



# 便携式眼底照相机

## Portable Fundus Camera

使用说明书

User Manual

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Portable Fundus Camera

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便携式眼底照相机应在以下环境条件下使用： Portable fundus cameras should be used under the following environmental conditions: 21

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包装完整的便携式眼底照相机可用常规交通运输工具运输，运输过程中应注意防潮、防晒、避免剧烈振动和机械碰撞、小心轻放、不得超过 3 层堆码； 22

The packaged portable fundus camera can be transported by conventional means of transportation. During transportation, attention should be paid to moisture, sun protection, avoiding severe vibration and mechanical collision, careful handling, and no more than 3 layers of stacking code; 21

9.1 储存环境（带包装） Storage environment (with packaging) 22

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## 前言 Preface

感谢您购买我们的便携式眼底照相机

Thank you for your purchasing of our portable fundus camera

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此设备用来通过瞳孔观察、拍摄和记录眼底的影像。

This device is used to observe, capture and record images of the fundus through the pupil.

本设备有如下特点：

This device has following features:

- 可获得高质量、稳定的图像
  - Can get stable images with high quality
  - 轻便易携带，能满足医生外出诊断等携带要求
  - Light and easy to carry, can meet the requirements of doctors for outing diagnosis
  - 具有拍照、保存、实时观察等功能
  - With functions such as taking photos, saving, real-time observation, etc.
-

## 一、预期用途 One. Expected usage

本设备适用于在无需散瞳的情况下，对患者眼底进行观察、拍摄，以获取视网膜图像。

This device is suitable for observing and photographing the fundus of a patient to obtain a retinal image without dilation.

## 二、基本组成 Two. Basic components

主要由拍照镜头（包括光源）、显示拍照系统、电池（3.6V）、软件(NES 云视 V1.1)、充电底座、眼罩等组成。

Mainly consists of camera lens (including light source), display camera system, battery (3.6V), software (NES cloud V1.1), charging base, eye mask and so on.

### 2.1 主机结构说明 Host structure description

















## 2.2 显示面板说明 Display panel description



## 2.3 按键说明 Key description

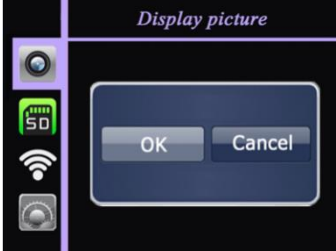










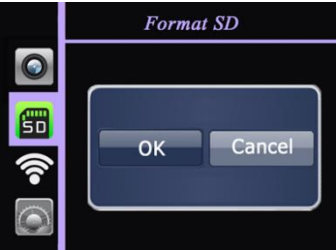
- “”: 电源键，按下设备开/关机； Power button, press to control device on/off
- “”: 一键进入/退出浏览模式； One-click to enter/exit browsing mode
- “M”: MENU 键，按下进入菜单模式； MENU button, press to enter the menu mode
- “、”: 图片/功能选择方向键； 进入浏览模式里，按“”浏览同一个文件夹内的图片，按“”切换不同的文件夹； 在拍照模式下，调整“”键，可切换 OS/OD 即为左右眼；

Picture/function select direction key. In the browse mode, press “” to browse the pictures in the same folder and press “” to switch between different folders. In the photo mode, adjust the “” button to switch the OS/OD, namely the left and right eyes.

- “OK”: 拍照模式下：拍照确认/返回键； In the photo mode: photo confirmation / return button
- “”/“”: 屏幕亮度调节或浏览图片放大与缩小； Screen brightness adjustment or browsing picture zoom in and out

## 2.4 菜单功能说明 Menu function description

序号 No.	显示 Display	描述 Description	设置 Setting

1		显示图片 Display pictures	<ol style="list-style-type: none"> <li>1. 按下“M”键，进入“Display picture”，选择“OK”浏览图片； Press the “M” button to enter “Display picture” and select “OK” to view the picture</li> <li>2. 按下“”放大图片，按下“”回到正常大小模式； Press “” to enlarge the picture and press “” to return to normal size mode.</li> <li>3. 在“放大”模式下按“”、“”浏览图片不通位置； Press “”、“” in “Zoom in” mode to browse the picture.</li> <li>4. 按“”回到拍照模式； Press “” to return to shoot mode.</li> </ol>
2		SD 卡格式化 SD card formatting	<ol style="list-style-type: none"> <li>1. 按下“M”键，进入“Format SD”； Press the “M” button to enter “Format SD” mode</li> <li>2. 按“OK”键，设备格式化进行时，显示屏将会处于关闭状态； Press “OK” button, the display will be off when the device is formatting.</li> </ol> <p>注意：格式化后所有的文件将会丢失。 Note: All files will be lost after formatting.</p>

