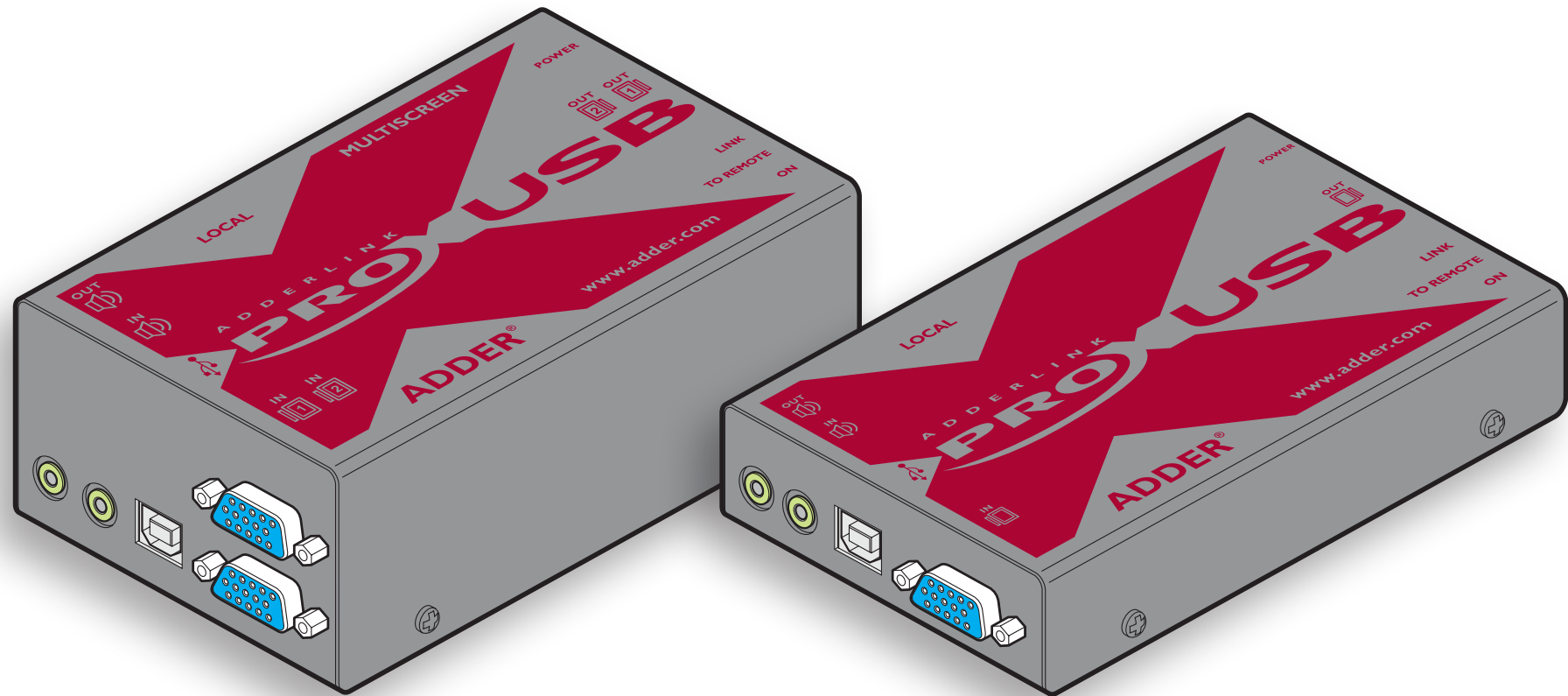


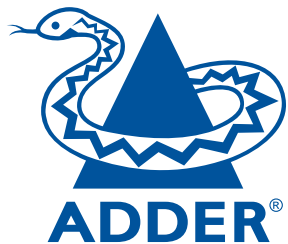


AdderLink X-USBPRO

Analog video and USB extenders

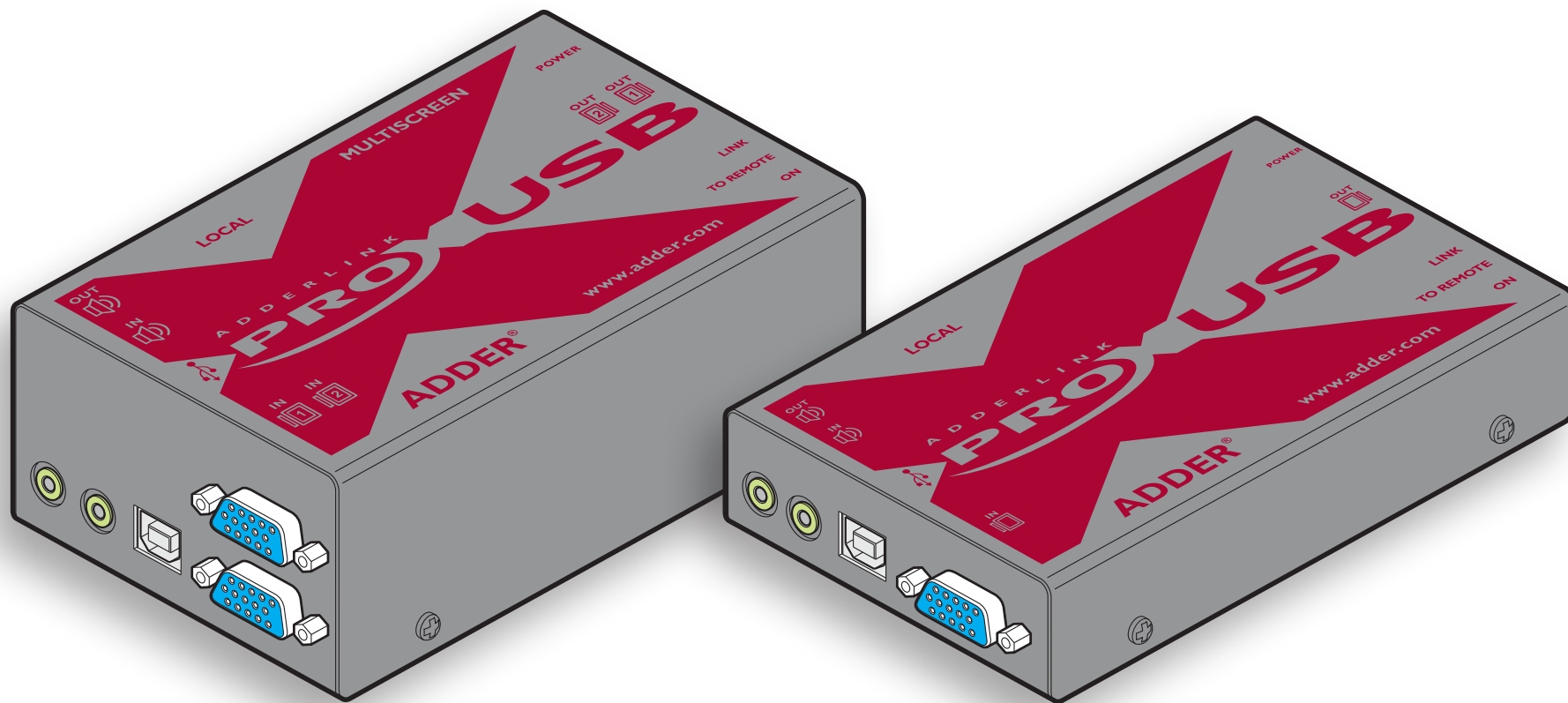


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AdderLink X-USBPRO

模拟视频和USB扩展器



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Welcome



Introduction

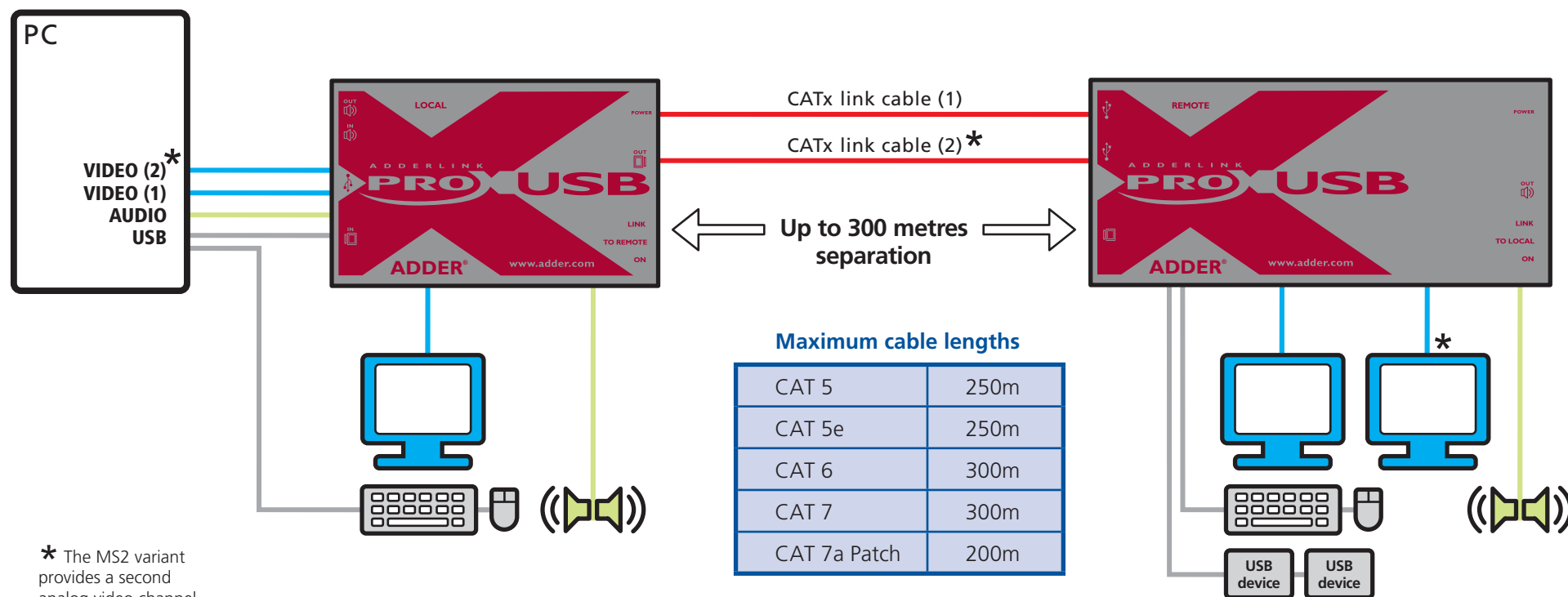
Thank you for choosing the AdderLink X-USBPRO or X-USBPRO-MS2 extenders which provide a very effective way to put distance between your computer and its peripherals.

The compact casings and ease of use of the modules belie the ingenuity of their operation. Using our proprietary transmission techniques we are able to reliably transfer more signals than ever before along a single length of Category 5, 5e, 6, 7 or 7a twisted pair cabling. What this means for you is that your video, audio, USB keyboard, USB mouse and two other USB channels are all readily and reliably available at up to 300 metres away.

Using the Adder X-USBPRO extenders does not mean that you need to compromise on functionality in any way. Our highly efficient transmission methods mean that CD quality sound and high video resolutions of up to 1920 x 1200 are fully supported. Any lag effects caused by long cable runs are easily eliminated using the intuitive video compensation system located within the remote module. Three equalisation bands allow you to ensure that every colour arrives at precisely the right time, ensuring a sharp image every time. The X-USBPRO-MS2 model uses an additional CATx connection to provide dual analog video links.

The USB connections are seamless allowing four full speed USB 2.0 devices to be used simultaneously with full support for disconnect/re-connect at any time without causing errors.

The Adder X-USBPRO extenders have been designed to be quick to install and totally transparent in operation: 'Fit and forget' is the motto. So whether you are extending your workplace or creating a cost-effective distributed audio visual system, the X-USBPRO extenders provide the power and flexibility to create the right solution.



