

PTZ Virtual USB Driver 操作说明书

前言

PTZ Virtual USB Driver 是在 Windows 上运行的软件。

通过在 Windows PC 上运行本软件，可以使 Windows 系统将与 PC 联网的 Panasonic 摄像机（下称网络摄像机）识别为虚拟 USB 摄像机，并加以使用。

主要特点

本软件具备如下所示的特点。

- **将网络摄像机转换为虚拟 USB 摄像机**

使 Windows 系统将网络摄像机识别为虚拟 USB 摄像机。通过这一方式，就可以在实施 USB 摄像机的视频分发和录制的各种 Windows 应用程序上，使用网络摄像机的视频和音频。

- **支持 H.264 码流的视频和音频**

可以接收网络摄像机 H.264 码流的视频和音频，并在 Windows 应用程序上使用。

- **最多可注册 5 台网络摄像机**

最多可注册 5 台网络摄像机。

- **可自动检测到网络摄像机**

可自动检测到网络上的摄像机并注册。

运行环境

使用本软件需要配备以下环境。

●操作系统

Windows 8.1 64bit

Windows 10 64bit

Windows 11

●PC

CPU: 酷睿 i5-7300U (2.60 GHz)以上

内存: 4GB 以上

支持本软件的摄像机包括以下产品（截至 2022 年 4 月）。

- 可由以下网站上的 PTZ Virtual USB Driver 产品页面查看最新的支持型号。

<https://pro-av.panasonic.net/en/>

- 松下产 支持网络的摄像机

PTZ 摄像机

- AW-UE150/155
- AW-UE100
- AW-HE130/AW-HN130
- AW-HR140
- AW-UE80/AW-UE50/AW-UE40
- AW-UE70/AW-UN70
- AW-UE20
- AW-HE40/70/65, AW-HN40/70/65
- AW-HE42/75/68
- AW-HE20
- AW-UE4

POVCAM

- AG-UMR20/AG-UCK20
- AG-MDR25/AG-MDC20

CX 摄像机

- AJ-CX4000/AJ-UPX900
- AG-CX350/AG-CX200/AJ-UPX360
- AG-CX10/AG-CX98

<注>

- 请将摄像机固件更新到最新版再使用。固件可以从以下网站下载。

<http://pro-av.panasonic.net/en/>

关于本文件的内容

- 本文件中的插图或显示画面可能与实际情况不同。
- 本文件以 PC 代替描述个人计算机。

关于注册及注册商标

- Microsoft、Windows 是美国 Microsoft Corporation 的注册商标。
- Intel、Intel Core i5 是美利坚合众国以及其他国家的 Intel 公司及其子公司的商标或注册商标。
- 另外，本文所提及的各类名称、公司名、商品名等均为各公司的商标或注册商标。此外，本文中没
有注明 TM 以及®标识。

摄像机的初始设置

使用本软件之前，必须先在网络摄像机的 Web 画面上，对 H.264 码流进行适当的设置。

根据网络摄像机的机型不同，需设置的项目也有所差异。

本节说明了各个机型的设置步骤。

- 本手册所列型号为截至 2022 年 4 月的型号。

有关最新型号的设置步骤，请查看以下网站上的 PTZ Virtual USB Driver 产品页面。

<https://pro-av.panasonic.net/en/>

关于 H.264 设置条件 (PTZ 摄像机、POVCAM)

本软件接收网络摄像机的 H.264 码流，并获取视频和音频。

使用本软件时，必须确保 H.264 码流的设置完全符合以下条件。

- H.264 transmission
H.264(1)~H.264(4) 中，至少启用 1 个。
- Image capture size
需进行以下任意一个设置。
3840x2160 / 1920x1080 / 1280x720 / 640x360 / 320x180
- Transmission priority
需进行以下设置。
Frame rate
- Frame rate
需进行以下任意一个设置。
60fps / 50fps / 30fps / 25fps / 24fps / 15fps / 12.5fps / 5fps
- Audio encoding format (仅限 AW-HE130/AW-HN130, AW-HR140 的情况)
需进行以下设置。
AAC-LC (High quality)

关于 H.264 设置条件 (CX 摄像机)

本软件通过网络摄像机的 H.264 码流，获取视频和音频。

使用本软件时，必须确保 H.264 码流的设置完全符合以下条件。

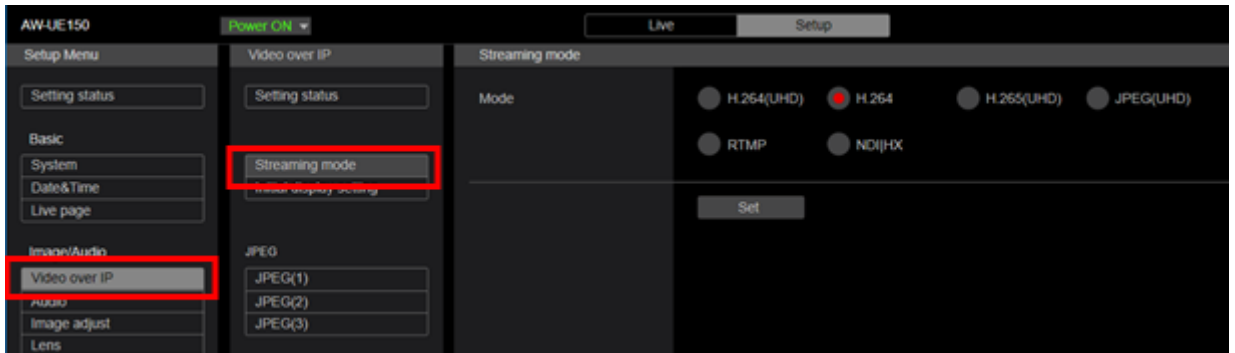
- NETWORK -> NETWORK FUNC
设置为 STREAMING。
- NETWORK -> STREAMING -> STREAMING FORMAT
设置必须是以下分辨率之一。
3840x2160 / 1920x1080 / 1280x720 / 640x360 / 320x180
- NETWORK -> STREAMING -> START TRIGGER
设置为 RECEIVER。
- NETWORK -> STREAMING -> RTSP PORT
设置为 554。

AW-UE150/155, AW-UE100 的设置

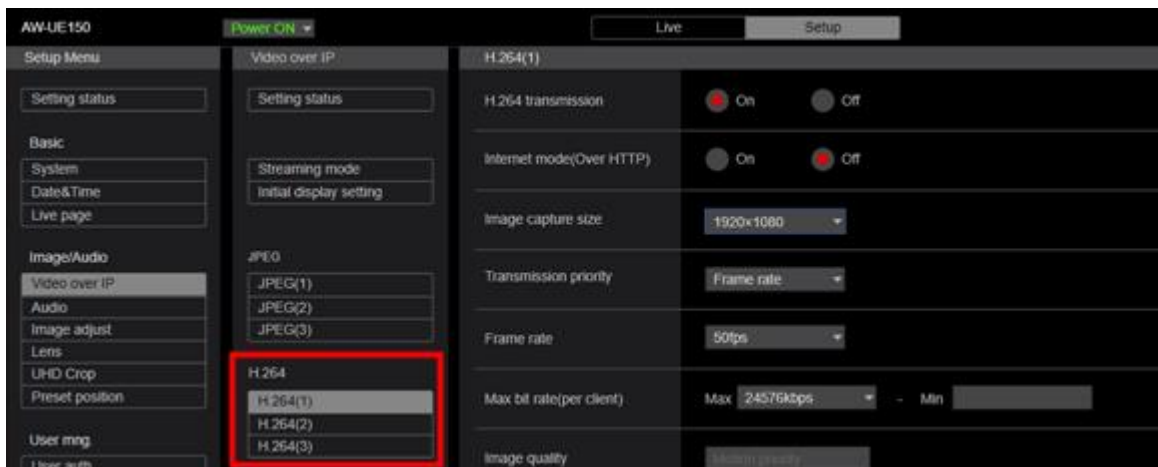
1. 启动 Web 浏览器。
2. 在 Web 浏览器的地址栏中输入网络摄像机的 IP 地址。
3. 网络摄像机的 Web 画面将被打开，然后点击中央上部的 Setup 键。



4. 系统将显示摄像机的账号密码确认画面，请输入账号和密码。
5. 单击设置屏幕左侧的[Video over IP]按钮，然后在出现的[Video over IP]菜单上选择[Streaming mode]。显示流媒体模式设置屏幕。设置”H.264(UHD)”，“H.264”，“JPEG(UHD)”，“NDI | HX”。设置好项目后，请点击 Set 键保存设置。



6. 在[Video over IP]菜单中设置 H.264 (1) ~H.264 (4) 或 NDI | HX 流的操作。设置好项目后，请点击 Set 键保存设置。
- 当 Streaming mode 为"H.264(UHD)", "H.264", "JPEG(UHD)"时