### 三、产品性能 Three. Product performance

尺寸：size	30×9×19cm <sup>3</sup>
重量：weight	450g(典型)typical

视场角： Angle of view	40±2°
屈光不正补偿范围： Compensation range of refractive error	-20D~+20D
调焦方式： Focusing mode	手动 Manual
图像清晰度（图像像素）： Image sharpness (image pixels):	1920×1080Pixels
红外 LED 波长峰值： Infrared LED wavelength peak:	810nm±20nm
闪光灯色温： Color temperature of the flash:	4500K≤TC≤6700K
LCD 显示屏： LCD Display	3.5" FULL Color TFTLCD
图片格式： Image Format:	JPEG(Photograph)
文件传输： document transmission	Wi-Fi connection for iPad
文件存储： document storage	Micro SD Card supports up to 16G
电源种类： power type	电压~220V、频率 50Hz、锂电池 3.6V 3400mAh Voltage ~220V, frequency 50Hz, lithium battery 3.6V 3400mAh
操作时间： Operation period	3 小时（2.5 瓦条件下） 3 hours (under the conditions of 2.5 Watt)
输出格式： output format	JPEG（Photograph）
工作距离： operation distance	31±2mm
可拍摄最小瞳孔直径： The smallest pupil diameter can be taken:	2.5mm
分辨率： distinguishability	视场中心处≥60 lp/mm、视场中心 1/2 处≥40 lp/mm、视场中心边缘处≥25 lp/mm ≥60 lp/mm at the center of the field of view, ≥40 lp/mm at the center of the field of view, ≥25 lp/mm at the center of the field of view
运行方式： operation method	连续运行 Continuous operation
设备防进液程度： Liquid-proofing of equipment:	IPX0
设备分类： equipment type	II 类、内部电源 Class II, internal power supply
防电击程度： Protection against electric shock:	B

设备输入功率 Device input power	20VA
按有易燃麻醉气与空气的混合气或和氧或氧化亚氮的混合气情况下使用时的安全程度分类：Classify according to the safety degree when using a mixture of flammable anesthetic gas and air or a mixture of oxygen or nitrous oxide:	不能在有与空气混合的易燃麻醉气或与氧或氧化亚氮混合的易燃麻醉气情况下使用的设备 Equipment that cannot be used in the presence of flammable anesthetic gases mixed with air or flammable anesthetic gases mixed with oxygen or nitrous oxide
消毒、灭菌 Disinfection and sterilization	按制造厂推荐的方法 According to the manufacturer's recommended method

#### 四、禁忌症 Four. Contraindications

本产品没有明确的禁忌症。There are no clear contraindications to this product.

#### 五、注意事项、警示及提示信息 Five. Notes, warnings and tips

1. 操作该设备时，请务必确保光学镜头不接触到患者眼睛或鼻子。
1. When operating the device, make sure that the optical lens does not touch the patient's eyes or nose.
2. 为防止触电，不要把金属物体插入设备的孔或槽中。
2. To prevent electric shock, do not insert metal objects into the holes or slots of the device.
3. 如果设备发生故障：冒烟或散发出烧焦的气味，为防止火灾，要立即关闭电源，取出电池。
3. If the equipment malfunctions: There is smoke or emitting a burnt smell, to prevent fire, it is needed to immediately turn off the power and remove the battery.
4. 为了防止设备振动引起松动，当设备不使用时，请将设备放置于包装箱内。
4. To prevent looseness caused by vibration of the equipment, when the equipment is not in use, place the equipment in the box.
5. 本设备不防水，为防止火灾和损害设备，不要把盛水的杯子或容器放在设备旁边。当设备被水弄湿，不要使用烘烤，微波，高压或紫外等方式干燥。
5. This device is not waterproof. To prevent fire and damage to the equipment, do not place the water-filled cup or container next to the device. When the device is wetted by water, do not use

baking, microwave, high pressure or UV to dry.

6. 为了防止触电、火灾、短路等危险，请不要将设备放置于有水或者潮湿的环境。

6. To prevent electric shock, fire, short circuit, etc., do not place the device in a water or humid environment.

7. 为了防止设备振动引起松动，当设备不使用时，请将设备放置于包装箱内。

7. To prevent looseness caused by vibration of the equipment, when the equipment is not in use, place the equipment in the box.

8. 设备放置环境必须清洁干净，设备应该远离火源。

8. The equipment placement environment must be clean and the equipment should be kept away from fire.

9. 不要使用有损坏的设备。在操作前请务必检查设备是否已经损坏，设备有损坏的迹象，以及缺陷，请务必联系我们。

9. Do not use damaged equipment. Always check that the equipment whether it is damaged before operation. If the equipment shows signs of damage and defects, please contact us as soon as possible.

10. 只允许使用我们提供或指定的 3.6V@3400mAh 的电池，否则一切后果将与我们公司无关

10. Only 3.6V@3400mAh batteries supplied or designated by our company is permitted, otherwise all consequences will not be on us..

11. 如果使用不同的 Micro SD 卡，该卡的文件格式必须为 FAT32。

11. If you use a different Micro SD card, the file format of the card must be FAT32.

12. 不要使用过高的照明亮度，否则将损坏眼睛。

12. Do not use excessive lighting level, otherwise this will damage your eyes.

13. 当拍照时，请不要适当的曝光要求，不要使用设备做过多的检验，否则将会对人眼造成伤害。

13. When taking pictures, please do not use proper exposure requirements, do not use the device to do too much inspection, otherwise it will cause harm to the human eye.

14. 如用户的合格技术人员修理由制造商指定可修理的设备部件，需要照相机的电路图、元器件清单、图注、校正细则等资料，可与我们取得联系并联系索取资料。

14. If the user's qualified technician repairs the repairable equipment parts specified by the manufacturer, the camera's circuit diagram, component list, drawing notes, calibration details, etc., may be obtained from us.

