	HDMI、SD 卡、USB （适用于鼠标和 WLAN 适配器或以太网适配器，不适用于 USB 数据存储设备或连接计算机）
摄像头安装形式	标准 C 接口

分辨率和帧频率

OLYMPUS EP50 采集实时图像时的分辨率要比采集拍照时低。此外，它还使用不同的图像格式。这意味着拍照显示的图像比实时图像大。

采集模式	图像格式	分辨率	帧频率	曝光时间
实时和影片 （WLAN 模式和 LAN 模式）	16:9	1920 x 1080 像素 （全高清）	每秒高达 25 帧 （具体取决于网络环境）	1 ms - 918 s
实时 （通过 HDMI 线）	16:9	1920 x 1080 像素 （全高清）	每秒 60 帧	1 ms - 918 s
影片 （通过 OSD 软件）	16:9	1920 x 1080 像素 （全高清）	每秒 30 帧	1 ms - 918 s
拍照	4:3	2592 x 1944 像素	---	1 ms - 918 s

OLYMPUS EP50 电源装置

	技术数据	电源装置
输入	电压范围	100 - 240 VAC
	频率范围	50 - 60 Hz
	交流电流	0.6 A
输出	直流电压	12 V
	额定电流	2.08 A
	最大额定功率	25 W
	过电压类别	II
	污染等级	2

1.4　　摄像头背面端口

USB 鼠标、USB WLAN 适配器或 USB 以太网适配器

HDMI 线

SD 卡

电源

LED

开／关
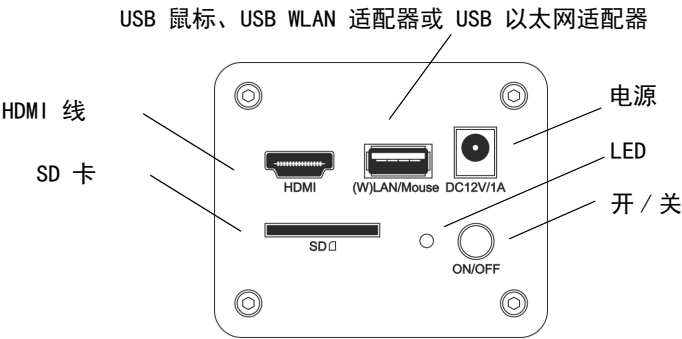
摄像头背面 LED 状态

- 红色 LED 常亮 = 摄像头关闭
- 蓝色 LED 每秒闪烁 1 次 = 摄像头初始化
- 蓝色 LED 每秒闪烁 4 次 = 摄像头传输数据（WLAN 模式和 LAN 模式）。
- 蓝色 LED 常亮 = 摄像头就绪。
  仅当将摄像头与 OSD 软件组合使用时才会出现此状态。
  OSD 表示屏幕显示（On-Screen Display）。

1.5　　　　运行和存储条件

请在以下条件下运行和存储摄像头：

- 摄像头运行期间允许的环境温度最大范围是 +5°C 至 +40°C。

- 摄像头运行期间允许的最大相对湿度是 5% – 85%（无冷凝）。

- 存储或运输摄像头时，环境温度必须保持在 -20°C 至 +60°C 之间。

- 仅限室内使用。

- 最高海拔：2000 米。

1.6　　使用摄像头 （概述）

您可以在不同的应用场景中使用 OLYMPUS EP50。每种应用场景需要不同的硬件环境。选择最符合您的需求的应用场景。
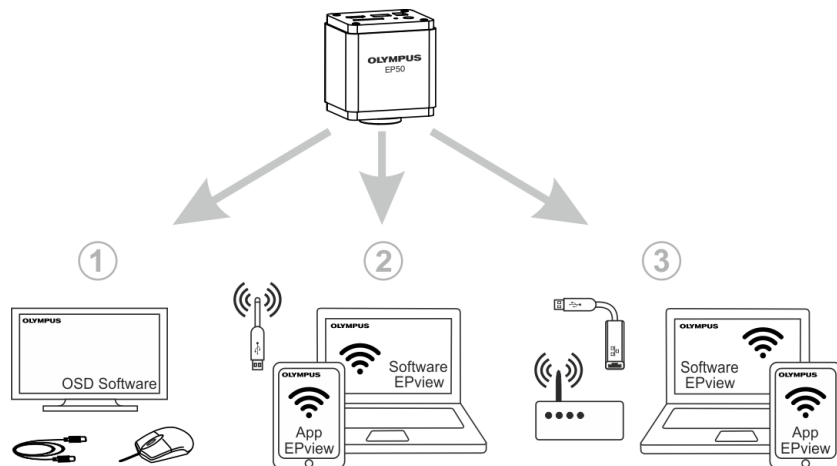
摄像头与 OSD 软件组合使用

①　在这种应用场景下，除了摄像头和显微镜之外，只需要配备 HDMI 端口的显示器、随附的 USB 鼠标和安装在摄像头上的 OLYMPUS EP50 OSD 软件。操作摄像头不需要计算机或网络连接。OSD 表示**屏幕显示 （On-Screen Display）**。

有关此场景的更多信息，请参阅第 17 页上的 4.1 章节。

在特定摄像头的 WLAN 中使用摄像头

②　在这种应用场景下，除了摄像头和显微镜之外，您需要 Windows PC 或移动设备。此外，您需要未随附的 USB WLAN 适配器。

有关此场景的更多信息，请参阅第 19 页上的 4.2 章节。

在 LAN 模式下使用摄像头

③　在这种应用场景下，除了摄像头和显微镜之外，您需要 Windows PC 或移动设备。此外，您需要随附的 USB 以太网适配器。

有关此场景的更多信息，请参阅第 22 页上的 4.3 章节。

2 常规安全说明

此摄像头的开发和生产均符合公认的安全法规。然而，并不可能完全排除可能对用户造成的危害、对摄像头或显微镜的损坏或者对摄像头功能的损害。为此，在安装前和安装过程中请务必阅读并遵循常规安全说明和警告。