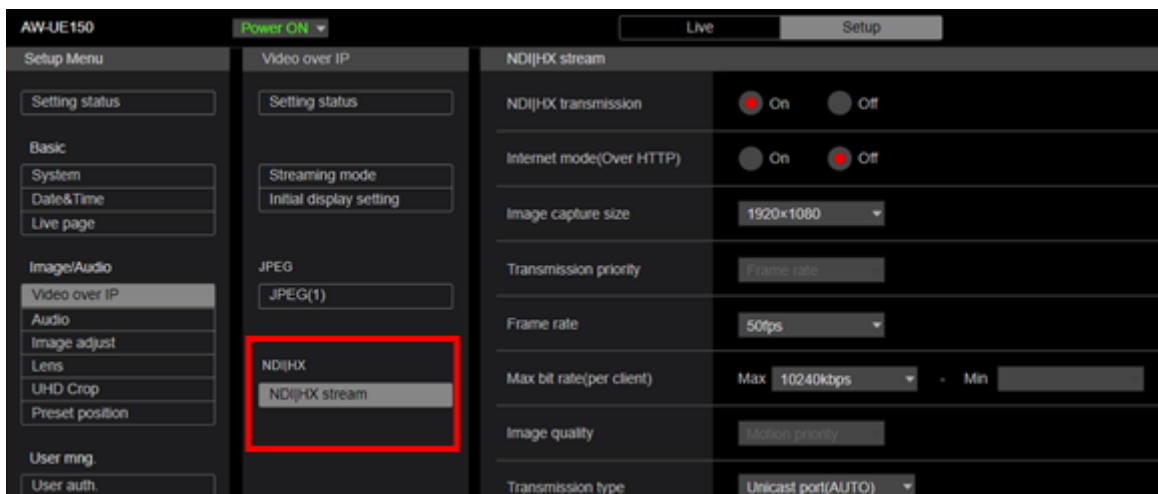
H.264 transmission: 将想要使用的码流设为 On 。

Image capture size: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。

Transmission priority: 设为“Frame rate”。

Frame rate: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧率。

- 当 Streaming mode 为"NDI|HX"时



NDI|HX transmission：将其设置为 On。

Image capture size：在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。

Transmission priority：设为“Frame rate”。

Frame rate：在本节中“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧率。

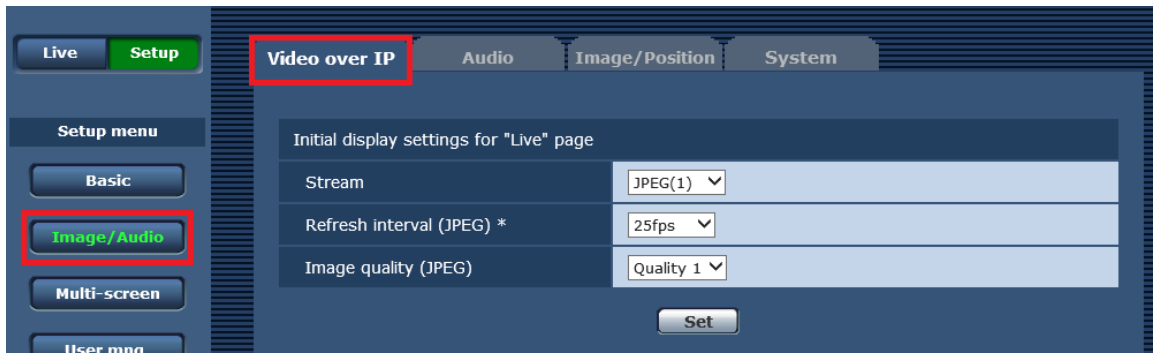
7. 设置到此结束。

AW-HE130/AW-HN130, AW-HR140 的设置

1. 打开 Web 浏览器。
2. 在 Web 浏览器的地址栏中输入网络摄像机的 IP 地址。
3. 网络摄像机的 Web 画面将被打开，然后点击左上方的 Setup 键。



4. 系统将显示摄像机的账号密码确认画面，请输入账号和密码。
5. 点击 Setup 画面左侧的 [Image/Audio] 键，在显示画面上方点击 [Video over IP] 选项卡。



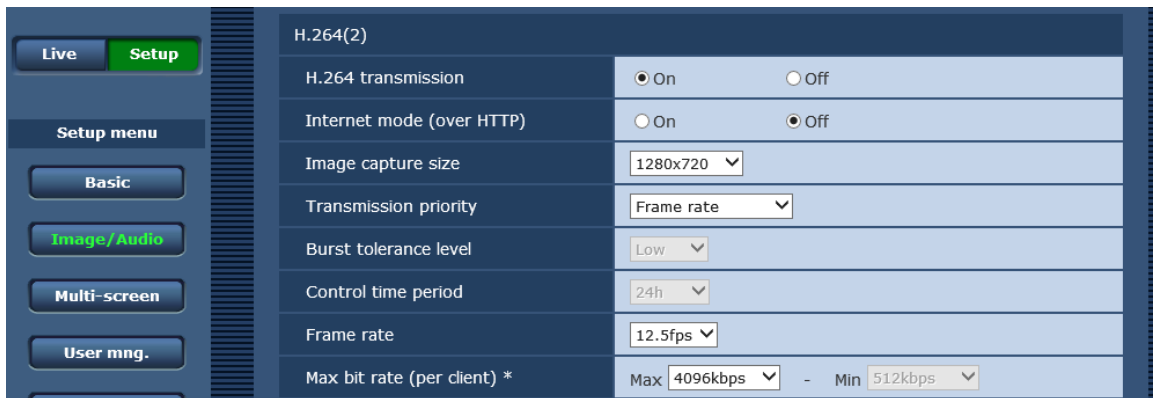
6. 设置 [Video over IP] 选项卡内的 H.264(1)~H.264(4) 的动作。使用本软件时，必须将以下项目设置成符合记录的条件。设置好项目后，请点击 Set 键保存设置。

H.264 transmission: 将想要使用的码流设为 On 。

Image capture size: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。

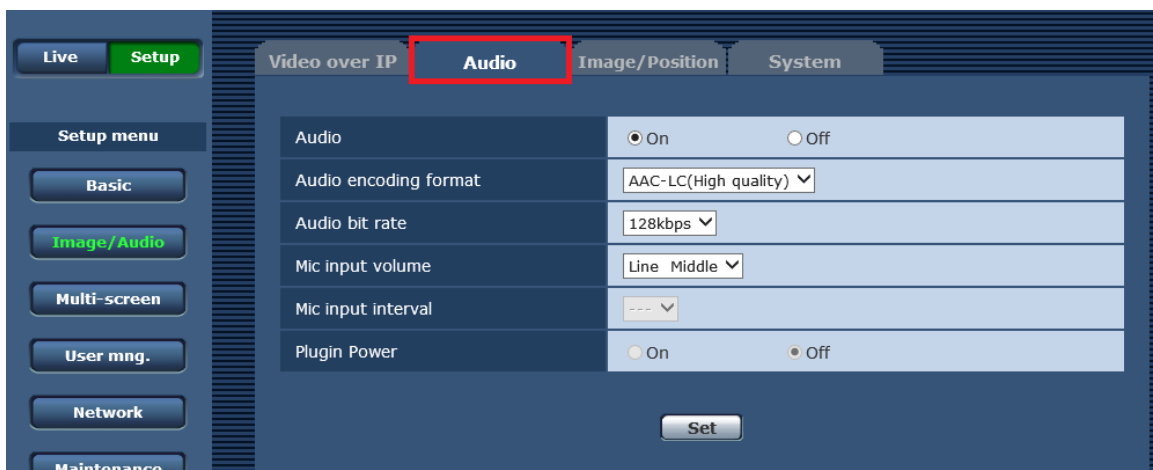
Transmission priority: 设为“Frame rate”。

Frame rate: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧频。



7. 点击画面上方的 [Audio] 选项卡，设置 Audio 项目。使用本软件时，必须将以下项目设置成符合记录的条件。设置好项目后，请点击 Set 键保存设置。

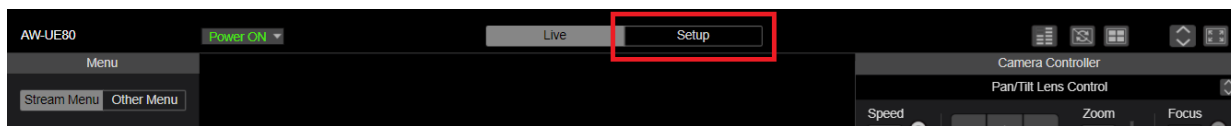
Audio encoding format: 设为“AAC-LC (High quality)”。