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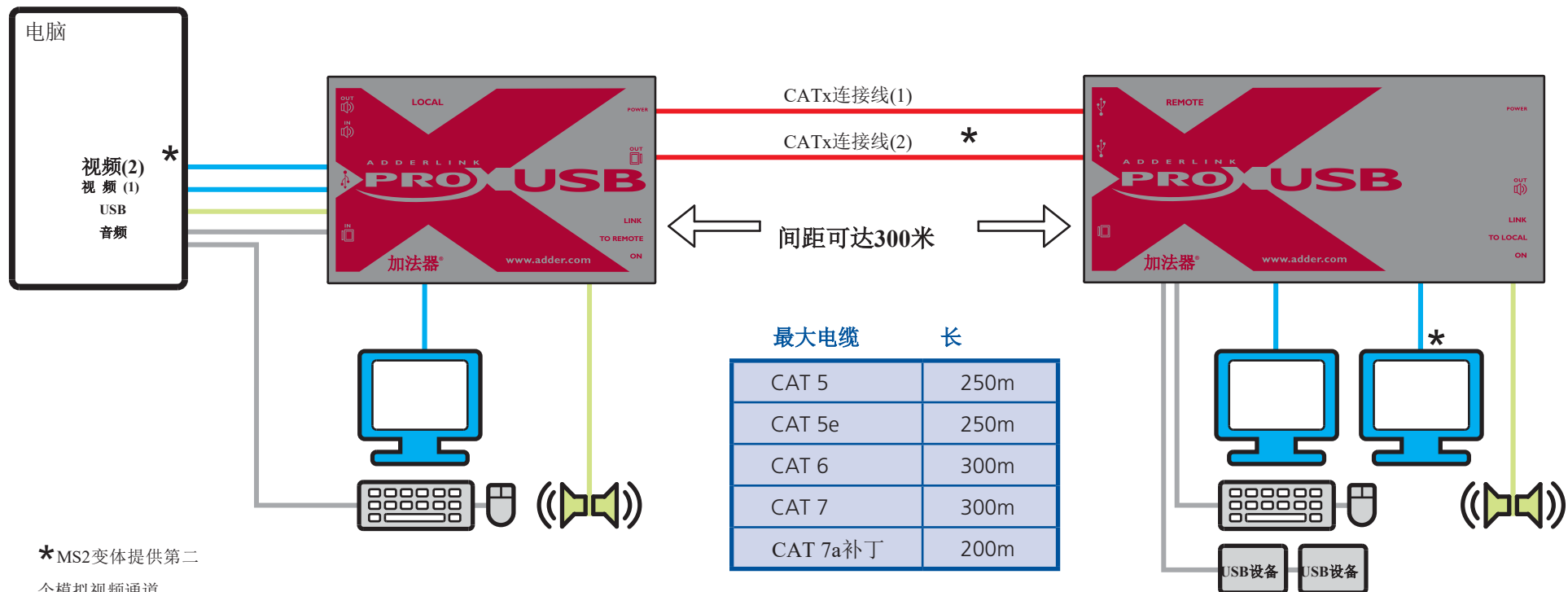
介

感谢您选择 AdderLink X-USBPRO 或 X-USBPRO-MS2 扩展器，它们为计算机和外围设备之间的距离提供了非常有效的解决方案。这些模块的紧凑外壳和易用性掩盖了其操作的巧妙之处。通过我们独有的传输技术，我们能够通过单根5类、5e、6类、7类或7a类双绞线电缆可靠传输比以往更多的信号。这意味着您的视频、音频、USB键盘、USB鼠标以及另外两个USB通道都可以在最远300米的距离内轻松且稳定地使用。

使用 Adder X-USBPRO 扩展器绝不会影响任何功能表现。我们高效的信号传输技术，可完美支持CD音质的音频和高达1920×1200的高清视频分辨率。通过遥控模块内置的直观视频补偿系统，轻松消除长线缆带来的延迟问题。三段均衡器能精准控制色彩信号的传输时机，确保画面始终锐利清晰。X-USBPRO-MS2 型号还配备CATx接口，提供双模拟视频传输通道。

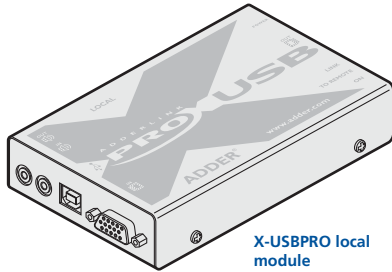
USB连接是无缝的，允许四个全速USB 2.0设备同时使用，并完全支持随时断开/重新连接，而不会引起错误。

Adder X-USBPRO 扩展器的设计理念是快速安装和完全透明的操作：“安装即忘”是其核心理念。无论您是在扩展工作场所还是创建一个经济高效的分布式视听系统，X-USBPRO 扩展器都能提供强大的功能和灵活性，为您打造理想的解决方案。

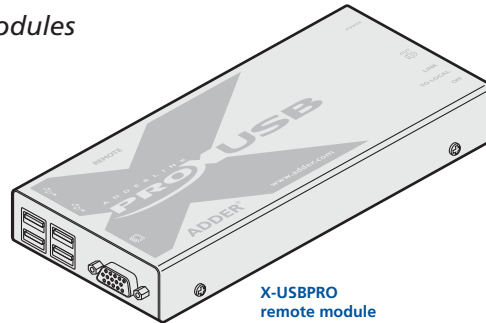


Supplied items

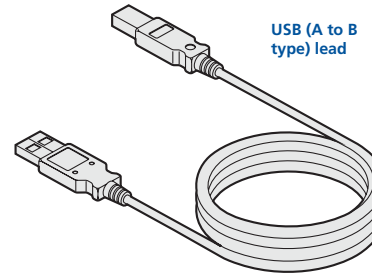
AdderLink X-USBPRO extender modules



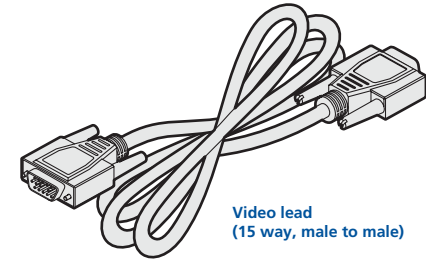
X-USBPRO local module



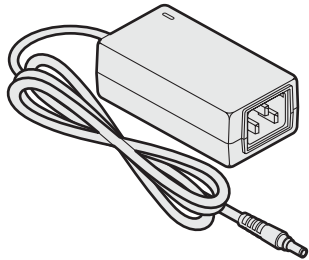
X-USBPRO remote module



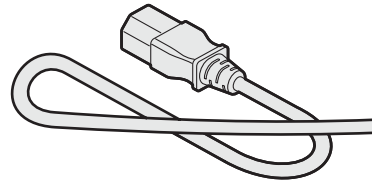
USB (A to B type) lead



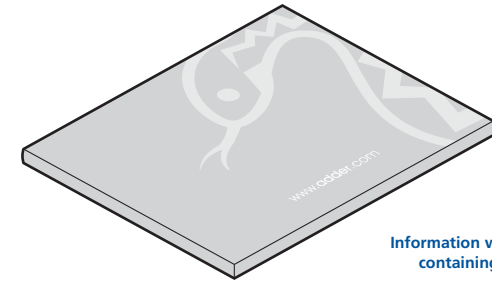
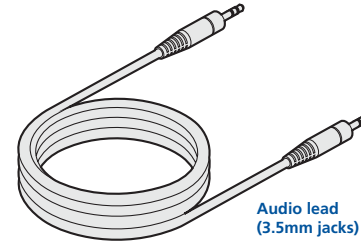
Video lead (15 way, male to male)