2.1 所用符号说明

人身伤害

警告

如果忽略由警告符号和**警告**一词指示的危险情况，可能导致严重受伤甚至危及生命。

小心

如果忽略由警告符号和**小心**一词指示的危险情况，可能会导致轻微受伤。

设备损坏

注意

如果忽略由感叹号和**注意**一词指示的情况，可能会对本产品造成不可修复的损坏。

常规注意事项

此符号指示有用的建议、对用户的提示以及有关本产品的重要信息。

2.2 避免人身伤害

警告	**由于电缆损坏而导致电击！**
⚠️	人员触碰磨损或损坏的电缆会带来电击风险。 请立即关闭硬件并更换电缆！

警告	**由于有毒气体而造成中毒！**
⚠️	发生火灾时，摄像头的材料可能会散发有毒气体。吸入这些气体可能会刺激并损伤呼吸道。 灭火时请佩戴呼吸保护装置！

小心	**绊倒危险！**
⚠️	房间内交错的电缆可能会造成绊倒危险，这会造成人身伤害和设备受损。 如果可能，请沿着墙或在家具后面布线。将穿过房间的电缆固定！

2.3 避免设备损坏

注意	**绝不要打开摄像头外壳！**
❗	摄像头的 CMOS 芯片极为敏感。静电放电可能会对摄像头造成永久性损坏。 因此，无论在任何情况下，都不要打开摄像头的外壳！

注意	**避免振动冲击！**
❗	机械冲击和强烈振动可能会损坏摄像头。 安装期间不要使摄像头跌落。确保摄像头牢固安装在显微镜上。未使用摄像头时，请将其存储在安全的地方！

注意	**使用额外的组件固定显微镜！**
❗	上部较重的显微镜可能会翻倒或跌落，从而导致摄像头和显微镜都损坏。 如果显微镜的上部较重或不稳，请将其固定！

注意	**不要触摸保护玻璃！**
❗	CMOS 芯片上的保护玻璃极为灵敏，不得徒手或用任何其他物体接触该玻璃，以免指纹或划痕影响采集效果。 保护玻璃上的灰尘应用压缩气体小心地吹去。除去因静电而吸附的灰尘时，建议使用电离空气。

注意	**观察运行条件！**
!	暴露在高温或潮湿环境可能会损坏摄像头的组件。
●	务必遵守运行和存储条件 （请参阅第 6 页）。

注意	**不要将摄像头暴露在强光中！**
!	暴露在强光中会导致摄像头过热，从而可能损坏其组件。
●	不要长时间将摄像头暴露在强光 （例如日光） 中。

注意	**只能使用随附的配件**
!	只能使用随附的配件来操作摄像头。这可确保满足 EMC 基本标准。
●	

注意	**切勿将摄像头正面或背面朝下放置**
!	当正面或背面朝下放置时，摄像头不稳定。
●	必须放下摄像头时 （例如将其安装在显微镜上之前），请始终将其侧面朝下放置。

注意	**仅使用原始包装来运输摄像头**
!	机械冲击和强烈振动可能会损坏摄像头。
●	要拆卸并运输摄像头时，请使用原始包装。

3 系统环境

3.1 总论

若要采集最佳质量的图像，必须对显微镜进行正确配置。例如设置光照时必须确保能以适当的曝光时间采集图像。

此摄像头的安装手册未包含有关如何设置显微镜的说明。如需了解此信息，请参阅显微镜手册。

i	**将摄像头与非 Olympus 显微镜组合使用** OLYMPUS EP50 可与多种市售显微镜组合使用；然而，其与非 Olympus 显微镜组合使用的性能尚未经过测试。

在特殊应用环境下使用 OLYMPUS EP50

应用环境	说明 / 更多信息	对策
使用低放大倍数物镜（<10x）	视显微镜配置而定，如果使用放大倍数低于 10x 的物镜，图像中可能会出现晕影。	确保使用的聚光器适合低放大倍数物镜。使用放大倍数更高的摄像头转换接口。
使用高放大倍数物镜（>40x）	最大曝光时间可能不够，无法采集到正确曝光的图像。	请提高光照强度或使用放大倍数更低的摄像头转换接口。
暗场和荧光显微镜	OLYMPUS EP50 由于曝光范围较小，不适用于暗场或荧光显微镜。	无可用对策。
带集成 EPI 照明的立体式显微镜	如果使用带集成 EPI 照明的立体式显微镜，低缩放级别的图像中可能出现显著的晕影。	只能使用更高的缩放级别或使用放大倍数更高的摄像头转换接口。
观察高对比度样品	如果查看高对比度样品，自动确定的曝光时间可能并非最佳。这可能造成图像曝光不足或曝光过度。	请在软件的 Camera Control（摄像头控制）中，定义曝光补偿。或者，请切换到手动曝光模式。
以长曝光时间采集图像	以长曝光时间（如 >300 ms）采集图像时，可能会出现越来越多的热像素。	无可用对策。 此现象非设备故障导致，在所有摄像头感光器件中普遍存在。

3.2 显微镜和摄像头转换接口

下表显示可用于将 OLYMPUS EP50 连接到许多现有的 Olympus 显微镜的摄像头转换接口。

请注意，也可使用此处未列出的显微镜。

显微镜	转换接口
正置式显微镜 BX61/ BX51/ BX41 CX41/ CX31/ MX61 CX23/ CX33/ CX43 BX43/ BX46/ BX53/ BX63	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
倒置式显微镜 IX81/ IX71/ IX51 IX83/ IX73/ IX53 CKX53	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
立体式显微镜 SZX16/ SZX10/ SZX7/ SZX12	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
立体式显微镜 SZ61TR	0.5x （转换接口为集成式）

3.3　计算机或移动设备

Windows PC 的系统要求

要在 Windows PC 上通过 EPview 软件使用摄像头，必须满足表中列出的系统要求。

处理器 (CPU)	Intel Xeon 或 Intel Core i3、i5、i7， 同类别、兼容的 AMD 处理器
硬盘	至少 30 GB 可用存储空间
RAM	至少 4 GB,
屏幕分辨率	至少 1920 像素 x 1080 像素，16:9 格式
VGA 板	32 位显卡，至少 128 MB 显存
接口	WLAN （IEEE 802.11n）
操作系统	MS-Windows 10、MS-Windows 8.1、MS-Windows 7 （32 或 64 位）
计算机电源	> 300 W

客户服务部门提出的最新系统要求

此处列出的系统要求是撰写本手册时的最新要求。制造商经常会更新系统要求。询问 Olympus Soft Imaging Solutions 的客户服务部门可了解最新的要求。为此，请发送电子邮件至以下地址： support@olympus-sis.com

移动设备的系统要求

移动设备是智能手机和平板电脑等设备。移动设备必须具有下列操作系统之一：

- iOS 11 或更高版本
- Android 5.1 或更高版本。
  - ► 请注意：Android 是 Google LLC 的商标。

3.4　软件

您需要合适的软件才能通过此摄像头采集图像。
存在以下选项：

1) 您可以使用预安装在摄像头上的 OLYMPUS EP50 OSD 软件来操作摄像头。

2) 您可以使用安装在 Windows PC 上的 OLYMPUS 的免费 EPview 软件来操作摄像头。

3) 您可以使用安装在移动设备上的 OLYMPUS 的免费 EPview 应用来操作摄像头。

下载和安装 EPview 软件

使用以下链接之一下载 EPview 软件。

https://www.olympus-ims.com/zh/service-and-support/downloads/
https://www.olympus-lifescience.com/zh/support/downloads/