15. 环境保护：便携式眼底照相机的整机、元件损坏或达到使用寿命末期时，随意丢弃可能会给环境带来污染，应按当地法律法规进行回收或报废处理。

15. Environmental protection: When the whole machine and components of the portable fundus camera are damaged or reach the end of their service life, disposal may cause environmental pollution and should be recycled or disposed of according to local laws and regulations.

16. 电磁兼容信息 Electromagnetic compatibility information

- 便携式眼底照相机在说明书电磁兼容指南和声明附表中有关电磁兼容性的专门提示，用户需根据提供的电磁兼容性信息进行安装和使用
- Portable fundus camera special instructions on electromagnetic compatibility in the manual electromagnetic compatibility guide and statement. Users need to install and use according to the electromagnetic compatibility information provided.
- 便携式眼底照相机不应与其它设备接近或叠放使用，如果必须接近或叠放使用，则应观察验证在其使用的配置下能正常运行。
- Portable fundus cameras should not be used in close proximity or stacked with other equipment. If it must be used closely or stacked, it should be observed that it will function properly in the configuration it is using.
- 便携式和移动式射频通讯设备可能影响便携式眼底照相机的使用。
- Portable and mobile RF communications equipment may affect the use of portable fundus cameras.
- 便携式眼底照相机可能对其他医用电子设备产生干扰，应与其保持尽可能远的距离。
- Portable fundus cameras may interfere with other medical electronic devices and should be kept as far as possible.

## 六、安装使用说明 Six. Installation instructions

## 6.1 电池安装及更换 Battery replacement and installation

- 电池安装：battery installation

使用一定的例如将电池盖向上去除，电池的正负极标识与仪器标识的正负极标识方向一致；

Remove the battery cover up and install the battery before use. The positive and negative signs of the battery are in the same direction as the positive and negative signs of the instrument identification.



- 更换电池：Replace the battery

电池盖向下推动，打开电池盖，取出需更换的电池，根据“电池安装”步骤装上新电池，并盖上电池盖；

Push the battery cover down, open the battery cover, and remove the battery that needs to be

replaced. Install a new battery according to the “Battery Installation” procedure and close the battery cover.

- 电池充电：Battery charging

将仪器放置于底座上，使用适配器的一端插入底座充电插口，另一端插座插入电源插口，观察仪器绿色灯亮起，则仪器正在充电；

Place the instrument on the base, insert one end of the adapter into the base charging socket, and the other end into the power socket. If the instrument's green light is illuminated, the instrument is charging.



注意事项：为确保安全及不损坏产品，请使用我们公司提供的电池与适配器，如需检测电池寿命，请联系我们；如需要更换适配器，请选择符合 GB/T 9706.1 标准要求的适配器。

Note: To ensure safety and not damage the product, please use the battery and adapter provided by our company. For testing battery life, please contact us. If you need to replace the adapter, please select the adapter that meets the requirements of GB/T 9706.1.

## 6.2 电池电量指示 Battery capacity indicator

电源指示灯颜色 Power indicator color	状态 Status
绿色灯常亮 Green light is always on	电量高于 30%，仪器开启或者待机状态 The battery capacity is higher than 30%. The instrument is on or in standby state.
橘色光闪烁 Orange light flashes	电量低于 30%提示 The battery capacity is lower than 30%.
橘色光常亮 Orange light is always on	设备充电状态 Device charging status
无指示灯光 No indicator light	设备关闭状态 Device off state

## 6.3 镜头安装 Lens mounting

- 第一步：将镜头的安装记号与手柄安装记号对齐。 Step 1: Align the lens mounting mark with the handle mounting mark.



- 第二步：将镜头放入接头并对齐，旋转并拧紧光学镜头，直至无法再转动。 Step 2: Place the lens into the connector and align it, rotate and tighten the optical lens until it stops.



- 第三步：按下电源键 1 秒，开启便携式眼底照相机，仪器开启过程需要 20~30 秒。Step 3: Press the power button for 1 second to turn on the portable fundus camera. The instrument opening process takes 20 to 30 seconds.



#### 6.4 设备拍照操作 Device shooting operation

第一步：将镜头对准人眼，距离人眼大约 30mm，然后旋转调节键，直至图像清晰，如下图所示。

Step 1: Align the lens with the human eye, about 30mm from the human eye, then rotate the adjustment button until the image is clear, as shown below.

第二步：将镜头架在一只手的虎口处，利用拍摄者手部虎口作为支撑，并将手指撑在病人的额头处，保持镜头水平位置；

Step 2: Place the lens on the between the area of thumb and index finger of one hand, use the area of thumb and index finger on the photographer's hand as a support, and hold the finger on the patient's forehead to maintain the horizontal position of the lens.



第三步：小心的前后移动设备，直到病人眼底完全显示在屏幕上；

Step 3: Carefully move the device back and forth until the patient's fundus is fully displayed on the screen.

第四步：旋转调焦轮做微调，按下 OK 键拍照，获得清晰眼底图像；

Step 4: Rotate the focus wheel to make fine adjustments. Press the OK button to take a picture and get a clear fundus image.