Power adapter and country-specific power lead (for remote module)



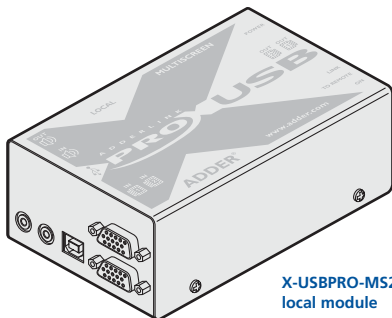
Audio lead (3.5mm jacks)



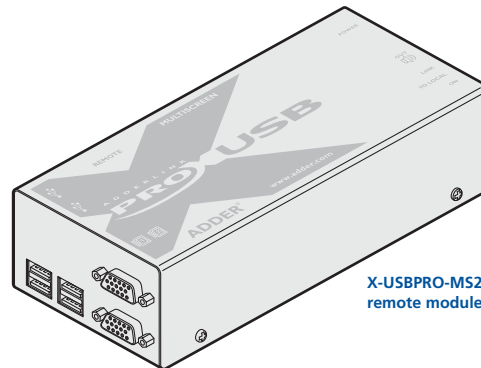
Information wallet containing:
Eight self-adhesive rubber feet
Safety document

AdderLink X-USBPRO-MS2 dual video extender modules

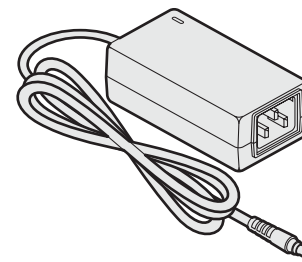
The MS2 variant package includes all of the above ancillary items plus:



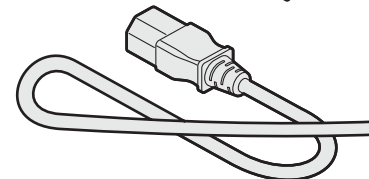
X-USBPRO-MS2 local module



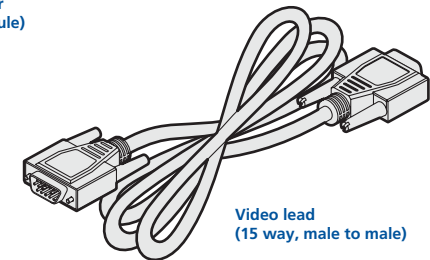
X-USBPRO-MS2 remote module



Power adapter and country-specific power lead (for MS2 local module)



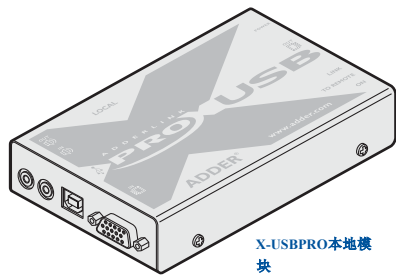
Video lead (15 way, male to male)



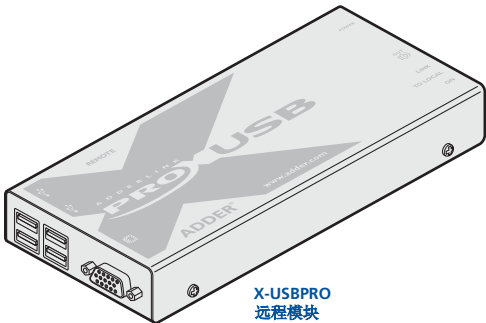
已提供的项目



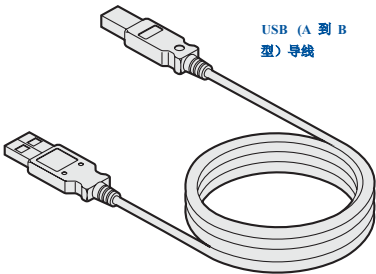
AdderLink X-USBPRO扩展器模块



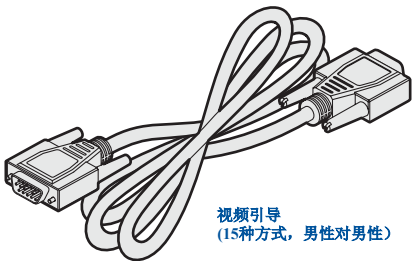
X-USBPRO本地模块



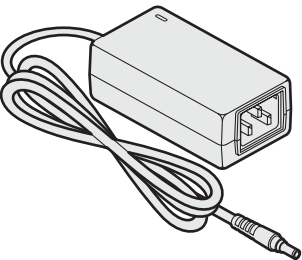
X-USBPRO远程模块



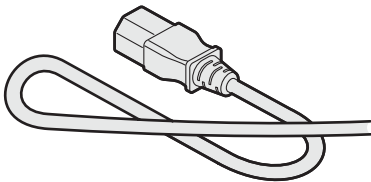
USB (A 到 B 型) 导线



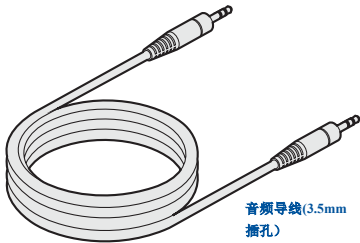
视频引导
(15种方式, 男性对男性)



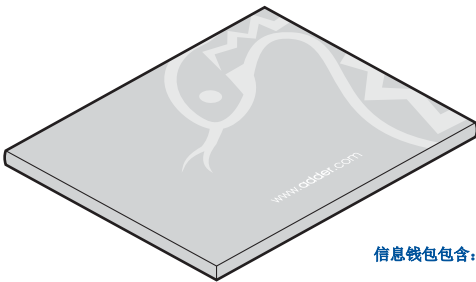
电源适配器和国家/地区专用电源线
(用于远程模块)