在软件下载网站浏览到包含 EPview 软件的子目录。点击详情按钮，打开含有下载链接的网站。您必须登录或注册才能开始下载。

安装 EPview 软件
要安装 EPview 软件，请转到包含 Setup.exe 文件的目录并单击该文件。

您可以在 EPview 安装手册中找到安装过程的描述。您可以在此下载手册：
https://www.olympus-lifescience.com/zh/resources/
https://www.olympus-ims.com/zh/resources/

安装 EPview 应用

安装免费的 OLYMPUS EPview 应用。
请使用下列链接之一。

● Apple App Store

https://itunes.apple.com/app/EPview/id1372702702

请注意：Apple 和 Apple 徽标是 Apple Inc. 在美国和其他国家/地区注册的商标。
App Store 是 Apple Inc. 的服务标志。

● Google Play Store

https://play.google.com/store/apps/details?id=com.olympus.epview

请注意： Google Play 是 Google LLC 的商标。

无论使用的设备或操作系统如何，应用的外观都基本上相同。

3.5　　WLAN 适配器

在 WLAN 模式下，需要 USB WLAN 适配器（未随附）以便操作摄像头。

WLAN 适配器必须支持 IEEE 802.11n 标准或更高版本。此外，必须使用 Realtek Semiconductor Corp. 芯片。

我们推荐以下 USB WLAN 适配器（截至 2019 年 1 月）：
● LM Technologies LM816
● COMFAST CF-WU810N
● TP-Link TL-WN725N（V3）

注意　如果您的国家/地区不提供这些 USB WLAN 适配器，请联系您的 OLYMPUS 销售代表。

如果计算机没有内置 WLAN 适配器，则需要附加 USB WLAN 适配器。
如果要使用 EPview 软件操作摄像头，但使用的计算机没有内置 WLAN 适配器（例如因为计算机通常使用 LAN），则需要附加 USB WLAN 适配器。

此附加 USB WLAN 适配器的型号可以与插入摄像头的 USB 接口的适配器相同。它必须插入计算机的 USB 端口之一才能通过此计算机启用 WLAN 连接。

WLAN 免责声明

摄像头可以使用 WLAN 适配器通过现有 USB 接口进行无线通信。但是，WLAN 适配器不在交付范围内，您需自行负责此附属设备的选择、使用和操作。

特别是，您必须确保所使用的 WLAN 适配器有您所在地区的相应无线电许可证。您需自行负责 WLAN 网络的功能。WLAN 网络中可能存在的干扰源也会影响摄像头的功能和性能。

选择 WLAN 信道

如果同时使用多个 OLYMPUS EP50 摄像头，我们建议为每个摄像头使用不同的 WLAN 信道。这避免了各个摄像头之间的干扰。

打开 OSD 软件中的设置 > 网络对话框，然后选择 AP 选项卡。请注意，一些国家 / 地区建议使用某些特定 WLAN 信道：

国家 / 地区	信道	备注
美国	1、6、11	IEEE 802.11 g/n (2.4 GHz) 22/20 Mhz；不允许使用 12、13 信道
其他国家 / 地区	1、5、9、13	IEEE 802.11 g/n (2.4 GHz) 20 MHz

4 摄像头的应用场景

您可以在不同的应用场景中使用 OLYMPUS EP50。每种应用场景使用不同的免费软件，并且需要不同的硬件环境。选择最符合您的需求的应用场景。

4.1 摄像头与 OSD 软件组合使用
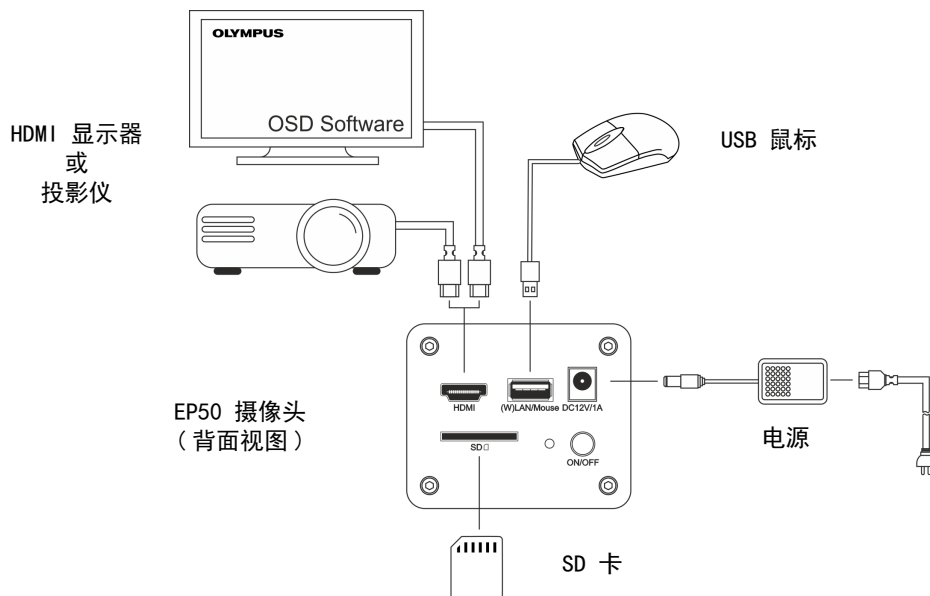
在这种应用场景下，除了摄像头和显微镜之外，只需要配备 HDMI 端口的显示器、随附的 USB 鼠标和安装在摄像头上的 OLYMPUS EP50 OSD 软件。

操作摄像头不需要计算机或网络连接。
OSD 表示**屏幕显示 (On-Screen Display)**。

注意 术语 HDMI 和 HDMI 高清晰度多媒体接口以及 HDMI 徽标是 HDMI Licensing Administrator, Inc. 在美国和其他国家／地区的商标或注册商标。