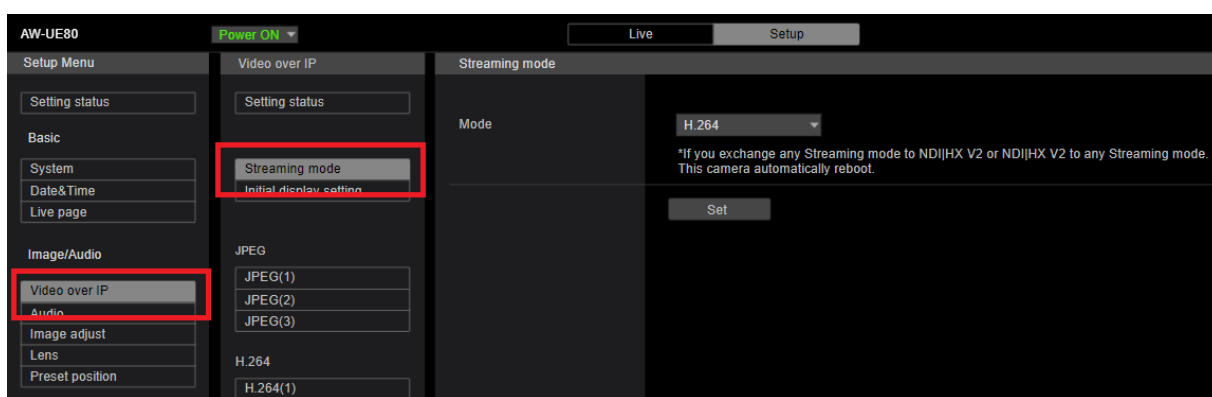
8. 设置到此结束。

AW-UE80, AW-UE50, AW-UE40 的设置

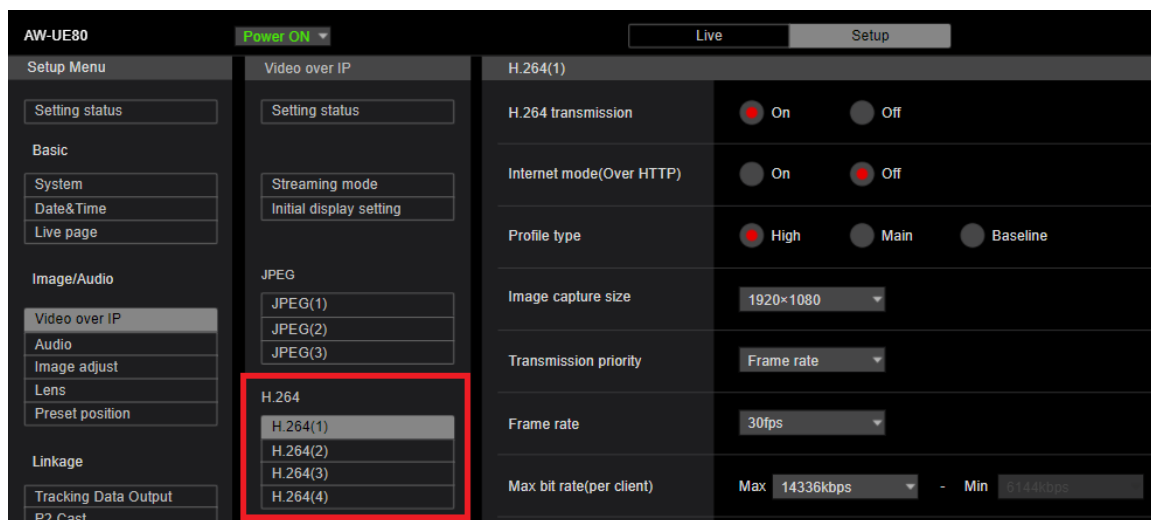
1. 启动 Web 浏览器。
2. 在 Web 浏览器的地址栏中输入网络摄像机的 IP 地址。
3. 网络摄像机的 Web 画面将被打开，然后点击中央上部的 Setup 键。



4. 系统将显示摄像机的账号密码确认画面，请输入账号和密码。
5. 单击设置屏幕左侧的[Video over IP]按钮，然后在出现的[Video over IP]菜单上选择[Streaming mode]。显示流媒体模式设置屏幕。设置“H.264”。设置好项目后，请点击 Set 键保存设置。



6. 在[Video over IP]菜单中设置 H.264 (1) ~H.264 (4) 流的操作。设置好项目后，请点击 Set 键保存设置。



H.264 transmission: 将想要使用的码流设为 On 。

Image capture size: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。

Transmission priority: 设为“Frame rate”。

Frame rate: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧率。

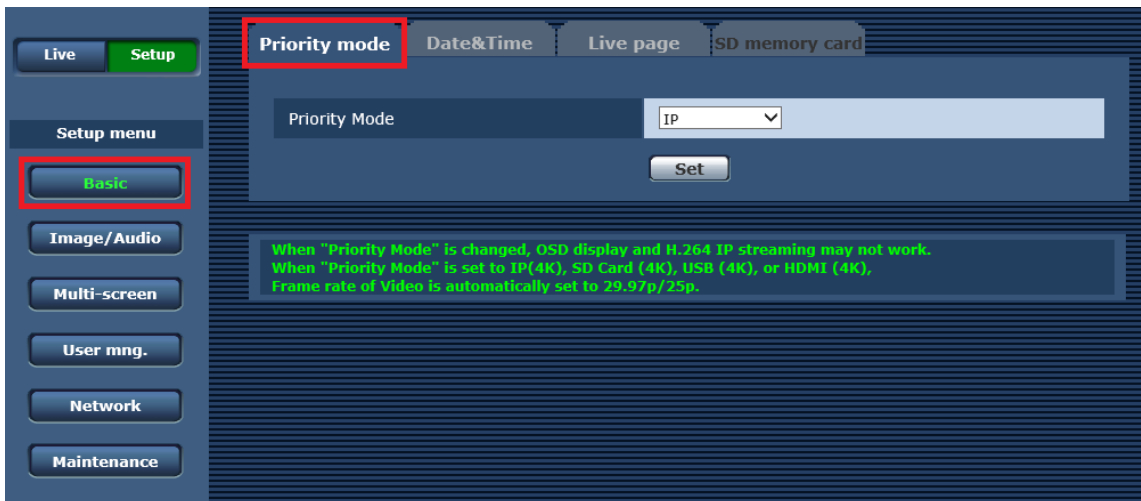
7. 设置到此结束。

AW-UE70/AW-UN70 的设置

1. 打开 Web 浏览器。
2. 在 Web 浏览器的地址栏中输入网络摄像机的 IP 地址。
3. 网络摄像机的 Web 画面将被打开，然后点击左上方的 Setup 键。



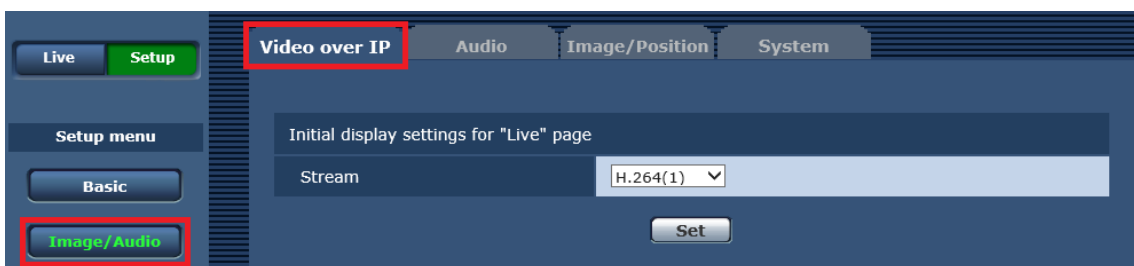
4. 系统将显示摄像机的账号密码确认画面，请输入账号和密码。
5. 点击 Setup 画面左侧的 [Basic] 键，在显示画面上方点击 [Priority mode] 选项卡。



6. 将 Priority Mode 设为以下任意一种。设置好项目后，请点击 Set 键保存设置。

- IP
- IP(4K)
- NDI|HX ※仅 AW-UN70

7. 点击 Setup 画面左侧的 [Image/Audio] 键，在显示画面上方点击 [Video over IP] 选项卡。



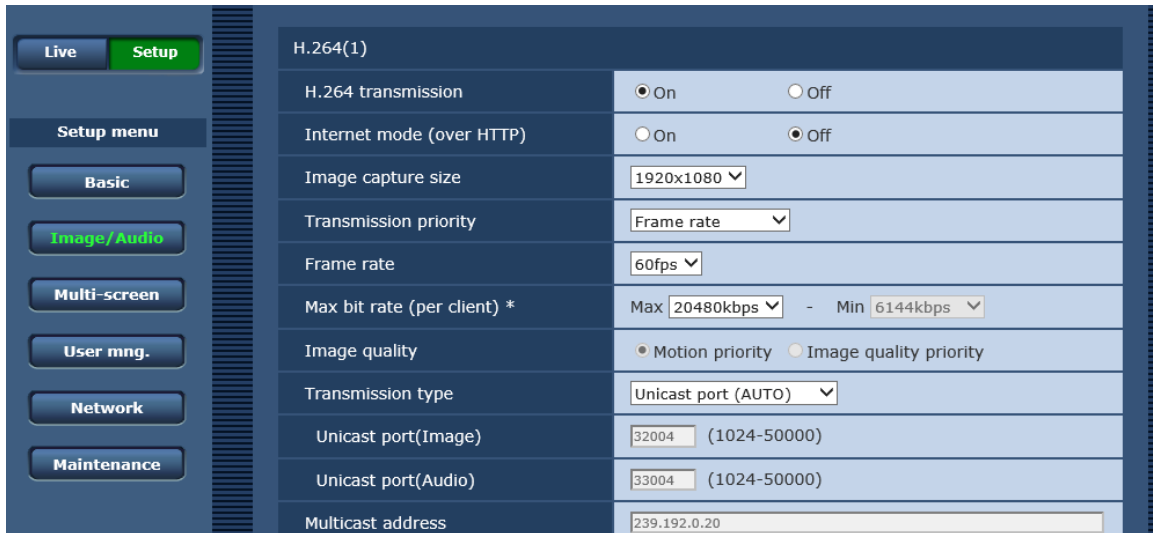
8. 设置 [Video over IP] 选项卡内的 H.264(1)~H.264(4) 的动作。使用本软件时，必须将以下项目设置成符合记录的条件。设置好项目后，请点击 Set 键保存设置。