## 6.5 Wi-Fi 连接 Wi-Fi connection

- 第一步：按下电源键 1 秒，指示灯绿灯亮起，设备开机；
- Step 1: Press the power button for 1 second, the indicator light is on and the device is turned on.
- 第二步：在 iPad 中“App store”中搜索“NES 云视”下载 APP，打开软件，并在 iPad 设置 Wi-Fi 中找到便携式眼底照相机的 Wi-Fi 接入点,连接设备，热点密码为 12345678，输入后连接 Wi-Fi。如 APP

提示已连接，屏幕上的“D”转变为“C”，设备即可实时传输图像到“NES 云视”中。便携式眼底照相软件的具体安装和使用方法请参阅 V1.1 《NES 云视用户操作手册》

- Step 2: Search for the “NES Cloud View” download app in the “App store” on the iPad. Open the software and find the Wi-Fi access point for the portable fundus camera in the iPad Settings Wi-Fi. Connect the device, the hotspot password is 12345678, and connect to Wi-Fi after input. If the APP prompt is connected, the “D” on the screen changes to “C”, and the device can transmit images to “NES Cloud View” in real time. For details on how to install and use the portable fundus camera software, please refer to V1.1 "NES Cloud View User Operation Manual".

提示信息：本仪器与“NES 云视”软件的连接是基于局域网的连接模式，不与互联网连接，数据的隐私足以得到保障；如连接过程中有断开现象，可取出仪器的 SD 卡，通过读卡器读取所拍信息。

Tip: The connection between the instrument and the "NES Cloud View" software is based on the LAN connection mode, and is not connected to the Internet, so the privacy of the data is sufficient. If there is a disconnection during the connection process, the SD card of the instrument can be taken out and the information recorded can be read by the card reader.

## 6.6 数据连接 Data connection

- 蓝牙功能：用户需配置带蓝牙功能的身份识别器，身份识别器蓝牙与 iPad 蓝牙进行连接，通过 App“NES 云视”软件，将病人的身份证放在识别器上读取病人的个人信息，信息即可通过蓝牙连接上传至“NES 云视”软件的病人信息中；
- Bluetooth function: Users need to configure an identity card with Bluetooth function. The identity card Bluetooth is connected to the iPad Bluetooth, and the patient's ID card is placed on the recognizer to read the patient's personal information through the App "NES Cloud View" software, so that the information can be uploaded to the patient information of the “NES Cloud” software via a Bluetooth connection.
- SD 卡：仪器如在受限条件下运行，无法使用 Wi-Fi 功能，可通过 SD 卡直接读取所拍照片信息；打开 Micro SD 接口，使用工具按下 SD 卡，SD 卡弹出，取出 SD 卡，使用读卡器插入 PC 端 USB 口，获得数据。

- SD card: If the instrument is running under restricted conditions, the Wi-Fi function cannot be used, and the photo information can be directly read through the SD card. Open the Micro SD interface, use the tool to press the SD card, and the SD card pops up. Take out the SD card and insert the card into the USB port of the PC to obtain the data.



Micro SD 接口

Micro SD interface

## 6.7 配置的电子设备 Configured electronic device

用户需配置具有以下参数的 iPad，方能实现 Wi-Fi 连接：

Users need to configure an iPad with the following parameters to enable Wi-Fi connection:

- 硬件配置 Hardware Configuration

CPU: 1GHz 及以上 RAM: 512MB 及以上; CPU: 1 GHz and above, RAM: 512 MB and above.

存储空间: 4G 及以上 Storage space: 4G and above

- 软件环境 software environment

系统版本: iOS 10.3 及以上, 具有网络条件

System version: iOS 10.3 and above with network conditions

- 屏幕尺寸: 不小于 9.7 英寸
- Screen size: no less than 9.7 inches
- 分辨率要求: 2048×1536 Pixels
- II distinguishability requirement: 2048×1536 Pixels
- 屏幕亮度设置: 50%

- I Screen brightness setting: 50%

## 七、产品维护和保养 Seven. Product maintenance

### 7.1 主机维护保养 Host maintenance

- 定期检查设备和部件；
- I Regularly check equipment and components.
- 在做任何清洁前，请务必确保电源关闭；
- I Be sure to turn off the power before doing any cleaning.
- 长期不使用仪器时，应每两周给仪器进行通电开机，再次使用前需确认该仪器可安全、正常的工作；
- I When the instrument is not used for a long time, the instrument should be powered on every two weeks. Before using it again, you need to confirm that the instrument can work safely and normally.
- 禁止使用手指触摸物镜或沾染尘土，否则影响画面质量；
- I Do not touch the objective lens or contaminate the dust with your fingers, otherwise the picture quality will be affected.
- 使用完毕，请盖上镜头保护罩，并放置于包装箱内；
- I After use, please cover the lens cover and place it in the box.
- 各部件应禁止与强酸、强碱接触。
- I All parts should be prohibited from contact with strong acids and alkalis.
- **熔断器规格 Fuse specifications:** F1、F2（2A、6Vdc），熔断器的更换需联系制造厂，禁止私自更换熔断器。Please contact the manufacturer for replacement of the fuse. It is forbidden to replace the fuses privately.

### 7.2 镜头清洁 Lens cleaning

- 使用吹气工具吹走物镜表面灰尘； Use a blower to blow off dust from the surface of the objective.
- 使用专业的光学镜头清洁布或清洁纸巾清洁镜头，从中心开始逐圈，慢慢扩大，轻拭镜头表面，如有必要反复擦拭，请勿用力，避免造成镜头表面划伤。  
Please use a professional optical lens cleaning cloth or a cleaning paper towel to clean the lens. Start from the center and circle slowly, and gently wipe the surface of the lens. If it is necessary to wipe repeatedly, do not do it violently to avoid scratching the lens surface.