音频导线(3.5mm 插孔)

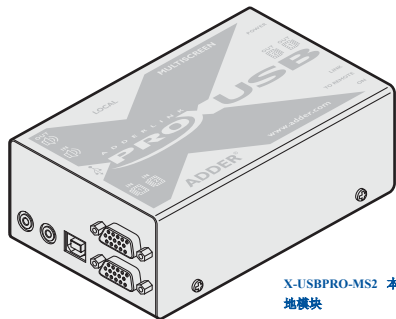


信息钱包包含:
8个自粘橡胶脚
安全文件

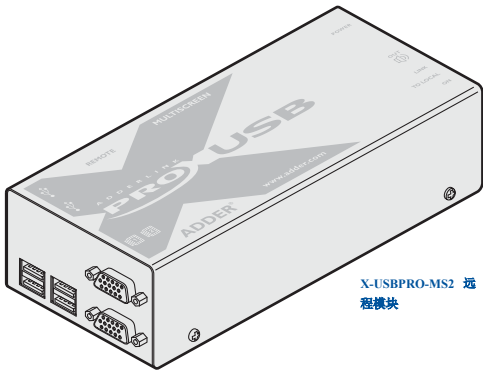


AdderLink X-USBPRO-MS2双视频扩展器模块

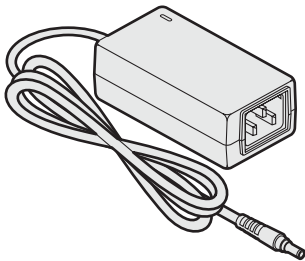
MS2变体包括上述所有辅助项目以及:



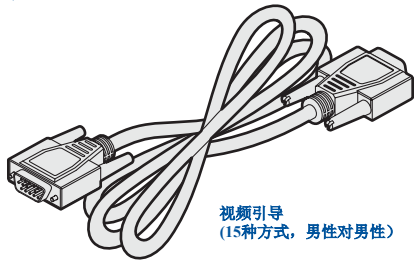
X-USBPRO-MS2本地模块



X-USBPRO-MS2远程模块



电源适配器和国家/地区专用电源线
(MS2本地模块)



视频引导
(15种方式, 男性对男性)

内容

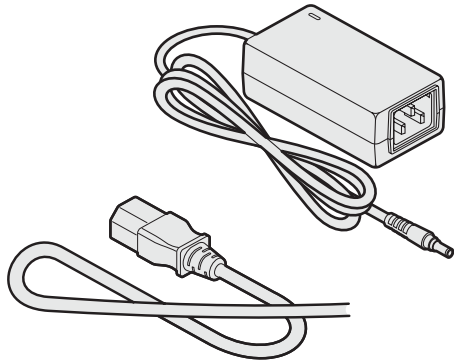
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Optional items



Power adapter for local module (if USB powering not possible)

Part number: PSU-IEC-5VDC-2.5A

Country-specific power cords

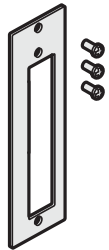
CAB-IEC-AUS (Australia)

CAB-IEC-EURO (Central Europe)

CAB-IEC-UK (United Kingdom)

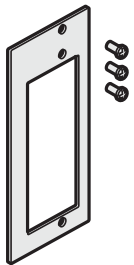
CAB-IEC-USA (United States)

CAB-IEC-JAPAN (Japan)



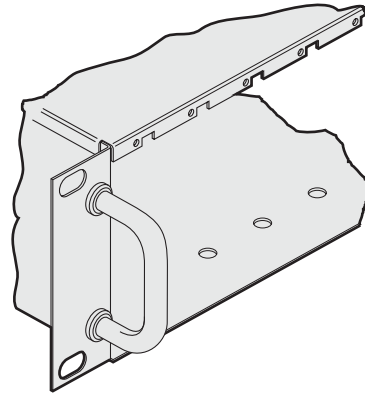
Rack mount plate for X-USBPRO module
(useable for the local or remote modules)

Part number: X-RMK-FASCIA



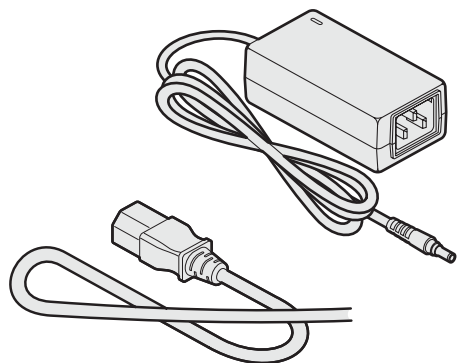
Rack mount plate for X-USBPRO-MS2 module
(useable for the local or remote modules)

Part number: X-RMK-FASCIA-DUAL



Rack mount chassis

Part number: X-RMK-CHASSIS



本地模块电源适配器（如果无法使用
USB供电）

部件号：PSU-IEC-5VDC-2.5A

特定国家的电源线

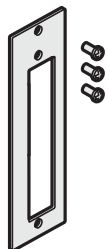
澳大利亚CAB-IEC认证 澳大利亚

CAB-IEC-EURO（中欧）

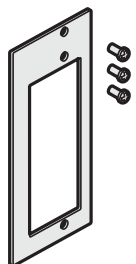
CAB-IEC-英国 英国

CAB-IEC-美国 合众国

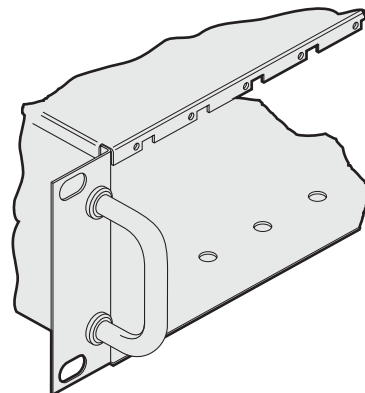
CAB-IEC-JAPAN（日本）



X-USBPRO模块的机架安装板（适用于本地
或远程模块）部件编号：X-RMK-FASCIA



X-USBPRO-MS2模块的机架安装板（可用于本地
或远程模块）部件号：X-RMK-FASCIA-DUAL



机架式底盘

部件号：X-RMK-CHASSIS

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Installation



Connections

Installation of the X-USBPRO modules is straightforward with minimal configuration requirements in most cases.