H.264 transmission: 将想要使用的码流设为 On 。

Image capture size: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。

Transmission priority: 设为“Frame rate”。

Frame rate: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧频。



9. 设置到此结束。

AW-HE40/70/65,AW-HN40/70/65,AW-HE42/75/68 的设置

设置项目和 AW-UE70/AW-UN70 相同。

请参照“AW-UE70/AW-UN70 的设置”进行设置。

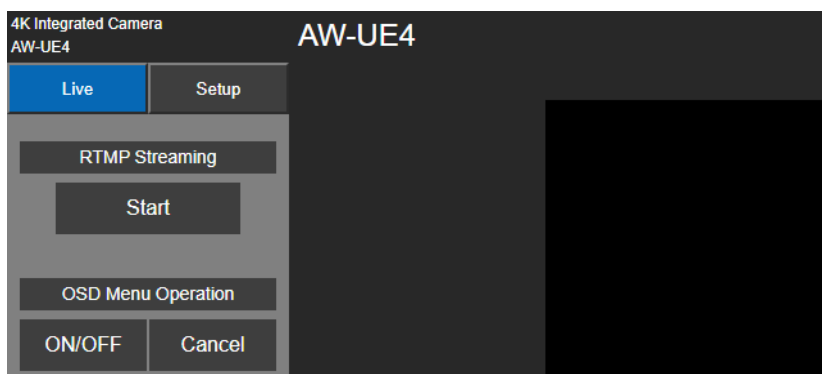
<注>

- Priority Mode 设置中不显示 IP(4K) 。

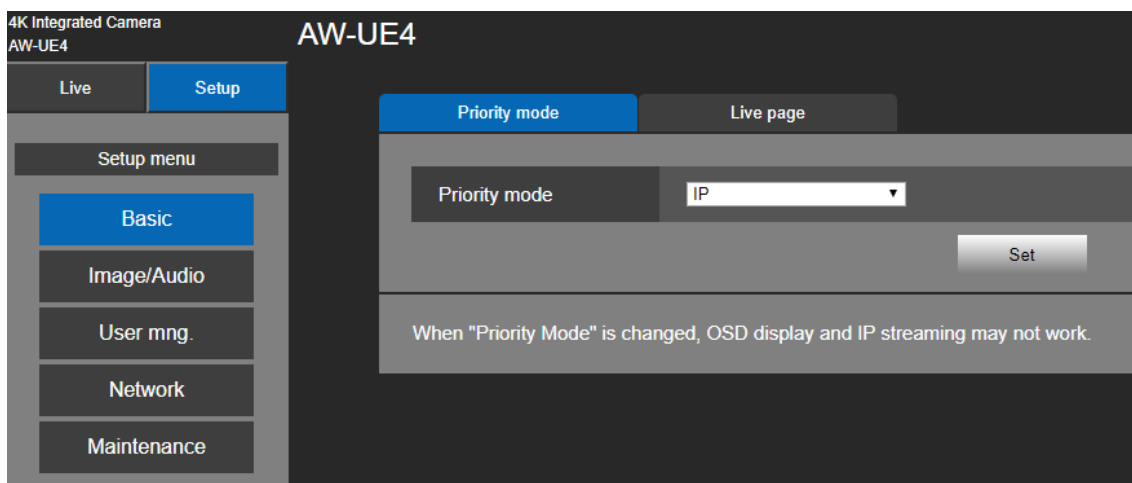
请将 Priority Mode 设为“IP”或“NDI|HX”。“NDI|HX”只有在 AW-HN40/70/65 时才会显示。

AW-UE20, AW-HE20, AW-UE4 的设置

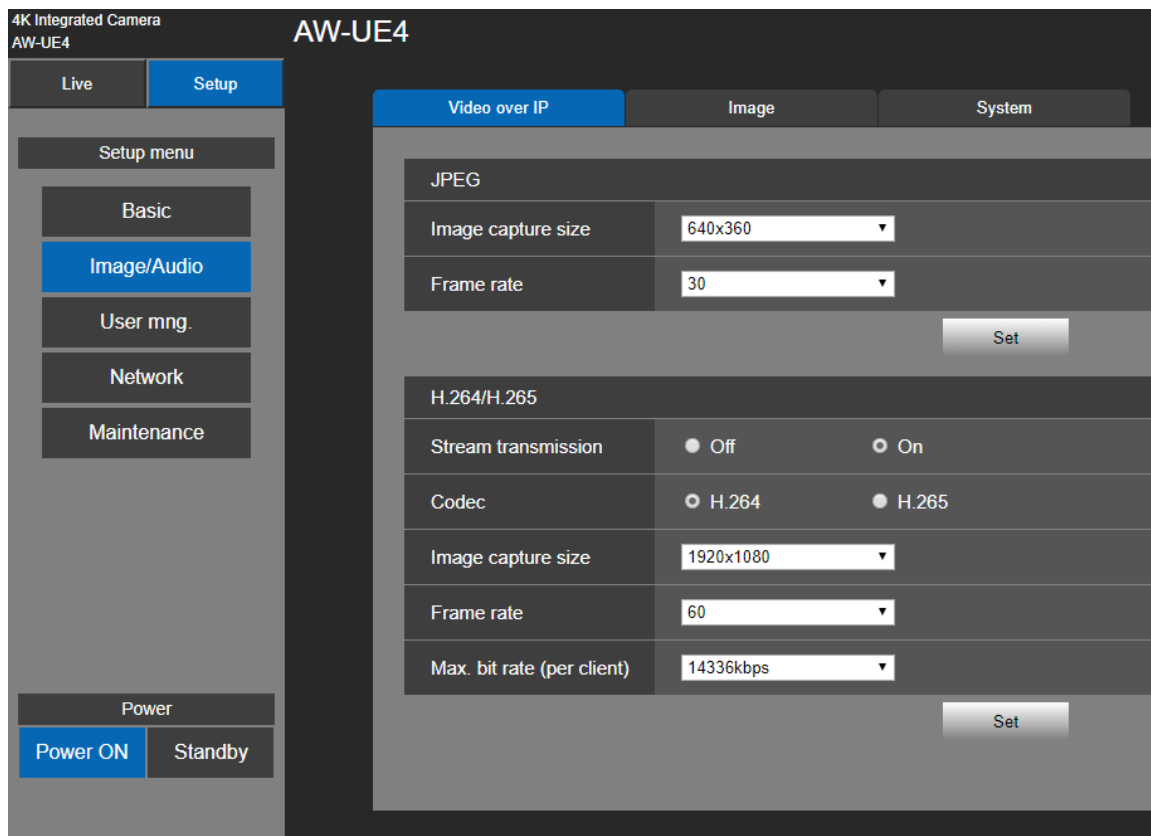
1. 打开 Web 浏览器。
2. 在 Web 浏览器的地址栏中输入网络摄像机的 IP 地址。
3. 网络摄像机的 Web 画面将被打开，然后点击左上方的 Setup 键。



4. 系统将显示摄像机的账号密码确认画面，请输入账号和密码。
5. 点击 Setup 画面左侧的 [Basic] 键，在显示画面上方点击 [Priority mode] 选项卡。



6. 将 Priority Mode 设为以下任意一种。设置好项目后，请点击 Set 键保存设置。
 - IP
 - IP(4K)
7. 点击 Setup 画面左侧的 [Image/Audio] 键，在显示画面上方点击 [Video over IP] 选项卡。
8. 在[Video over IP]选项卡中设置 H.264 / H.265 的操作。使用本软件时，必须将以下项目设置成符合记录的条件。设置好项目后，请点击 Set 键保存设置。
 - Stream transmission: 将其设置为“On”。
 - Codec: 将其设置为“H.264”。
 - Image capture size: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。
 - Frame rate: 在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置帧频。