使用此应用场景

1) 取下摄像头的保护盖，将摄像头安装在显微镜的摄像头适配器上。

2) 使用随附的 HDMI 线将摄像头连接到显示器。或者，也可以将随附的 HDMI 线插入投影仪。

3) 将随附的鼠标插入摄像头的 USB 端口。

   ► 通过鼠标指针，您可以访问 OSD 软件的所有功能并更改设置。如果要输入文本，请再次单击到文本字段。然后会显示屏幕键盘。

4) 将随附的 SD 卡插入摄像头背面适当的端口。确保按正确的方向插入该卡（如上图所示）。

   ► 采集的图像将保存在此 SD 卡中。

5) 连接摄像头电源，然后打开电源。

   ► 摄像头将初始化。摄像头的 LED 会在初始化过程期间闪烁。初始化过程结束后，蓝色 LED 将持续亮起。

6) 开启显示器。

   ► 数秒后，OSD 软件出现在显示器上。随即显示摄像头的实时图像。

   ► 如果将鼠标移动到显示器的上、下或左边缘，会出现不同的软件元素。您可以使用这些元素来操作 OSD 软件。

7) 为采集图像进行最佳的摄像头设置。

   ► 为此，请使用将鼠标移动到显示器左侧时出现的摄像头控制面板。

8) 如果需要，请在实时图像上执行测量或者将文本或绘图元素添加到图像。

9) 采集图像。为此，请单击摄像头控制面板窗口中的拍照按钮。

   ► 图像自动保存到摄像头的 SD 卡。

4.2　　　　在特定摄像头的 WLAN 中使用摄像头
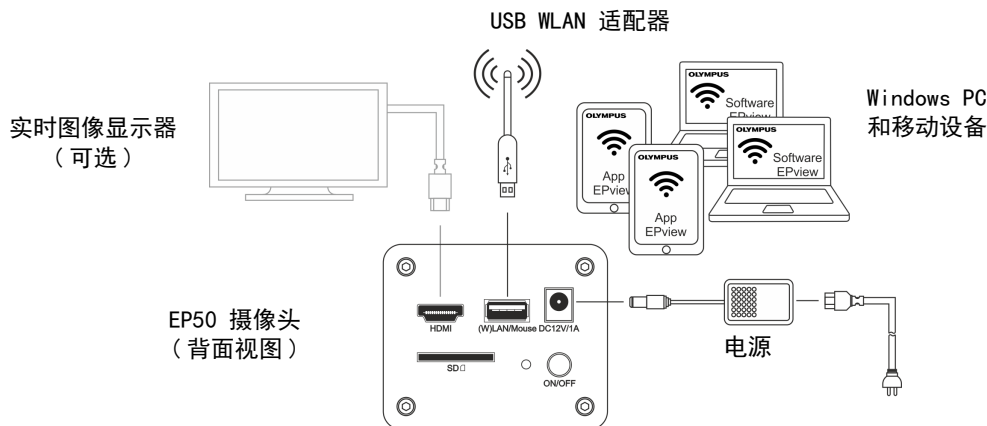
在这种应用场景下，除了摄像头和显微镜之外，您需要 Windows PC 或移动设备。此外，您需要未随附的 USB WLAN 适配器。

通过 Windows PC 操作摄像头时，需要免费的 EPview 软件。不论 Windows PC 是笔记本电脑还是台式 PC。

通过移动设备操作摄像头时，需要免费的 EPview 应用。不论移动设备是智能手机还是平板电脑。

无论使用的设备或操作系统如何，应用的外观都基本上相同。

概述：WLAN 模式

要使用 WLAN 来传输数据，需要 USB WLAN 适配器（未随附）。摄像头会识别到此适配器已插入，然后进入 AP 模式。AP 表示接入点（Access Point）。

在此模式下，OLYMPUS EP50 摄像头会提供自带的 WLAN。必须将 USB WLAN 适配器插入摄像头，才能使此功能正常工作。有关 USB WLAN 适配器的更多信息，请参阅第 15 页上的 3.5 节。

多个客户可以使用 WLAN 来连接到同一个 OLYMPUS EP50 摄像头。这样使所有客户能够同时查看摄像头的实时图像并更改摄像头设置。

客户可以使用移动设备上的 EPview 应用，或者使用安装了 EPview 软件的 Windows PC。

SSID: EP50_6700xxxx
WLAN Key: 12345678

客户首先在设备上选择无线网络的图标，从而选择 OLYMPUS EP50 摄像头的 WLAN。所有活动的 OLYMPUS EP50 摄像头都会出现在找到的网络列表中。

然后，客户选择所需摄像头的 WLAN 并输入 WLAN 密码。您可以在摄像头上找到 WLAN 的预设名称以及 WLAN 密码（在包含二维码的标签上）。

使用此应用场景

1) 在 Windows PC 上安装 EPview 软件。或者，在移动设备上安装免费的 EPview 应用。

2) 取下摄像头的保护盖，将摄像头安装在显微镜的摄像头适配器上。

3) 将 USB WLAN 适配器插入摄像头的 USB 端口。

4) 如果要额外在显示器或投影仪上显示实时图像：使用随附的 HDMI 线将显示器或投影仪连接到摄像头。

5) 连接摄像头电源，然后打开电源。

   ➤ 摄像头将初始化。摄像头的蓝色 LED 会在初始化过程期间缓慢闪烁。

   ➤ 初始化过程完成后，摄像头的蓝色 LED 将持续亮起。数秒后，摄像头的 LED 开始快速闪烁。摄像头正在传输数据。

   ➤ 摄像头会识别到 USB WLAN 适配器正在使用中并进入 AP 模式。

6) 将计算机连接到 OLYMPUS EP50 提供的 WLAN。

   ➤ 根据使用的操作系统，此过程可能略有不同。例如，对于 Windows 10 操作系统，请单击右下状态栏上的此图标。
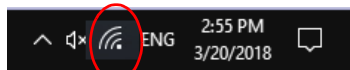
   ➤ 随即出现一个选择列表，显示当前可用的网络。

7) 从选择列表中选择 OLYMPUS EP50 提供的 WLAN，然后单击连接按钮。

   ➤ 您可以在摄像头上找到 OLYMPUS EP50 提供的网络的名称（在包含二维码的标签上的 SSID 字段中）。

通过 EP50_67000001 摄像头的 WLAN 实现 的连接示例。
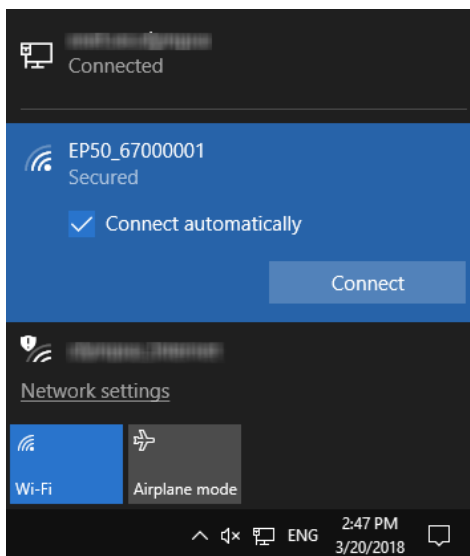
SSID: EP50_6700xxxx
WLAN Key: 12345678