- [Connections at the local module](#)
- [Connections at the remote module](#)

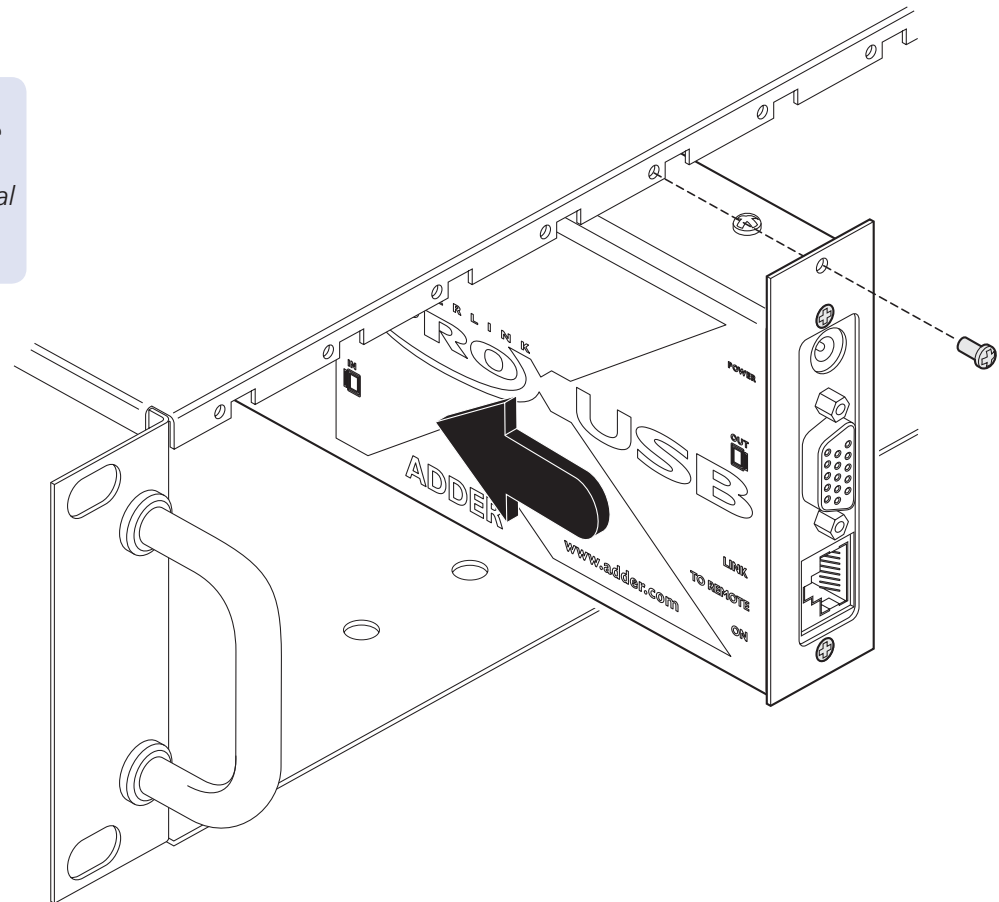
Important

The X-USBPRO can be used with other USB hubs in the system, but please note that due to power constraints, the local unit should not be connected to the downstream port of a bus-powered USB hub. Additionally, X-USBPRO-MS2 local units must always be powered using their supplied power adapter. Please see page 8 for details.

Mounting

The X-USBPRO modules offer two main mounting methods:

- Supplied four self-adhesive rubber feet
- Optional rack mount brackets - see below



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连接

在大多数情况下，安装X-USBPRO模块非常简单，配置要求也很低。

- [本地模块上的连接](#)
- [远程模块上的连接](#)

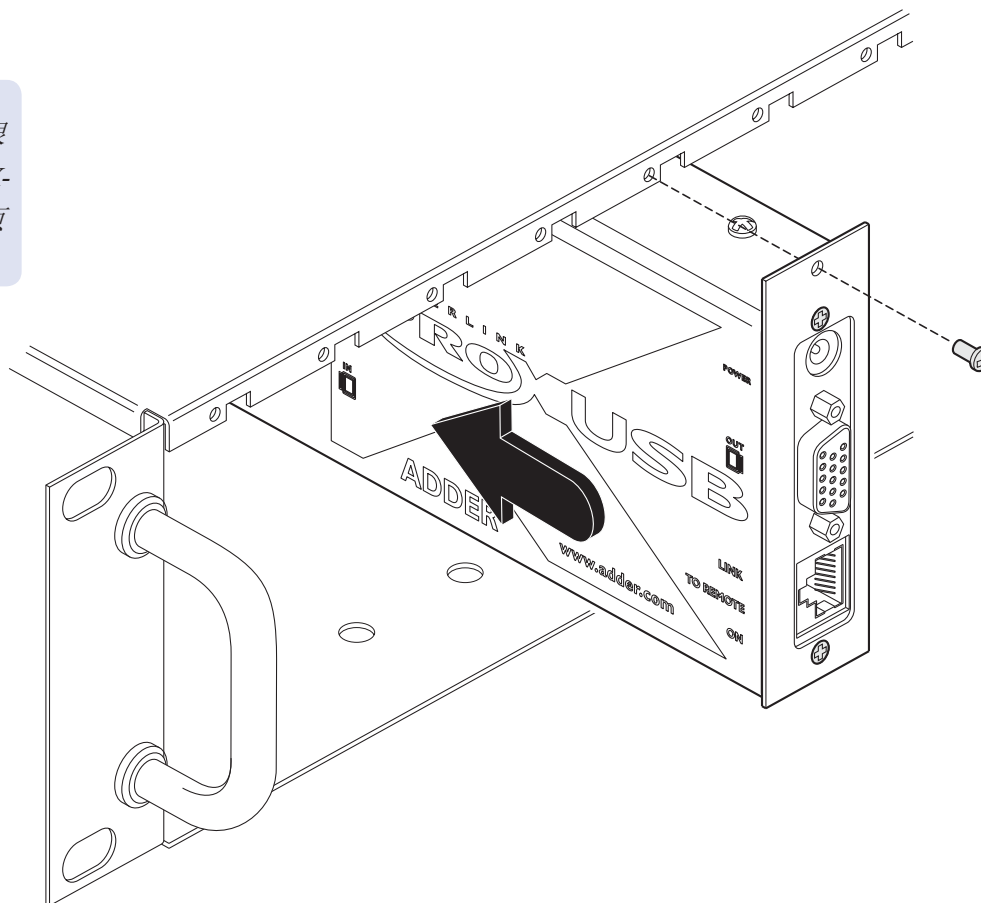
重要事项

X-USBPRO 可与系统中的其他USB集线器一起使用，但请注意，由于电源限制，本地单元不应连接到总线供电的USB集线器的下游端口。此外，X-USBPRO-MS2本地单元必须始终使用其提供的电源适配器供电。请参阅第8页的详细信息。