9. 设置到此结束。

AG-UMR20/AG-UCK20, AG-MDR25/AG-MDC20 的设置

设置项目和 AW-UE70/AW-UN70 相同。

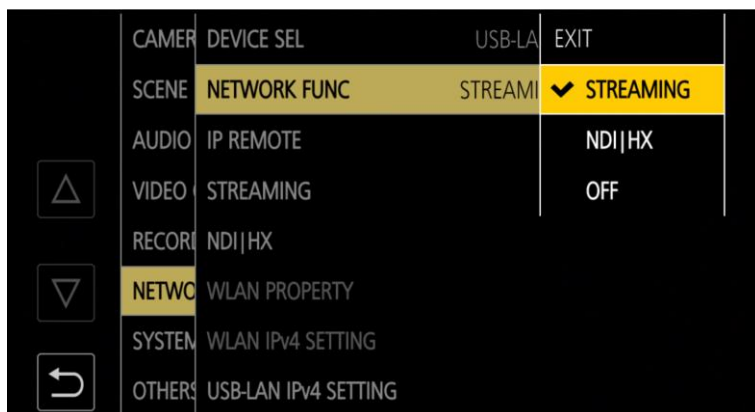
请参照“AW-UE70/AW-UN70 的设置”进行设置。

<注>

- Priority Mode 设置中不显示“NDI|HX”。
请将 Priority Mode 设为“IP”或“IP(4K)”。

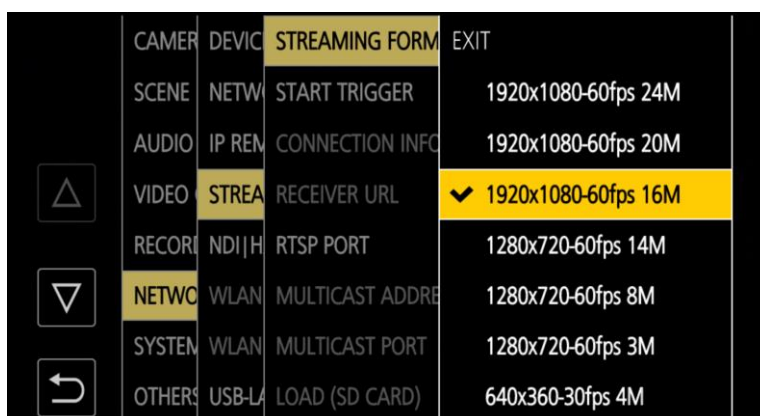
CX 摄像机的设置

1. 从“NETWORK->NETWORK FUNC”菜单中选择“STREAMING”。

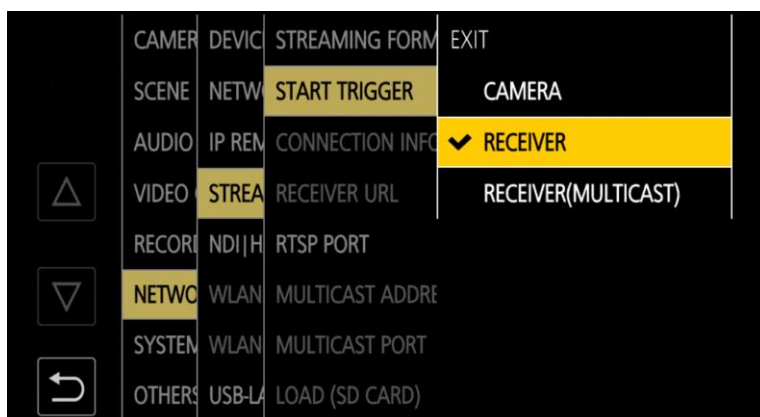


2. 在“NETWORK -> STREAMING -> STREAMING FORMAT”菜单中设置分辨率。

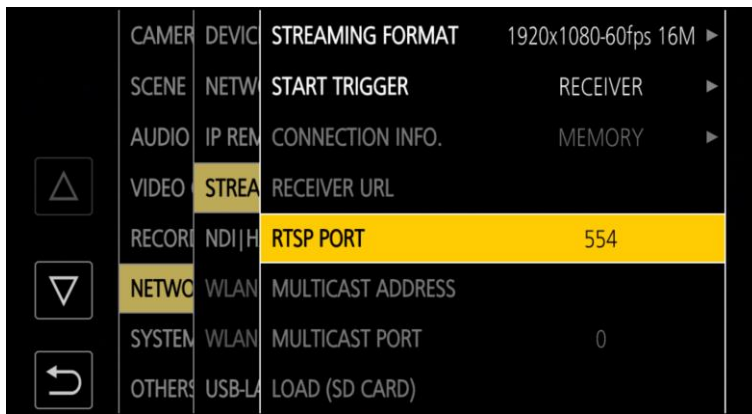
在本节“关于 H.264 设置条件（PTZ 摄像机、POVCAM）”中描述的范围设置分辨率。