### 7.3 电池维护保养 Battery maintenance

- 请使用 18650 型号的电池，使用不同型号的电池，可能会引致爆裂或造成严重后果；
- Please use the model 18650 battery. Using different types of batteries may cause a burst or serious consequence.
- 充电时禁止覆盖充电器，以免引起火灾；
- I Do not cover the charger during charging to avoid fire.
- 电池电量低于 30%，仪器指示灯为橘色灯闪烁，该状态下电池需要充电；
- I The battery power is lower than 30%, and the instrument indicator light flashes orange. In this state, the battery needs to be charged.
- 充电请使用 5V/2A 的适配器，请确认选择符合 GB/T 9706.1 要求的充电器；
- I Please use the 5V/2A adapter for charging. Please confirm the selection of the charger that meets the requirements of GB/T 9706.1.
- 配置的电池充电时间大约 3 小时，电池充满电后，请断开充电，避免长时间处于过充状态；
- I The configured battery charging time is about 3 hours. After the battery is fully charged, please disconnect the battery to avoid overcharging for a long time.
- 长时间不使用该仪器，需每隔 3 个月给该电池进行充电，电池应存放于干燥、阴凉处；
- I When you do not use the instrument for a long time, please charge the battery every 3 months. The battery should be stored in a dry, cool place.
- 禁止电池在高温、高湿环境下使用或充电。
- I Do not use or charge the battery in high temperature or high humidity environment.

## 八、使用环境 Eight. The usage environment

便携式眼底照相机应在以下环境条件下使用： **Portable fundus cameras should be used under the following environmental conditions:**

- 环境温度：10°C~40°C
- I Ambient temperature: 10 ° C ~ 40 ° C
- 相对湿度：80%以下（无凝露）
- I Relative humidity: 80% or less (no condensation)
- 气压：860hPa ~ 1060hPa
- I Air pressure: 860hPa ~ 1060hPa
- 请在相对较暗环境下使用该仪器，避免影响眼底观察成像
- I Please use the instrument in a relatively dark environment to avoid affecting the fundus

observation imaging.

## 九、产品运输、储存 **Nine. Product transportation and storage**

包装完整的便携式眼底照相机可用常规交通运输工具运输，运输过程中应注意防潮、防晒、避免剧烈振动和机械碰撞、小心轻放、不得超过 3 层堆码；

A fully packaged portable fundus camera can be transported using conventional means of transportation. During transportation, pay attention to moisture, sun protection, avoid severe vibration and mechanical collision, handle with care, and do not stack more than 3 layers.

### 9.1 储存环境（带包装） **Storage environment (with packaging)**

- 环境温度：-40° C ~70° C
- 相对湿度：93%以下
- 大气压力：860hPa ~ 1060hPa
- 无腐蚀性气体且通风良好的室内

l Ambient temperature: -40 ° C ~ 70 ° C

l Relative humidity: less than 93%

l Atmospheric pressure: 860hPa ~ 1060hPa

l Indoors without corrosive gas and well ventilated

### 9.2 长期储存该仪器须确认具备以下条件： **Long-term storage of the instrument must confirm the following conditions:**

- 仪器上没有液体； There is no liquid on the instrument.
- 储存地点的应符合 9.1 中要求； The storage location should meet the requirements in 9.1.
- 该仪器的主要部件为光学和电子器件，请务必轻拿轻放； The main components of the instrument are optical and electronic components, so be sure to handle them gently.
- 禁止将仪器放置于有化学品和燃气的环境中。
- Do not place the instrument in an environment where chemicals and gases are present.

## 十、使用期限 **Ten. Lifetime**

如该设备定期维修保养，交货后 8 年。If the equipment is regularly maintained, the lifetime is 8 years after delivery.

## 十一、配置清单 **Eleven. Configuration list**

编号 No.	名称 Name	数量 Quantity
1	便携式眼底照相机主机 Main body of the portable fundus camera	1
2	拍照镜头 Camera lens	1
3	充电底座 Charging base	1
4	电源适配器（带充电线）（品牌：星博 型号：HPU10A-102） Power adapter (with charging cable) (Brand: Xingbo Model: HPU10A-102)	1
5	锂电池（18650） Lithium battery (18650)	1
6	眼罩 Eye mask	1
7	产品使用说明书 Product User's Manual	1
8	合格证 Certificate	1

## 十二、标示说明 Twelve. Label instructions

	B 型应用部分 Type B application part
	注意！查阅随机文件 Warning! Check out random file
	参考使用说明 Reference instructions
	II 类设备 Class II equipment
	避免雨淋 Avoid rain
	小心轻放、易碎品 Handle With Care, fragile
	产品运输时应竖直向上 The product should be transported vertically upwards
	可堆码相同运输包装件的最大层数为 3 层 The maximum number of layers that can be stacked in the same transport package is 3 layers
	电池正极 Battery positive
	电池负极 Battery negative

### 三、清洁、消毒 Thirteen. Cleaning and disinfection.

便携式眼底照相机是精密的光学仪器，所以务必轻拿轻放。请注意以下说明：

Portable fundus cameras are precision optical instruments, so be sure to handle them lightly. Please note the following instructions:

- 在做任何清洁前，请务必确保电源关闭；
- I Be sure to turn off the power before doing any cleaning.
- 使用蘸有酒精（75%酒精）的软布清洁，必须等到液体完全干透才可以连接电源或者打开仪器；
- I Clean with a soft cloth dampened with alcohol (75% alcohol). You must wait until the liquid is completely dry before you can connect the power supply or turn on the instrument.