8) 然后输入 WLAN 密码。

  ▶ 您还可以在摄像头上找到 WLAN 密码（在包含二维码的标签上的 WLAN Key 字段中）。

  ▶ 您只需在首次连接到摄像头时输入 WLAN 密码。

9) 启动 EPview 软件或应用并检查配置。

10) 单击实时观察按钮。

  ▶ 实时图像现显示在文档组中。

11) 为采集图像进行最佳的摄像头设置。执行白平衡并检查曝光时间。

  ▶ 如果使用装有 EPview 软件的 Windows PC，您可以在 EPview 用户手册中找到更多信息。

12) 采集图像。为此，请单击 EPview 软件或应用中的拍照按钮。

  ▶ 如果使用 EPview 应用，图像会默认保存在移动设备的图像库中，相册名称为 OLYMPUS EP50。

  ▶ 如果使用 EPview 软件，图像会默认显示在文档组中。图像尚未保存。

4.3 在 LAN 模式下使用摄像头
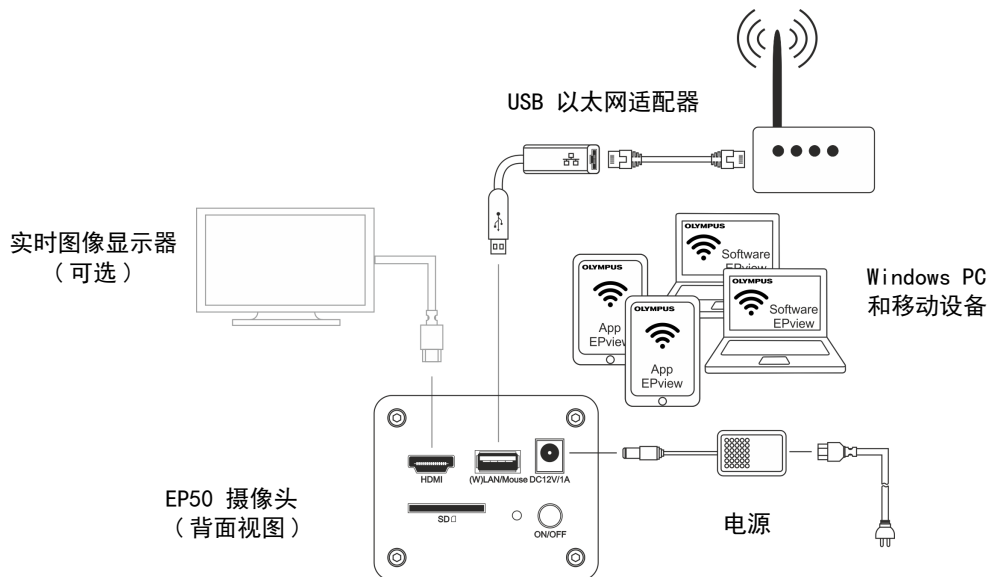
在这种应用场景下，除了摄像头和显微镜之外，您需要 Windows PC 或移动设备。此外，您需要随附的 USB 以太网适配器。

通过 Windows PC 操作摄像头时，需要免费的 EPview 软件。不论 Windows PC 是笔记本电脑还是台式 PC。

通过移动设备操作摄像头时，需要免费的 EPview 应用。不论移动设备是智能手机还是平板电脑。

无论使用的设备或操作系统如何，应用的外观都基本上相同。

概述：LAN 模式

要使用 LAN 来传输数据，需要 USB 以太网适配器（已随附）。摄像头会识别到此适配器已插入，然后进入 **LAN 模式**（LAN 表示局域网）。

在此模式下，摄像头会连接到网络（LAN）。必须将 USB 以太网适配器插入摄像头，才能使此功能正常工作，同时必须插入网络电缆。

当网络（LAN）配备了必要的硬件（WLAN 路由器或接入点）时，客户可以在移动设备上通过 WLAN 来控制摄像头。

EPview 软件或 EPview 应用会自动识别活动的 OLYMPUS EP50 摄像头并将其显示为缩略图。

多个客户可同时查看同一个 OLYMPUS EP50 摄像头的实时图像并更改摄像头设置。

如果无法自动识别活动的 OLYMPUS EP50 摄像头（例如因为它们连接到不同的网络），可以在 EPview 软件或 EPview 应用中输入 IP 地址，手动添加摄像头。IP 地址必须由网络管理员提供。

使用装有 EPview 软件的 Windows PC 的客户可以在 EPview 用户手册中找到更多信息。

> **i** **关于数据安全的说明**
>
> OLYMPUS EP50 摄像头在 LAN 或 WLAN 中的数据传输未经加密。任何连接到网络并安装了 EPview 软件或应用的人士都能看到所有活动的 OLYMPUS EP50 摄像头的实时图像。如果要确保网络中的其他人无法看到摄像头的实时图像，请通过 OSD 软件来操作摄像头。

使用此应用场景

1) 在 Windows PC 上安装 EPview 软件。或者，在移动设备上安装免费的 EPview 应用。

2) 取下摄像头的保护盖，将摄像头安装在显微镜的摄像头适配器上。

3) 将 USB 以太网适配器插入摄像头，同时插入网络电缆。将网络电缆的另一端插入 LAN 路由器。

4) 连接摄像头电源，然后打开电源。

   ► 摄像头将初始化。摄像头的蓝色 LED 会在初始化过程期间缓慢闪烁。

   ► 初始化过程完成后，摄像头的蓝色 LED 将持续亮起。数秒后，摄像头的 LED 开始快速闪烁。摄像头正在传输数据。

   ► 摄像头会识别到正在使用 USB 以太网适配器并在内部切换到 LAN 模式。

5) 如果要额外在显示器或投影仪上显示实时图像：使用随附的 HDMI 线将显示器或投影仪连接到摄像头。

6) 确保 Windows PC 或移动设备已连接到 LAN 或由此 LAN 路由器创建的 WLAN。

7) 启动 EPview 软件或应用并检查配置。

   ► 通常情况下，系统会自动识别活动的 OLYMPUS EP50 摄像头。随即以缩略图形式显示每个摄像头的实时图像。EPview 软件中使用 EP50 摄像头列表工具窗口，EPview 应用中使用摄像头列表对话框进行显示。