3. 在“NETWORK -> STREAMING -> START TRIGGER”菜单中选择“RECEIVER”。



4. (仅适用于 CX10 系列) 在 NETWORK-> STREAMING-> RTSP PORT 菜单中将该值设置为 554。



5. 设置到此结束。

功能说明

本软件的启动和关闭

本软件的启动

登录 Windows 系统后，本软件自动启动。

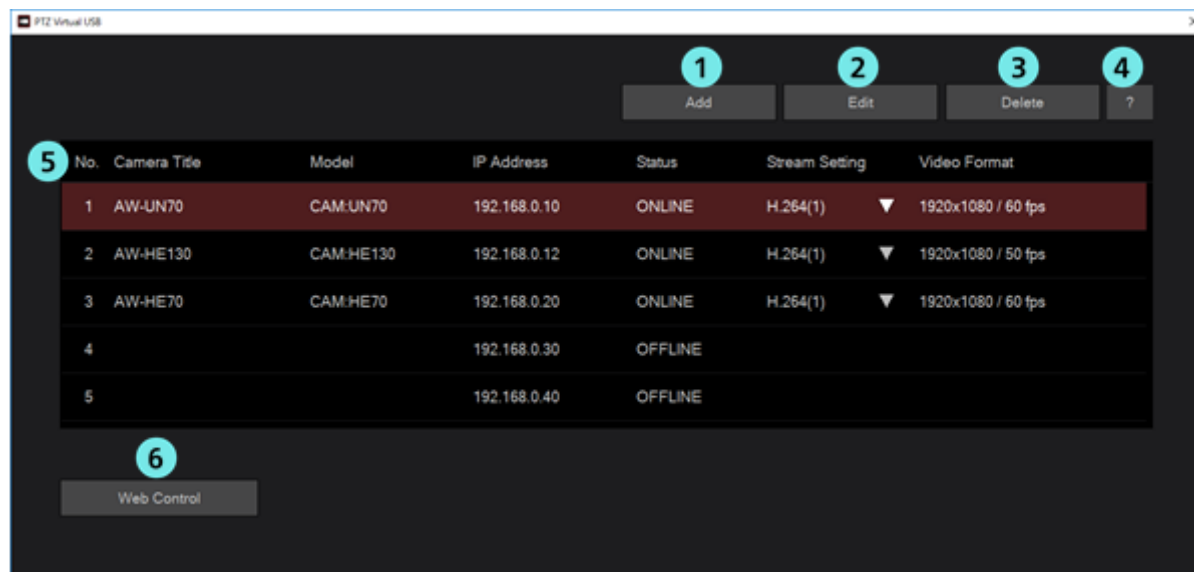
本软件的关闭

要关闭此软件，请单击窗口右上方的 X 按钮。

将显示关闭软件的确认屏幕。选择“是”关闭该软件。

主画面的说明

下面对本软件主画面的各大元素进行说明。



① 摄像机注册键

注册新的网络摄像机并添加到列表。

② 摄像机编辑键

编辑列表中选择网络摄像机的设置。

③ 摄像机删除键

删除列表中选择网络摄像机。

④ 帮助显示键

显示本软件的帮助文档（本资料）。

⑤ 摄像机列表

显示已注册的网络摄像机一览表。

各列显示内容如下。

No.: 摄像机管理编号。

Camera Title: 对于 PTZ 摄像机和 POV CAM, 显示的名称和摄像机的 Web 画面上设置的名称一样。

CX 摄像机显示为“CX Camera Series”。

Model: 摄像机的种类和型号。

IP Address: 摄像机的 IP 地址。

Status: 摄像机的状态。有关各种状态的详情, 请参照后面的“关于摄像机 Status 显示”。

Stream Setting: 选中的 H.264 码流的编号。

点击▼, 可选择要使用的 H.264 码流。

Video Format: 选中的 H.264 码流的分辨率和帧频。

⑥ 摄像机 Web 画面显示键

通过 Web 浏览器显示列表中被选中的网络摄像机的 Web 画面。

关于摄像机的 Status 显示

下面对主画面上显示的摄像机的 Status 显示进行说明。
显示的 Status 一览及其状态如下所示。

- **ONLINE**

网络摄像机已被识别，并且能正常接收视频和音频的状态。

- **OFFLINE**

网络摄像机未被识别的状态。可能存在以下几种原因。

- 网络摄像机的电源没有打开，或者处于待机模式
- PC 和网络摄像机没有通过网线连接

请检查网络摄像机电源是否打开，PC 和网络摄像机之间的网线是否正确连接。

- **UNSUPPORT**

虽然网络摄像机已被识别，但网络摄像机的设置不属于本软件支持的对象范围，因而无法使用的状态。

请依照本资料的“摄像机的初始设置”步骤，对 H.264 码流进行设置。

- **DISCONNECTED**

网络摄像机连接断开的状态。

请检查 PC 和网络摄像机之间的网线是否正确连接。

- **AUTH FAIL**

网络摄像机的用户身份验证失败。

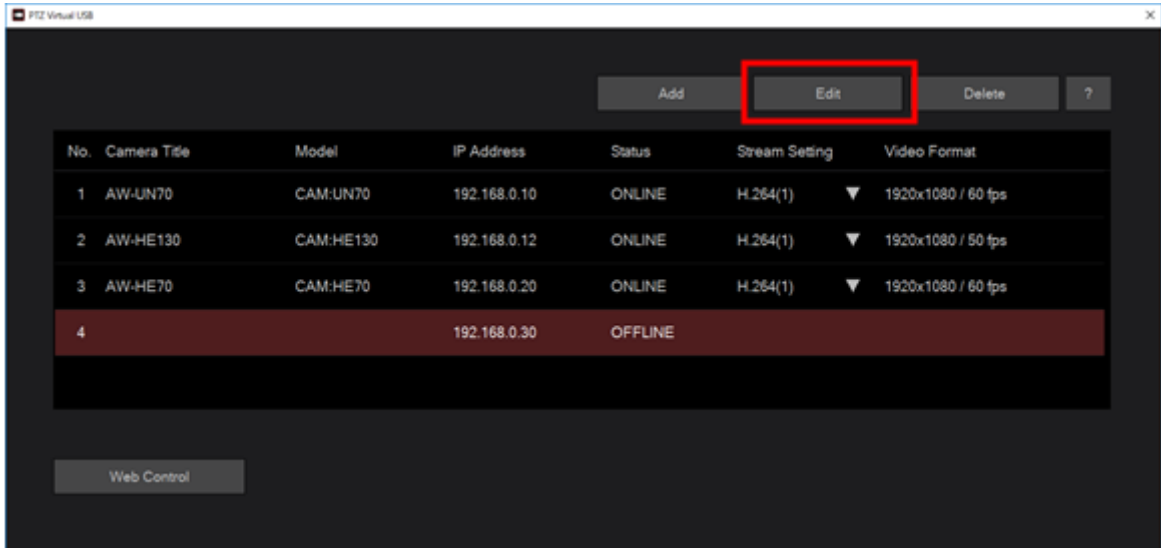
请检查登录相机时输入的帐户和密码是否正确。

更改网络设置（仅 PTZ 摄像机，POVCAM）

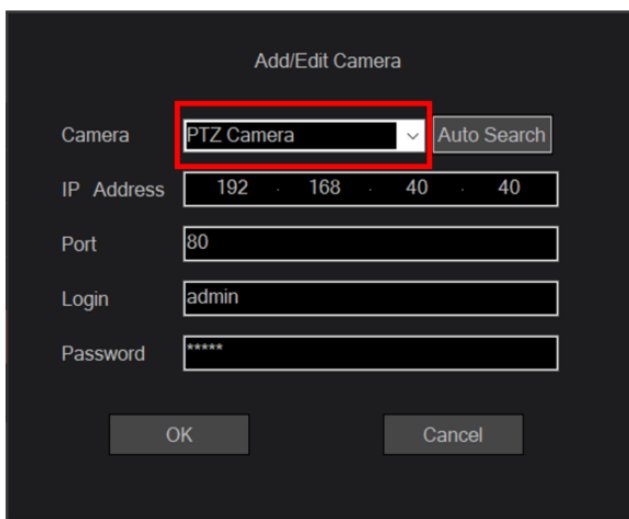
通过本软件，可以更改网络摄像机的网络设置。

按以下步骤设置。

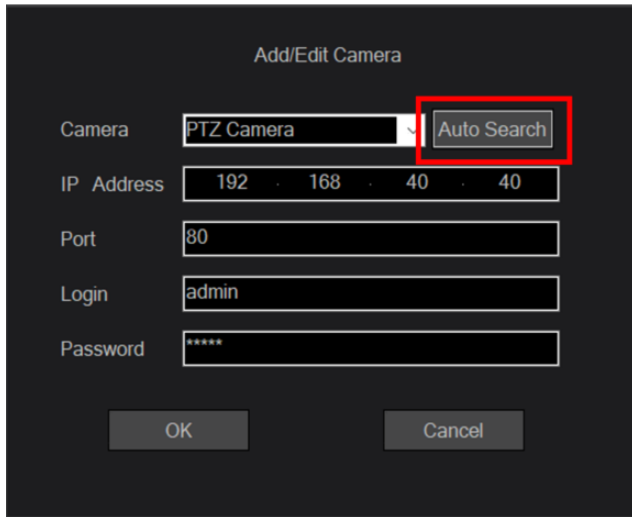
1. 点击主画面上的 Edit 键。



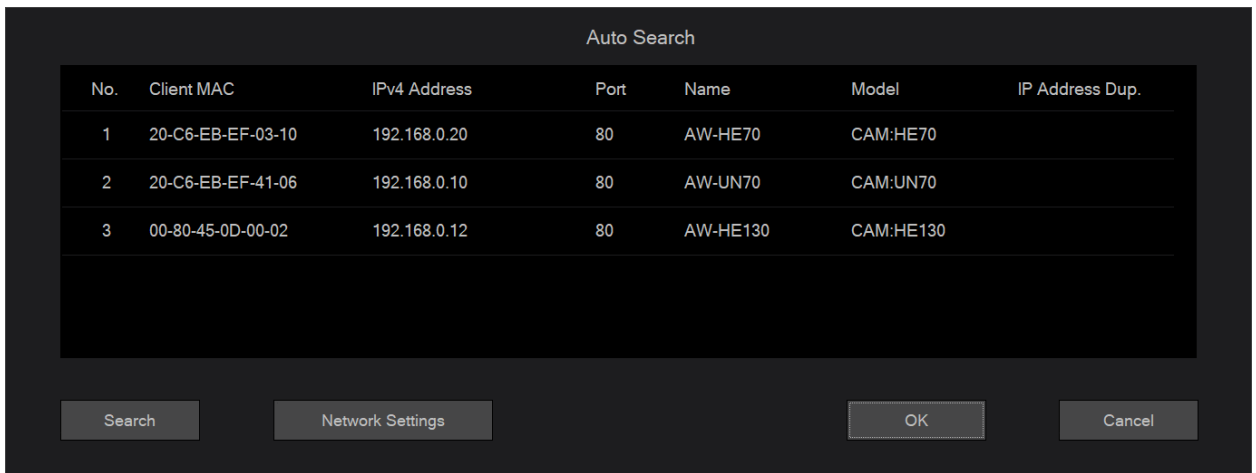
2. 在显示的“Add/Edit Camera”画面上，选择“PTZ Camera”作为摄像机类型。



3. 在显示的 Add/Edit Camera 画面上点击“Auto Search”键。

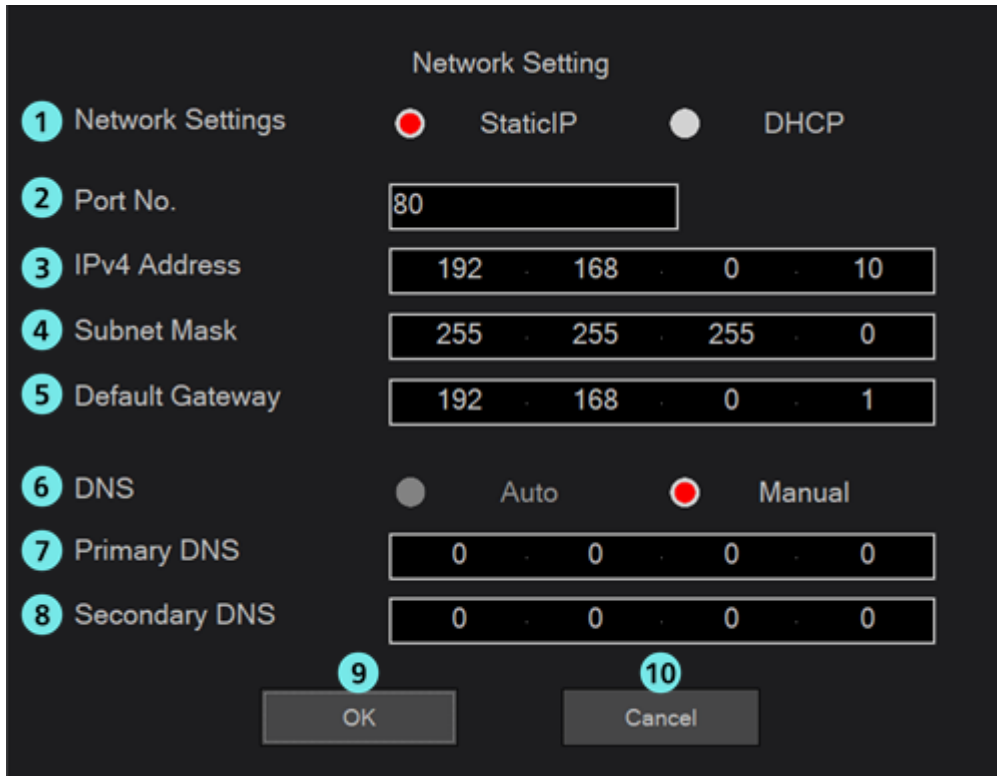


4. 系统将显示 Auto Search 画面，并显示当前联网的网络摄像机列表。



5. 从网络摄像机列表中选择要更改设置的摄像机，点击 Network Setting 键。

6. 网络设置画面打开。修改各个项目后点击确定键，摄像机网络设置即更改完成。



① Network Settings

选择 IP 地址的设置方法。

Static IP: 通过固定 IP 设置。

DHCP: 通过 DHCP 设置。

② Port No.