- 请务必使用专业的光学镜头清洁布或清洁纸巾，比如 THORLAB 公司的镜头清洁产品。（[www.thorlabs.com](http://www.thorlabs.com)）
- 1 Be sure to use a professional optical lens cleaning cloth or cleaning paper towel, such as THORLAB lens cleaning products. ([www.thorlabs.com](http://www.thorlabs.com))
- 在每次用于新病人前请清洁眼罩；
- 1 Clean the eye mask each time you use it for a new patient.
- 用蘸有酒精（75%酒精）的软布对眼罩进行消毒处理；
- 1 Disinfect the eye mask with a soft cloth dampened with alcohol (75% alcohol).

注意：便携式眼底照相机不是无菌产品。

Note: Portable fundus cameras are not sterile products.

## EMC 电磁兼容指南和声明附表 EMC Electromagnetic Compatibility Guide and Statement Schedule

便携式眼底照相机电磁辐射情况 Portable fundus camera electromagnetic radiation		
<p>便携式眼底照相机预期在下列规定的电磁环境中使用，购买者或使用者应保证它在这种电磁环境中使用。</p> <p>Portable fundus cameras are intended for use in the electromagnetic environment specified below, and the purchaser or user should ensure that it is used in such an electromagnetic environment.</p>		
发射试验 Emission test	符合性 Compliance	电磁环境-指南 Electromagnetic environment guide
射 频 发 射 Radio frequency emission GB 4824	1 组 Group 1	<p>便携式眼底照相机在执行其功能时，需要发射电磁能量。便携式眼底照相机附近的电子设备可能会受到影响。</p> <p>Portable fundus cameras need to emit electromagnetic energy when performing their functions. Electronic devices near portable fundus cameras may be affected.</p>
射 频 发 射 Radio frequency emission GB 4824	B 类 Class B	<p>便携式眼底照相机适于使用在所有的设施中，包括家用和直接连到供家用的住宅公共低压电网。Portable fundus cameras are suitable for use in all facilities, including homes and direct connection to residential public low voltage power grids for home use.</p>
谐 波 发 射 Harmonic emission GB 17625.1	A 类 Class A	

电压波动/闪烁发射 Voltage fluctuation / flicker emission GB 17625.2	符合 Compliant	
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便携式眼底照相机电磁抗扰度 Portable fundus camera electromagnetic immunity			
便携式眼底照相机预期在下列规定的电磁环境中使用,购买者或使用者应保证它在这种电磁环境中使用。 Portable fundus cameras are intended for use in the electromagnetic environment specified below, and the purchaser or user should ensure that it is used in such an electromagnetic environment.			
抗扰度试验 Immunity test	IEC 60601 试验电平 Test voltage	符合电平 Compliance voltage	电磁环境-指南 Electromagnetic environment guide
静电放电 Electrostatic discharge GB/T 17626.2	±6 kV 接触放电 Contact discharge ±8 kV 空气放电 Air discharge	±6 kV 接触放电 Contact discharge ±8 kV 空气放电 Air discharge	地面应是木质、混凝土或瓷砖， 如果地面用合成材料覆盖，相对 湿度应至少 30%。 The floor should be wood, concrete or ceramic. If the floor is covered with synthetic material, the relative humidity should be at least 30%.
电快速瞬变脉冲群 Electrical fast transient burst group GB/T 17626.4	±2kV 对电源线 Pair power cable ±1kV 对输入/输出线 Pair input/output cable	±2kV 对电源线 Pair power cable  不适用 Not applicable	网电源应具有典型的商业或医院 环境中使用的质量。 <b>The network power supply should have the quality used in a typical commercial or hospital environment.</b>
浪涌 Surge GB/T 17626.5	± 1kV 线对线 Cable to cable ± 2kV 线对地 Cable to ground	+ 1kV 线对线 Cable to cable  不适用 Not applicable	网电源应具有典型的商业或医 院环境中使用的质量。 <b>The network power supply should have the quality used in a typical commercial or hospital environment.</b>