8) 选择感兴趣的 OLYMPUS EP50 摄像头。

   • 要进行此操作，如果使用 EPview 软件，请在 EP50 摄像头列表工具窗口中单击该摄像头的缩略图。

   • 如果使用 EPview 应用，请在摄像头列表对话框中触按该摄像头的缩略图。

9) 采集图像。为此，请单击 EPview 软件或应用中的拍照按钮。

   ► 如果使用 EPview 应用，图像会默认保存在移动设备的图像库中，相册名称为 OLYMPUS EP50。

   ► 如果使用 EPview 软件，图像会默认显示在文档组中。图像尚未保存。

概述： 可用的数据传输方法

OLYMPUS EP50 摄像头支持以下两种方法，在网络中将数据从发送方传输到客户。

- 单播
- 多播

单播流

摄像头　　　　路由器

单播流

客户（Android、Windows、iOS）

多播流

摄像头　　　　路由器

多播流

客户（Android、Windows、iOS）
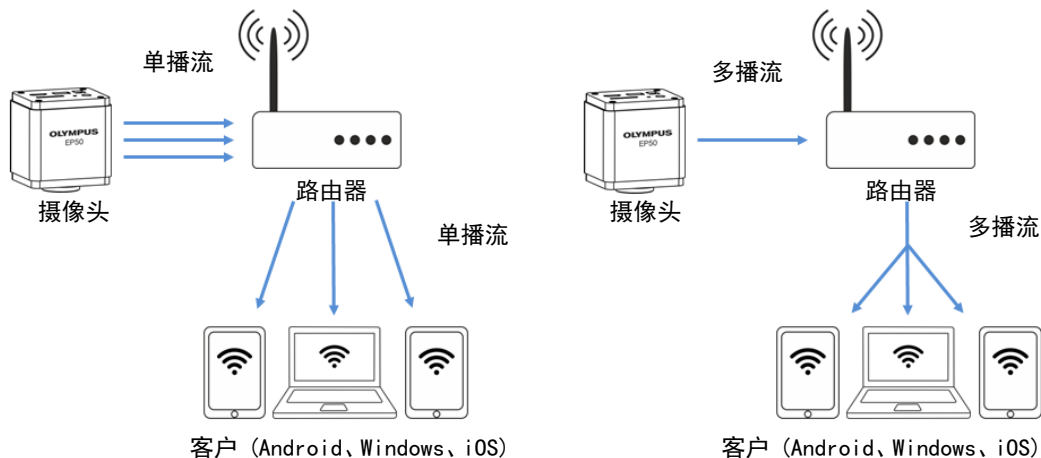
单播　**单播**数据传输方法是 OLYMPUS EP50 摄像头的默认设置。此方法将数据从摄像头单独传输到每个客户。

多播　还可以使用**多播**数据传输方法。此方法将数据从摄像头同时传输到多个客户。此数据传输方法让您能够将数据从摄像头发送到数量更多的客户。

> **ⓘ**
>
> **注意网络的基础结构**
>
> 请与您的网络管理员核实正在使用的硬件是否支持**多播**数据传输方法，以及您的网络上是否已启用该方法。

更改数据传输方法

您仅可在 OSD 软件中更改数据传输方法。执行如下操作：

1) 关闭摄像头。

2) 从摄像头背面的 USB 端口上拔出 USB 以太网适配器，然后将随附的 USB 鼠标插入此端口。

  ► 通过鼠标指针，您可以访问 OSD 软件的所有功能并更改设置。

3) 将摄像头连接到已启用 HDMI 的显示器。

4) 开启摄像头。

  ► OSD 软件打开，显示器上出现摄像头的图像。

5) 将鼠标指针移动到显示器的下边缘可显示不同的按钮。单击设置按钮。

   ► 设置对话框出现。

6) 选择网络条目，然后单击 LAN 选项卡。

7) 选择多播选项。

8) 单击应用和关闭按钮以保存您的设置并关闭对话框。

9) 从摄像头上拔出随附的 USB 鼠标，然后将 USB 以太网适配器插回到此端口。

   ► 摄像头现在处于 LAN 模式并且正在使用**多播**数据传输方法。

4.4　　在网络环境中使用摄像头

您可以在网络环境中将 OLYMPUS EP50 摄像头与 EPview 软件或应用搭配使用：

多个客户连接到同一个 OLYMPUS EP50 摄像头（AP 模式）

为此，所有客户均需要连接到摄像头提供的 WLAN。所有客户都可以查看实时图像、更改摄像头设置和采集图像。

多个客户连接到不同或同一个 OLYMPUS EP50 摄像头（LAN 模式）

在 EPview 应用或软件中，客户可以查看与它们的计算机处于同一网络的所有活动的 OLYMPUS EP50 摄像头的实时图像缩略图。

多个 OLYMPUS EP50 摄像头处于活动状态时 EPview 软件中 EP50 摄像头列表 工具窗口的外观。
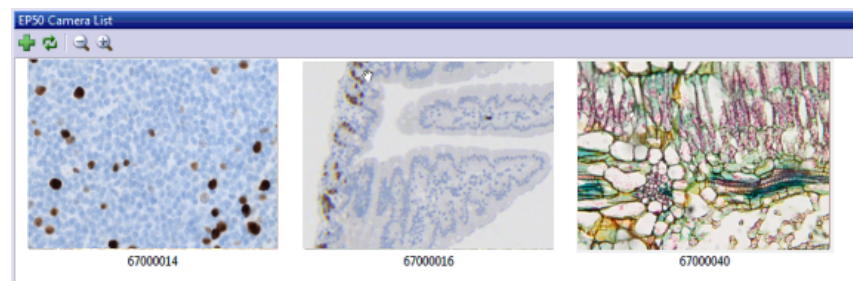
客户可连接到每个摄像头以查看实时图像、更改摄像头设置和采集图像。

还可以手动添加 IP 地址，从而使用与安装了 EPview 软件或应用的 Windows PC 或移动设备不在同一个网络中运行的 OLYMPUS EP50 摄像头。

如果使用 EPview 软件，您可以在 EPview 用户手册中找到关于 EP50 摄像头列表工具窗口以及手动添加摄像头的 IP 地址的更多信息。

关于图像校准的注释

确保正确校准图像

如果要在图像上进行测量，需要进行正确的图像校准。如果在网络环境中使用 OLYMPUS EP50 摄像头，请注意以下事项：

采集的图像始终使用在客户的 `EPview` 软件或应用中设置的系统配置（在 Windows PC 或移动设备上）。然而，这种本地系统配置不会自动对应显微镜本身设置的系统配置。