设置摄像机使用的端口号。

③ IPv4 Address

设置摄像机的 IP 地址。

只有在 Network Settings 中选择 Static IP 时才能设置。

④ Subnet Mask

设置摄像机的子网掩码。

只有在 Network Settings 中选择 Static IP 时才能设置。

⑤ Default Gateway

设置摄像机的网关。

只有在 Network Settings 中选择 Static IP 时才能设置。

⑥ DNS

选择 DNS 服务器的设置方法。

Auto: 自动设置 DNS 服务器。

Manual: 直接指定 DNS 服务器地址。

⑦ Primary DNS

设置首选 DNS 服务器。

只有在 DNS 中选择 Manual 时才能设置。

⑧ Secondary DNS

设置备用 DNS 服务器。

只有在 DNS 中选择 Manual 时才能设置。

⑨ 确定键

应用设置并关闭画面。

⑩ 取消键

取消设置并关闭画面。

<注>

- 若同时使用 EasyIpSetup 软件和本软件，则无法通过本软件进行网络设置。

实现虚拟 USB 摄像机用途的流程

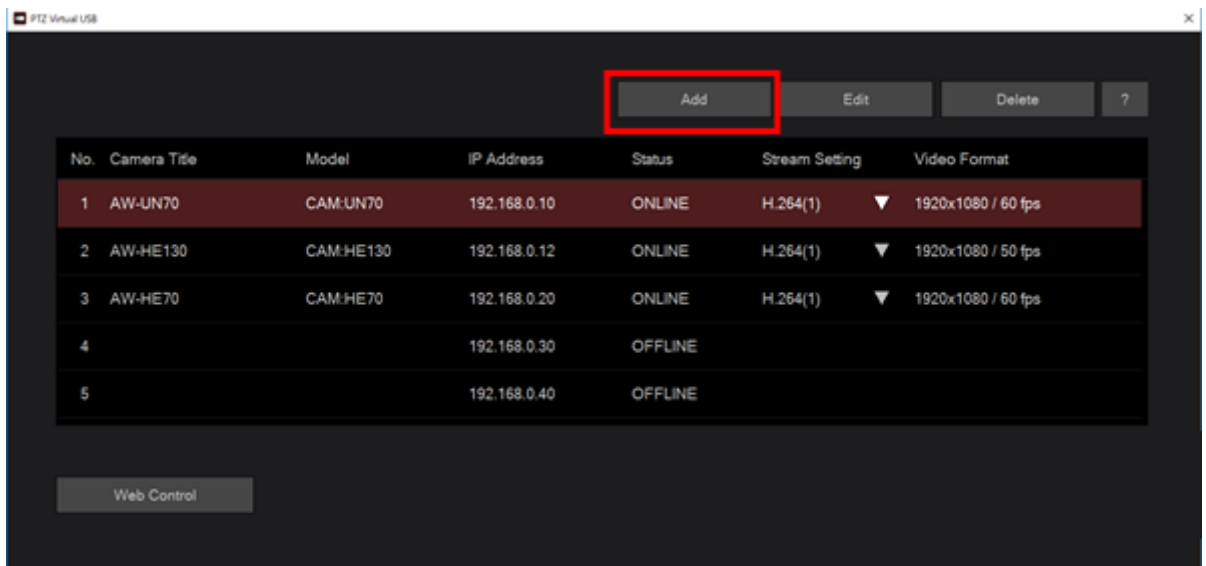
下面介绍通过本软件注册网络摄像机，并在 Windows 应用程序中将其用作虚拟 USB 摄像机的流程。大体流程如下。

1. 注册网络摄像机
2. 设置要使用的 H.264 码流
3. 在 Windows 应用程序中使用虚拟 USB 摄像机

1.注册网络摄像机

刚开始使用本软件时，请按以下步骤注册网络摄像机。

1. 点击本软件主画面上的 Add 键。



- 2.显示 Add/Edit Camera 画面，输入各个项目的信息。



Camera：选择相机类型

PTZ Camera：用于 PTZ 摄像机和 POVCAM

CX Camera Serieese：用于 CX 摄像机

IP Address：网络摄像机的 IP 地址

Port：网络摄像机端口号（用于 PTZ 摄像机和 POVCAM）

Login：网络摄像机的账号（用于 PTZ 摄像机和 POVCAM）

Password：网络摄像机的密码（用于 PTZ 摄像机和 POVCAM）

Resolution：摄像机上设置的分辨率（用于 CX 摄像机）

输入方法包括手动输入项目的方法和搜索网络摄像机后自动输入的方法（选择 PTZ 摄像机时）。

- 手动输入的情况

在各个项目的输入框中输入相应的值。

- 自动输入的情况

点击 Auto Search 键，系统将显示当前联网的网络摄像机一览表。从一览表中选择任意 1 台摄像机，点击确定键关闭窗口后，部分项目将被自动输入。

3.点击确定键，关闭 Add/Edit Camera 画面。

4.新的网络摄像机将被添加到主画面的摄像机列表中。

5.添加网络摄像机数秒后，主画面的 Status 将根据摄像机的状态而改变。

一旦网络摄像机被识别，在本软件中变为可使用的状态，其 Status 将显示为“ONLINE”，因此请检查 Status 是否显示为“ONLINE”。若没有显示为“ONLINE”，请参照本资料的“关于摄像机的 Status 显示”，检查网络连接和网络摄像机的设置。

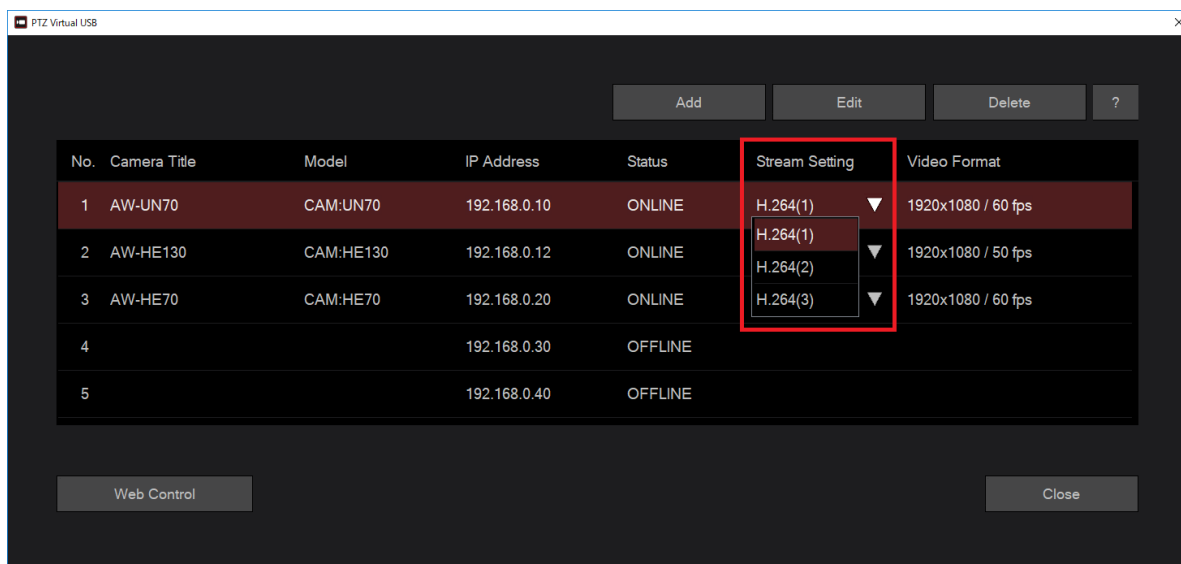
6.请对使用的每一台网络摄像机重复进行上述 1~5 的步骤。

2. 设置要使用的 H.264 码流

Status 显示为“ONLINE”的网络摄像机处于可通过本软件接收 H.264 码流的状态。

网络摄像机通常都支持多个 H.264 码流，请根据需要，按以下步骤设置本软件所使用的 H.264 码流。

1. 从主画面的摄像机列表中，选择要设置的网络摄像机。
2. 点击 Stream Setting 列的 ▾，系统将显示可设置的 H.264 码流一览表，请选择要使用的 H.264 码流。