正在安装

X-USBPRO模块提供两种主要安装方法：

- 提供四个自粘橡胶脚
- 可选的机架支架-请参见下文



内容

欢迎

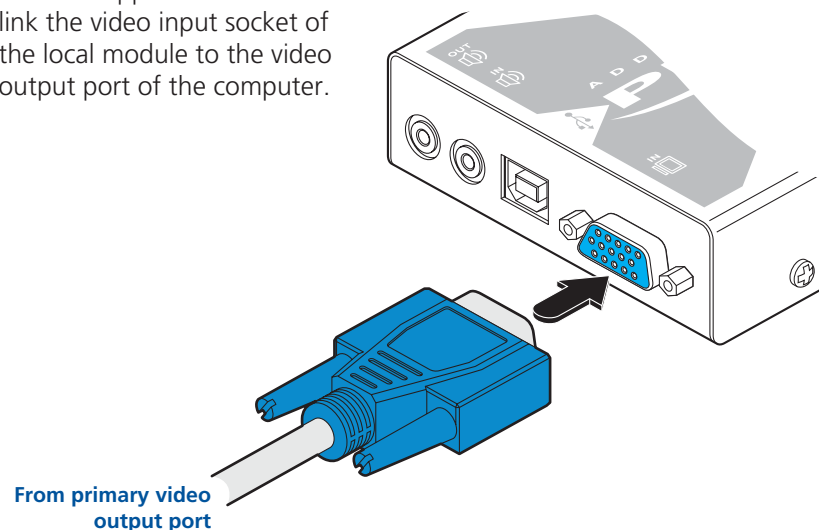
安装

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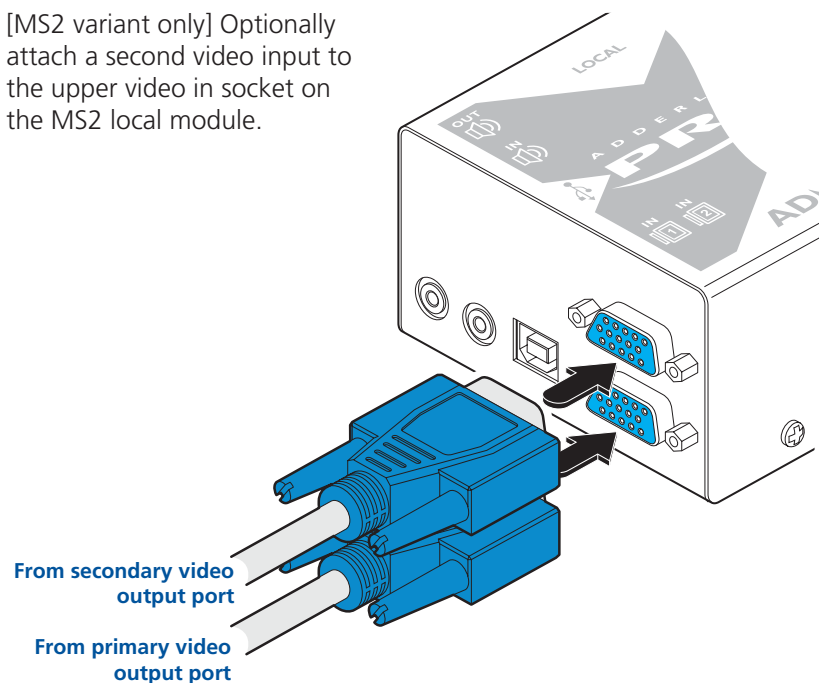
其他信息

Connections at the local module

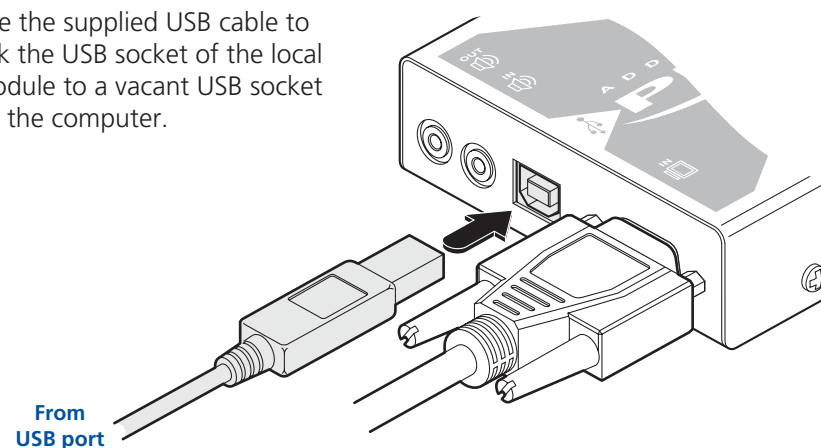
- 1 Where possible ensure that power is disconnected from the computer system to be connected.
- 2 Use the supplied video lead to link the video input socket of the local module to the video output port of the computer.



[MS2 variant only] Optionally attach a second video input to the upper video in socket on the MS2 local module.



- 3 Use the supplied USB cable to link the USB socket of the local module to a vacant USB socket on the computer.

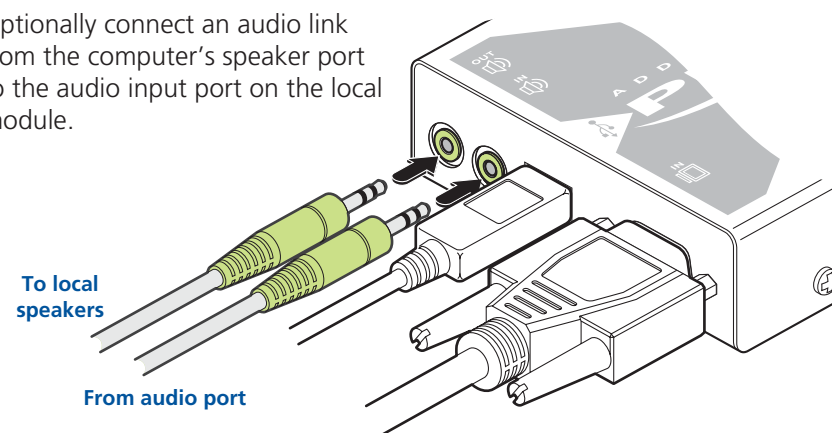


Note: Do not use USB cables longer than 3 metres to connect the local module to the computer.