出于这个原因，在网络环境中连接到 OLYMPUS EP50 的客户（例如在实时图像中执行长度测量）必须确保其本地系统配置与在显微镜上设置的系统配置相对应。

如果客户在其 `EPview` 软件或应用中设置了 10x 物镜，但显微镜仅具有 20x 物镜，则采集的图像不会正确校准，并且图像上的测量结果不正确。

关于更改摄像头设置的注释

多个客户连接到同一个 OLYMPUS EP50 摄像头时，所有客户都可以更改摄像头设置。例如，如果一个客户增加曝光时间，则其他客户的曝光时间也会增加。

5 保养和维护

在使用得当的情况下，摄像头具有很长的使用寿命并且基本上不需要特别的维护。您必须按照说明对它进行保养，方能保证其功能不受影响。

清洁保护玻璃

要清洁摄像头的保护玻璃，可使用常见的吹风球吹走灰尘并用干净的纸巾（或干净的纱布）轻轻擦拭。

如果保护玻璃上有指纹或油污，可用以纯酒精润湿的干净纱布进行擦拭。

警告	**使用酒精时存在火灾危险！**
⚠️	酒精极易燃烧，可能会导致火灾。
	请绝对确保酒精不接触明火或电气组件。

清洁外壳

非玻璃材质的组件应使用干净的布进行清洁。不要使用有机溶剂来去除大块污迹。请使用以中性清洁剂溶剂润湿的软布。

注意	**不要拆卸任何部件！**
❗	摄像头由易损部件制成，拆卸部件可迅速造成功能故障或性能降低。
	因此，不要拆卸摄像头的任何部件。

6 故障排除

6.1 可能的问题

下文介绍了使用 OLYMPUS EP50 摄像头时可能出现的一些典型问题。

表 1: 通过 OSD 软件操作摄像头时发生问题

错误	可能的原因	解决办法
出现错误的图像。	未使用随附的 HDMI 线, 而是使用了其他的线。 使用了随附的 HDMI 线, 但未正确插入。	请使用随附的 HDMI 线。 确保正确插入随附的 HDMI 线。
显示器上出现的图像失真。	您正在使用不支持 16: 9 长宽比的显示器, 例如 16:10 长宽比的显示器。	请使用随附的 HDMI 线。 确保正确插入随附的 HDMI 线。
一些 OSD 软件控件被截断或者完全未在显示器上显示。	使用的显示器未针对 OSD 软件的使用进行正确配置。	如果可能, 在显示器的配置菜单中调整图像缩放功能或减小输出尺寸。如果过扫描功能存在, 将其禁用。
鼠标未正常工作。	您未使用随附的 USB 鼠标。	使用随附的 USB 鼠标。在启动摄像头**之前**连接鼠标。
	您在连接鼠标之前启动了摄像头。	关闭摄像头并连接鼠标。稍等片刻, 然后再次开启摄像头。
未识别 SD 卡。	未使用随附的 SD 卡, 而是使用了其他的卡。 已插入随附的 SD 卡, 但未使用。	请使用随附的 SD 卡。确保正确插入随附的 SD 卡。
	SD 卡未正确格式化或未识别格式化。	仅当未在 SD 卡上保存重要数据时: 重新格式化 SD 卡。 为此, 请打开 OSD 软件中的设置 > SD 卡对话框, 然后单击格式化为 FAT32 按钮。

表 2: 在 WLAN 模式下操作摄像头时发生的问题

错误	可能的原因	解决办法
未找到摄像头提供的 WLAN。	移动设备与摄像头之间的距离太远。	使移动设备或计算机更靠近摄像头。一般情况下，不应超过 12 米的距离。
	USB WLAN 适配器未插入摄像头。	将 USB WLAN 适配器插入摄像头的 USB 端口。
	移动设备或计算机的 WLAN 支持已停用。	在计算机或移动设备的系统设置中激活 WLAN 接口。
	使用的计算机没有 WLAN 功能。	将附加 USB WLAN 适配器插入计算机的 USB 端口之一。
	USB WLAN 适配器不适合。	使用适合的 USB WLAN 适配器。可从第 15 页上获得更多信息。
未在 EPview 软件或 EPview 应用中找到摄像头。	安装 EPview 软件或 EPview 应用的设备连接到了非摄像头提供的 WLAN。	将移动设备连接到摄像头的 WLAN。
未在 EPview 软件中找到摄像头。因此，所有图像采集按钮都被禁用。	Windows PC 在后台运行阻止从摄像头接收数据的第三方应用程序。例如，防火墙或防病毒软件。	请联系您的系统管理员。如果没有任何异议，请禁用或卸载阻止从摄像头接收数据的第三方应用程序。
与摄像头的连接停止。	使用同一 WLAN 通道的网络设备过多。	将摄像头设置到不同的 WLAN 通道。为此，请打开 OSD 软件中的设置 > 网络 > AP 对话框，然后在通道字段中选择不同的通道。然后再次连接摄像头。
无法连接到摄像头提供的 WLAN。	您已更改网络密码并且未正确输入新密码。	查看当前密码。如果需要，请指定新密码。为此，请打开 OSD 软件中的设置 > 网络 > AP 对话框。记下当前显示的密码或输入新密码。

表 3： 在 LAN 模式下操作摄像头时发生的问题

错误	可能的原因	解决办法
未在 EPview 软件或应用中找到摄像头。	摄像头与网络或网络路由器的连接未正常工作。	使用随附的 USB 以太网适配器。或者，确保使用的 USB 以太网适配器基于以下芯片组之一： Realtek RTL8152B(N) 或 Asix AX88772C。
		确保您的网络基础结构具备 DHCP 服务器功能。在路由器的设置菜单中激活 DHCP 服务器。打开摄像头之前，确保路由器正在运行。
		使用另一根 LAN 以太网电缆。电缆必须符合 CAT5 或更高规格。
		在摄像头开启时取下 USB 以太网适配器，然后再次插入。
	您未连接到网络 （LAN）。	连接到网络 （LAN）。如果需要，输入登录信息。
	摄像头和移动设备或 Windows PC 未连接到同一网络。	如果可能，确保移动设备或 Windows PC 连接到同一网络。
		手动添加摄像头，具体操作为将摄像头的 IP 地址输入到 EPview 软件或 EPview 应用中提供的 IP 地址输入对话框。注意：您可以从网络管理员处获取摄像头的 IP 地址。
	在 Windows PC 或移动设备的后台运行的第三方应用程序阻止从摄像头接收数据。例如，防火墙或防病毒软件。	请联系您的系统管理员。如果没有任何异议，请禁用或卸载阻止从摄像头接收数据的第三方应用程序。仅使用默认的防火墙设置。
与摄像头的连接缓慢或停止。	连接到同一网络 （LAN） 的网络设备过多。	如果可能，减少连接到网络的 LAN 设备数量。安装其他或更强大的网络硬件。
	摄像头上设置了多播数据传输方法。	确保正在使用的网络硬件支持多播数据传输方法。在路由器的设置中激活多播功能。或者，您可以将摄像头的数据传输方法更改为单播。为此，请启动 OSD 软件并打开设置 > 网络对话框。激活 LAN 选项卡，然后选择单播选项。