3. 若设置得以反映，Video Format 列的显示内容将发生变化。

<注>

对于 CX 系列的摄像机，Video Format 列不显示 FPS 信息。

3.使用虚拟 USB 摄像机

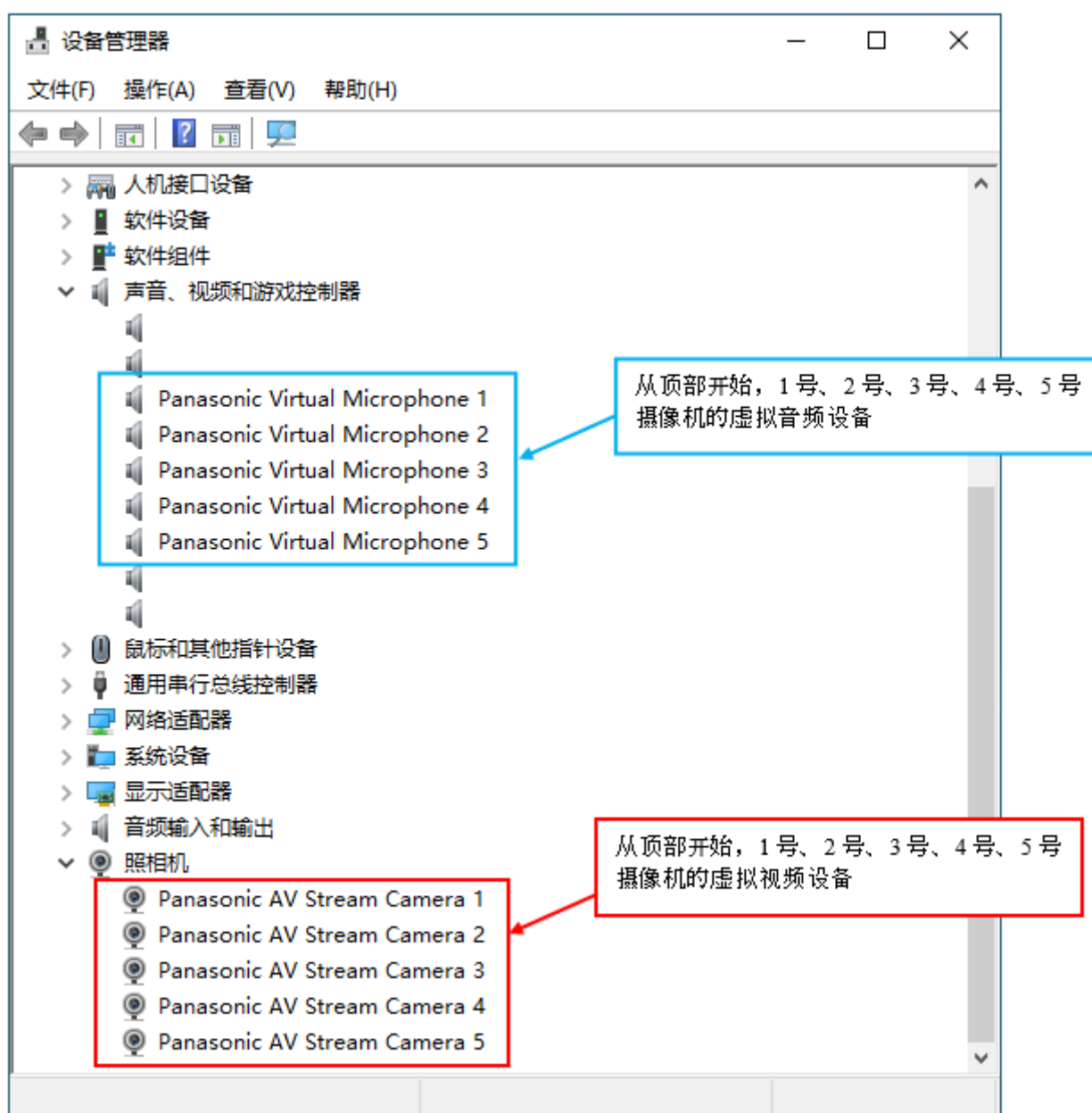
通过本软件注册网络摄像机后，Windows 系统上将生成与注册的网络摄像机相对应的虚拟 USB 摄像机。虚拟 USB 摄像机由用于获取视频的虚拟 Video 设备和用于获取音频的虚拟 Audio 设备所组成。生成的虚拟 USB 摄像机名称如下。*处显示与主画面摄像机列表中的摄像机编号相对应的数字。

虚拟 Video 设备：Panasonic AV Stream Camera *

虚拟 Audio 设备：Panasonic Virtual Microphone *

如果虚拟 USB 设备创建正确，您将在设备管理器中的“相机”下看到虚拟视频设备，在“声音、视频和游戏控制器”下看到虚拟音频设备。

以下就是注册 5 台网络摄像机时的设备管理器显示范例。



若要通过与 USB 摄像机相应的 Windows 应用程序使用网络摄像机的视频，可以在 Windows 应用程序的视频设备设置中选择 Panasonic AV Stream Camera *，这样，网络摄像机的视频就会被输出到 Windows 应用程序，然后就可以通过 Windows 应用程序使用视频了。

同样，若要通过与 USB 摄像机相应的 Windows 应用程序使用网络摄像机的音频，可以在 Windows 应用程序的音频设备设置中选择 Panasonic Virtual Microphone *，这样，网络摄像机的音频就会被输出到 Windows 应用程序，然后就可以通过 Windows 应用程序使用音频了。

<注>

- 从在视频设备设置中选择 Panasonic AV Stream Camera *，到实际输出视频，需要几秒钟的时间。
- 若同时使用多台虚拟 USB 设备，则根据不同 PC 的性能，可能出现视频丢帧等现象。若出现此种现象，请减少同时使用的虚拟 USB 设备的数量。

附录

当出现以下情况时

本软件运行过程中出现的故障原因和应对方法如下所示。

网络摄像机已经注册，但 Status 为 OFFLINE 。

原因 1:

- PC 和网络摄像机没有正确连接。

应对措施 1:

- 检查 PC 和网络摄像机之间的网线是否正确连接。

原因 2:

- 网络摄像机的电源没有打开，或者处于待机模式。

应对措施 2:

- 检查网络摄像机电源是否打开。

网络摄像机已经注册，但 Status 为 UNSUPPORT 。

原因:

网络摄像机的 H.264 码流设置不属于本软件支持的对象范围。

应对措施:

- 请参照本资料的“摄像机的初始设置”中的项目，对网络摄像机的 H.264 码流进行设置。
- 请在主画面的 Stream Setting 中，选择除当前 H.264 码流外的其他 H.264 码流。

通过 Windows 应用程序显示网络摄像机的视频时，出现丢帧等现象。

原因：

- 由于 PC 的 CPU 性能不足等原因，导致视频来不及解码。

应对措施：

- 请更换 CPU 性能更高的 PC，并确认运行状况。
- 若同时使用多台虚拟 USB 设备，请减少同时使用的虚拟 USB 设备的数量。

通过 Windows 应用程序输出网络摄像机的音频时，没有声音输出。

原因：

- 网络摄像机音频输出设置未处于有效状态。

应对措施：

- 请在网络摄像机的 Web 画面上检查音频输出设置是否处于有效状态。详情请参考各款网络摄像机的使用说明书。

来自 CX 摄像机的图像错误。

原因：

- 相机的 STREAMING 分辨率与此应用程序上的分辨率设置不匹配。

应对措施：

- 确保相机上的 STREAMING 分辨率与本应用程序设置的分辨率一致。

卸载步骤

1. 在 Windows 控制面板上点击“程序和功能”。
2. 在程序一览表中点击“Panasonic PTZVirtualUsbDriver”，然后点击“卸载”，显示确认画面。
3. 在确认画面上点击“是”，即开始卸载。

与本产品相关的软件信息

本产品包括以下开源软件。

FFmpeg Ver. 4.1.3

- 许可证信息

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
Licenses are intended to guarantee your freedom to share and change
free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some
specially designated software packages--typically libraries--of the
Free Software Foundation and other authors who decide to use it. You
can use it too, but we suggest you first think carefully about whether
this license or the ordinary General Public License is the better
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation

and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility

is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the

ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a

derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the

user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot

use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the

original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in

certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE

LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2.1 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Lesser General Public License for more details.

You should have received a copy of the GNU Lesser General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

That's all there is to it!

- 源代码

您可以从以下 URL 下载源代码。

https://www.pass.panasonic.co.jp/pro-av/support/content/download/JP/jp2main/vusb_j.htm

https://www.pass.panasonic.co.jp/pro-av/support/content/download/EN/ep2main/vusb_e.htm