<p>电源线上电压暂降、短时中断和电压变化</p> <p>GB/T17626.11</p> <p>Voltage dip, short interruption and voltage change on power cable</p> <p>GB/T17626.11</p>	<p>&lt;5% <math>U_T</math>, 持续 0.5 周 (在 <math>U_T</math> 上, &gt; 95%的暂降)</p> <p>40% <math>U_T</math>, 持续 5 周 (在 <math>U_T</math> 上, 60%的暂降)</p> <p>70% <math>U_T</math>, 持续 25 周 (在 <math>U_T</math> 上, 30%的暂降)</p> <p>&lt;5% <math>U_T</math>, 持续 5s (在 <math>U_T</math> 上, &gt; 95%的暂降)</p> <p>&lt;5% UT for 0.5 weeks (On the UT, &gt; 95% sag)</p> <p>40% UT for 5 weeks (on the UT, 60% sag)</p> <p>70% UT for 25 weeks (on the UT, a 30% sag)</p> <p>&lt;5% UT for 5s (On the UT, &gt; 95% sag)</p>	<p>&lt;5% UT, 持续 0.5 周 (在 UT 上, &gt; 95%的暂降)</p> <p>40% UT, 持续 5 周 (在 UT 上, 60%的暂降)</p> <p>70% UT, 持续 25 周 (在 UT 上, 30%的暂降)</p> <p>&lt;5% UT, 持续 5s (在 UT 上, &gt; 95%的暂降)</p> <p>&lt;5% UT for 0.5 weeks (On the UT, &gt; 95% sag)</p> <p>40% UT for 5 weeks (on the UT, 60% sag)</p> <p>70% UT for 25 weeks (on the UT, a 30% sag)</p> <p>&lt;5% UT for 5s (On the UT, &gt; 95% sag)</p>	<p>网电源质量应具有典型的商业或医院环境中使用的质量。如果便携式眼底照相机的用户在电源中断期间需要连续运行, 那么推荐便携式眼底照相机采用不间断电源或电池供电。</p> <p>The quality of the network power supply should have the quality used in a typical commercial or hospital environment. If the user of the portable fundus camera needs to operate continuously during a power outage, it is recommended that the portable fundus camera be powered by an uninterruptible power supply or battery.</p>
<p>工频磁场 Power frequency magnetic field (50 Hz /60Hz)</p> <p>GB/T 17626.8</p>	<p>3A/m</p>	<p>3A/m</p>	<p>如果发生图像失真, 那么有必要使便携式眼底照相机远离工频长源或安装磁屏蔽可能是必不可少的。应测量预期安装场所内的工频磁场以确保其足够低</p> <p>If image distortion occurs, it is necessary to keep the portable fundus camera away from the power frequency source or install the magnetic shield. The power frequency magnetic field within the intended installation site should be measured to ensure it is low enough.</p>
<p>注: <math>U_T</math> 是指施加试验电压前的交流电网电压</p> <p>Note: UT refers to the AC grid voltage before the test voltage is applied.</p>			


**便携式眼底照相机电磁抗扰度**

**Portable fundus camera electromagnetic immunity**

便携式眼底照相机预期在下列规定的电磁环境中使用,购买者或使用者应保证它在这种电磁环境中使用。

Portable fundus cameras are intended for use in the electromagnetic environment specified below, and the purchaser or user should ensure that it is used in such an electromagnetic environment.

<p>射频传导 Radio frequency conduction GB/T 17626.6</p> <p>辐射射频 Radiation radio frequency GB/T 17626.3</p>	<p>3V (有效值 Valid value) 150 kHz~80MHz</p> <p>3V/m 80 MHz~2.5 GHz</p>	<p>3V (有效值 Valid value) 150 kHz~80MHz</p> <p>3V/m 80 MHz~2.5 GHz</p>	<p>便携式及移动式射频通信设备不应比推荐的隔离距离更靠近便携式眼底照相机任何部分（包括电缆）使用，该距离的计算应使用与发射机频率相对应的公式。Portable and mobile RF communications equipment should not be used closer to any part of the portable fundus camera (including cables) than the recommended isolation distance. This distance should be calculated using the formula corresponding to the transmitter frequency.</p> <p>推荐隔离距离 Recommended isolation distance: <math>d=1.2\sqrt{P}</math></p> <p><math>d=1.2\sqrt{P}</math> 80 MHz to 800 MHz</p> <p><math>d=2.3\sqrt{P}</math> 800 MHz to 2.5 GHz</p> <p>式中:</p> <p>Where:</p> <p>P—由发射机制造商提供的发射机最大输出功率，以瓦特（W）为单位；</p> <p>P—the maximum output power of the transmitter provided by the transmitter manufacturer in watts (W);</p> <p>d—推荐隔离距离，以米（m）为单位。</p> <p>d—Recommended isolation distance in meters (m).</p> <p>固定式射频发射机的场强，通过对电磁场所的勘测来确定，在每个频率范围都应比符合电平低。</p> <p>The field strength of a fixed RF transmitter is determined by surveying the electromagnetic field and should be lower than the compliance level in each frequency range.</p> <p>在标志下列符号的设备附近可能出现干扰。Interference may occur near devices that mark the following symbols.</p>
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注 1:在 80MHz 和 800MHz 频率上,应采用较高频段的公式. Note 1: At 80MHz and 800MHz frequencies, the formula for the higher frequency band should be used.

注 2:这些指南可能不适合所有的情况.电磁传播受建筑物、物体及人体的吸收和反射的影响。

Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by the absorption and reflection of buildings, objects and the human body.

\*固定式发射机, 诸如: 无线(蜂窝/无绳)电话和地面移动式无线电的基站、业余无线电、调幅和调频无线电广播以及电视广播等, 其场强在理论上都不能准确预知。为评定固定式射频发射机的电磁环境, 应考虑电磁场所的勘测。如果测得便携式眼底照相机所处场所的场强高于上述射频符合电平, 则应观测便携式眼底照相机以验证其能正常运行, 如果观测到不正常性能, 则补充措施可能是必需的, 比如重新调整支气管热成形射频控制器的方向或位置。

\* Fixed transmitters, such as base stations for wireless (cell/cordless) telephones and terrestrial mobile radios, amateur radio, AM and FM radio broadcasts, and television broadcasts, whose field strength is not theoretically predictable. In order to assess the electromagnetic environment of a fixed RF transmitter, the survey of the electromagnetic field should be considered. If the measured field strength of the location where the portable fundus camera is located is higher than the above-mentioned radio frequency compliance level, the portable fundus camera should be observed to verify that it is functioning properly. Additional measures may be necessary if abnormal performance is observed, such as reorienting the direction or position of the bronchus thermoformed RF controller.