6.2 将摄像头重置为出厂默认值

您可以将摄像头的所有设置重置为交付摄像头时的值。可在 OSD 软件中进行此设置。

要在显示器上显示 OSD 软件，必须使用随附的 HDMI 线将摄像头连接到显示器。此外，必须将随附的鼠标插入摄像头的 USB 端口。

为此，请打开 OSD 软件中的设置 > 其他对话框，然后单击重置为出厂默认值按钮。将显示一个消息框。确认安全提示后，OSD 软件将重启，所有设置重置为出厂默认值。

6.3 联系客户服务部门

如有任何关于产品的疑问，请联系当地 OLYMPUS 支持。可在以下网站找到地址：

Life Science Solutions https://www.olympus-lifescience.com/zh/contact-us/

Industrial Solutions https://www.olympus-ims.com/zh/contact-us/

7 关于符合性与弃置的说明

7.1 CE 符合性 （欧洲）

根据 IEC/EN61326-1 标准，此产品符合关于电磁兼容性条令 2014/30/EU 的要求。
- 排放：A 类
- 免疫：适用于工业和基本环境要求。

此摄像头系统符合条令 2014/35/EU （低电压指令）。

7.2 WEEE 声明 （欧洲）

根据关于废弃电气电子设备的欧洲条令，此符号表示产品不得作为未分类的城市废物弃置，而是应单独收集。请查阅欧洲当地政府关于您所在国家／地区可用的回收和／或收集系统。

7.3 RoHS 符合性 （欧洲）

此 Olympus Soft Imaging Solutions 摄像头符合欧盟关于限制在电气和电子设备中使用某些有害物质的条令 2011/65/EU。

7.4 FCC 符合性 （美国）

本设备符合 FCC 规范的第 15 部分。操作受制于以下两个条件：（1）本设备不会造成有害的干扰，以及 （2）本设备必须接受任何收到的干扰，包括可能导致有害操作的干扰。

该设备已经过测试，证明其符合 FCC 规范第 15 部分的 B 类数字设备限制。

这些限制设计用于在住宅环境下操作设备时，合理保护设备以避免有害干扰。该设备会产生、使用并且可以发射射频能量。如果未根据说明进行安装和使用，可能对无线电通信造成有害干扰。

然而，不能保证在具体安装中不会发生干扰。

如果该设备对无线电或电视接收产生可通过开关设备确定的有害干扰，我们鼓励用户采取以下措施中的一项或多项尝试修正干扰：
1) 重新定向或重新定位接收天线。
2) 增大设备与接收器之间的间隔。
3) 将设备接入电路中与接收器所接入插座不同的插座。

4) 咨询经销商或有经验的无线电／电视技术人员寻求帮助。

FCC 警告

合规性责任方未明确批准的更改和变动可能会导致用户无法操作该设备。

FCC Supplier's Declaration of Conformity

The supplier hereby declares that the product
    Product: Optical Microscope Accessory
    Model: OLYMPUS EP50

conforms to the following specifications:
    FCC Part 15, Subpart B, Section 15.107 and Section 15.109.

Supplementary Information:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party Name: Olympus Scientific Solutions Americas Corp.
Address: 48 Woerd Ave Waltham, MA 02453, U.S.A.
Phone Number: 781-419-3900

7.5 仅限韩国

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다 .

7.6　　　　　中国 RoHS 符合性 （中国）

本标志是根据"电器电子产品有害物质限制使用管理办法"以及"电子电气产品有害物质限制使用标识要求"的规定，适用于在中国销售的电器电子产品上的电器电子产品有害物质使用限制标志。
(注意）电器电子产品有害物质限制使用标志内的数字为在正常的使用条件下有害物质等不泄漏的期限，不是保证产品功能性能的期间。

电器电子产品有害物质限制使用标志

产品中有害物质的名称及含量

部件名称		有害物质					
		铅及其化合物	汞及其化合物	镉及其化合物	六价铬及其化合物	多溴联苯	多溴二苯醚
		(Pb)	(Hg)	(Cd)	(Cr(Ⅵ))	(PBB)	(PBDE)
主体	机构部件	○	○	○	○	○	○
	光学部件	○	○	○	○	○	○
	电气部件	○	○	○	○	○	○
附件		×	○	×	○	○	○

本表格依据SJ/T 11364的规定编制。
○：表示该有害物质在该部件所有均质材料中的含量均在GB/T26572规定的限量要求以下。
×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T26572规定的限量要求。

7.7　　　仅限中国台湾

限用物質含有情況標示聲明
Declaration of the Presence Condition of the Restricted Substances Marking

證書號碼／受理編號：(No.) CI334061000629_00
Certificate No / Application No.

商品標籤及商品檢驗標識：(Description)
Product Label and Commodity Inspection Mark

樣張及其標示位置：
Sample and its location

設備名稱：電源供應器，型號（型式）：GST18A05 Equipment name Type designation (Type)						
單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
印刷電路板	○	○	○	○	○	○
電子零件	—	○	○	○	○	○
外部信號連接頭及線材	—	○	○	○	○	○
金屬結構件	—	○	○	○	○	○
塑膠結構件	○	○	○	○	○	○

備考 1. 〝超出 0.1 wt %〞及〝超出 0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1："Exceeding 0.1 wt %"and"exceeding 0.01 wt %"indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.
備考 2. 〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2："○"indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.
備考 3. 〝—〞係指該項限用物質為排除項目。
Note 3：The"−"indicates that the restricted substance corresponds to the exemption.

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Linux Kernel

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Linus Torvalds

Das U-Boot - Universal Bootloader

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-- Wolfgang Denk

BusyBox

Copyright (C) 1999 Denys Vlasenko (vda.linux@googlemail.com)

BusyBox: The Swiss Army Knife of Embedded Linux

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mp4v2-2.0.0.zip

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udev - Userspace Device Management Daemon

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udev - Linux userspace device management

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hostapd-2.3.tar.bz2

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