\*在 150KHz~80MHz 整个频率范围, 场强应低于 3V/m。

\*In the whole frequency range from 150KHz to 80MHz, the field strength should be lower than 3V/m.

### 便携式及移动式射频通信设备和便携式眼底照相机之间的推荐隔离距离

Recommended isolation distance between portable and mobile RF communication devices and portable fundus cameras

便携式眼底照相机预期在射频辐射骚扰受控的电磁环境中使用。依据通信设备最大输出功率, 便携式眼底照相机的购买者或使用者可通过维持下面推荐的便携式及移动式射频通信设备(发射机)和便携式眼底照相机的最小距离来防止电磁干扰

Portable fundus cameras are expected to be used in electromagnetic environments where radio frequency radiation disturbance is controlled. Depending on the maximum output power of the communication device, the purchaser or user of the portable fundus camera can prevent electromagnetic interference by maintaining the minimum distances recommended below for portable and mobile radio communication devices (transmitters) and portable fundus cameras.

	150kHz~80MHz $d=1.2\sqrt{P}$	80MHz~800MHz $d=1.2\sqrt{P}$	800MHz~2.5GHz $d=2.3\sqrt{P}$
发射机最大额定 输出功率 Transmitter maximum rated output power  W	对应发射机不同频率的隔离距离 Corresponding isolate distance to different frequencies of the transmitter /m		
0.001	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
<p>对于上表未列出的发射机最大额定输出功率，推荐隔离距离 <math>d</math>，以米（m）为单位，能用对应发射机频率栏中的公式确定这里 <math>P</math> 是由发射机制造商提供的发射机最大额定输出功率，以瓦特（W）为单位。</p> <p>For the maximum rated output power of the transmitter not listed above, the recommended isolation distance <math>d</math>, in meters (m), can be determined using the formula in the corresponding transmitter frequency column. Here <math>P</math> is the maximum rated output power of the transmitter provided by the transmitter manufacturer in watts (W).</p> <p>注 1：在 80MHz 和 800MHz 频率点上，应采用较高频段的公式。</p> <p>Note 1: At the 80MHz and 800MHz frequency points, the formula for the higher frequency band should be used.</p> <p>注 2：这些指南可能不适合所有的情况。电磁传播受建筑物、物体及人体的吸收和反射的影响。</p> <p>Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by the absorption and reflection of buildings, objects and the human body.</p>			

## 保证声明 Warranty statement

- 提供便携式眼底照相机 1 年的零件担保，电池提供 6 个月的担保。
  - provides a one-year warranty for the portable fundus camera. The battery is backed by a six-month warranty.
- 担保从交货日期正式开始。
  - The guarantee begins formally on the delivery date.
- 自然灾害，人为破坏，缺乏合理的保养，拆卸，升级，撕下保修贴纸，或任何淘汰部分不包括在保修范围内
  - Natural disasters, vandalism, lack of proper maintenance, disassembly, upgrades, tear off warranty stickers, or any obsolete parts are not covered by the warranty.

## 免责条款 Disclaimer

在下列条件下，对此产品的安全、可靠性和性能概不负责：

Under the following conditions, is not responsible for the safety, reliability and performance of this product:

- 对由火灾、地震、第三者的行为、其他事故、使用者的粗心个错误使用、非正常条件下使用所造成的损坏概不负责。
  - is not responsible for any damage caused by fire, earthquake, third party behavior, other accidents, careless use of the user, or use under abnormal conditions.
- 对因亏损、停业等不能使用此设备所造成的损失概不负责。
  - is not responsible for the losses caused by the inability to use this equipment due to loss or suspension of business.
- 对此说明书中没有介绍过的操作所造成的损坏概不负责。
  - is not responsible for the damage caused by the operations not described in this manual.
- 诊断是有关医生的责任，对诊断结果概不负责。

- Diagnosis is the responsibility of the doctor. is not responsible for the diagnosis results.

在下列条件下，才对此产品的安全、可靠性和性能负责：

Under the following conditions, is responsible for the safety, reliability and performance of this product:

- 由授权的人员对产品进行装配操作，扩展，调整，修改或维修。
  - I Assembly operations, expansion, adjustment, modification or repair of the product by authorized personnel.
- 电气安装部分符合要求。
  - I The electrical installation part meets the requirements.
- 设备按照使用说明进行操作。
  - I The device operates according to the instructions for use.

## **售后服务 After-sales service**

您和我们联系时，请告诉我们以下信息：

When you contact us, please let us know the following information:

序列号 Serial Number: 请见仪器铭牌 Please see the instrument nameplate

购买时间 Purchase time: 请告诉我们您购买设备的日期 Please tell us the date you purchased the device

故障描述 Fault description: 请尽可能详细地描述故障发生情况 Please describe the occurrence of the fault as much as possible.