Important

The X-USBPRO can be used with other USB hubs in the system, but please note that due to power constraints, the local unit should not be connected to the downstream port of a bus-powered USB hub. Additionally, X-USBPRO-MS2 local units must always be powered using their supplied power adapter. Please see page 8 for details.

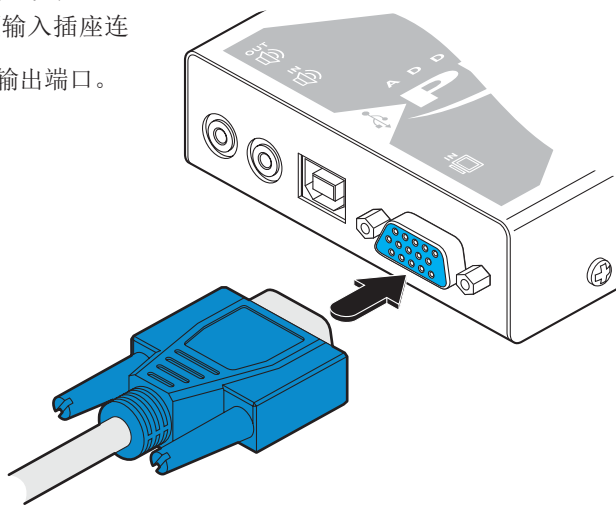
- 4 Optionally connect an audio link from the computer's speaker port to the audio input port on the local module.



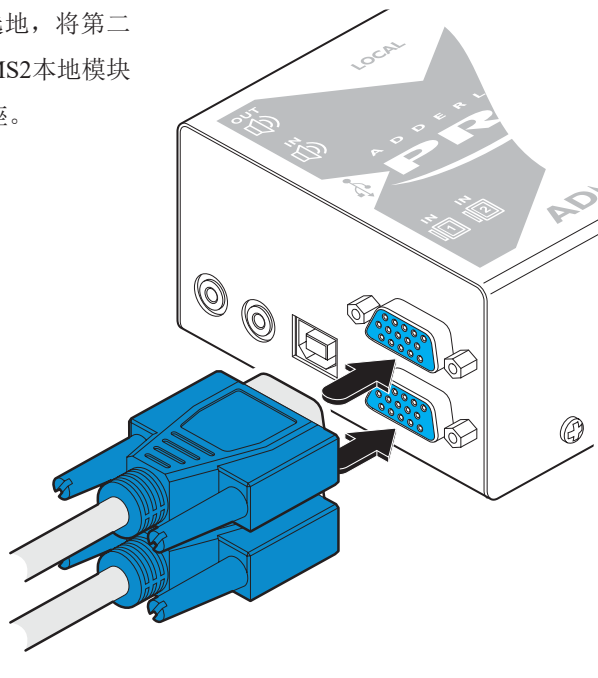
- 5 Optionally connect local speakers to the audio output port on the local module.

本地模块上的连接

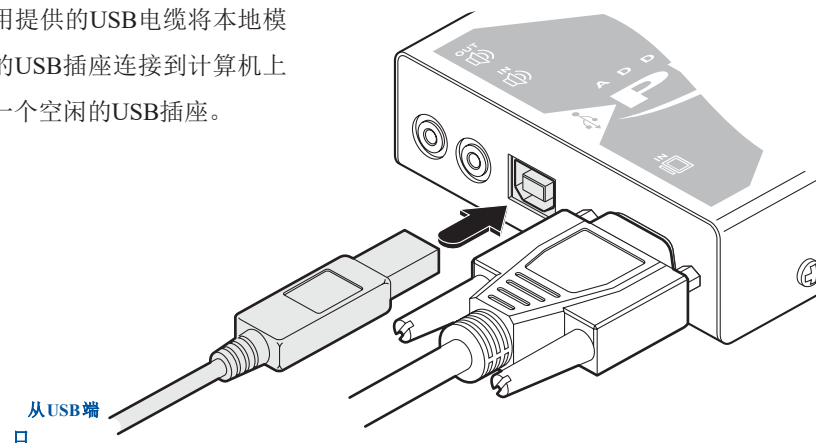
- 1 在可能的情况下，确保切断待连接计算机系统的电源。
- 2 使用提供的视频导线到
将本地模块的视频输入插座连
接到计算机的视频输出端口。



[仅限MS2变体]可选地，将第二个视频输入连接到MS2本地模块上端的视频输入插座。



- 3 使用提供的USB电缆将本地模块的USB插座连接到计算机上的一个空闲的USB插座。

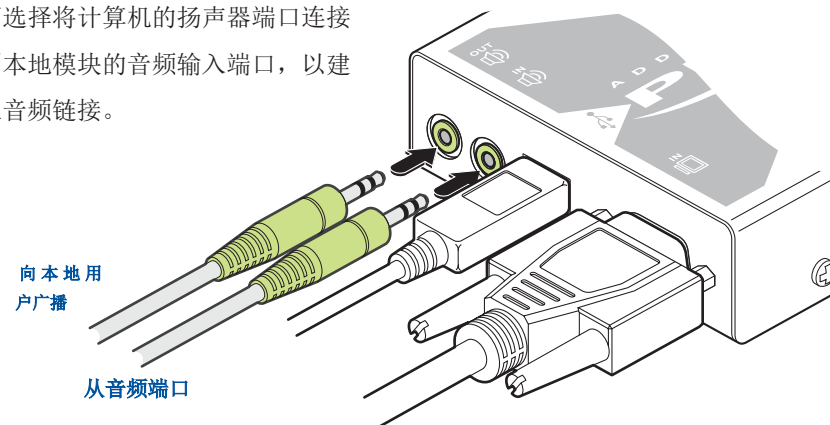


注意：请勿使用超过3米的USB线缆将本地模块连接至计算机。

重要事项

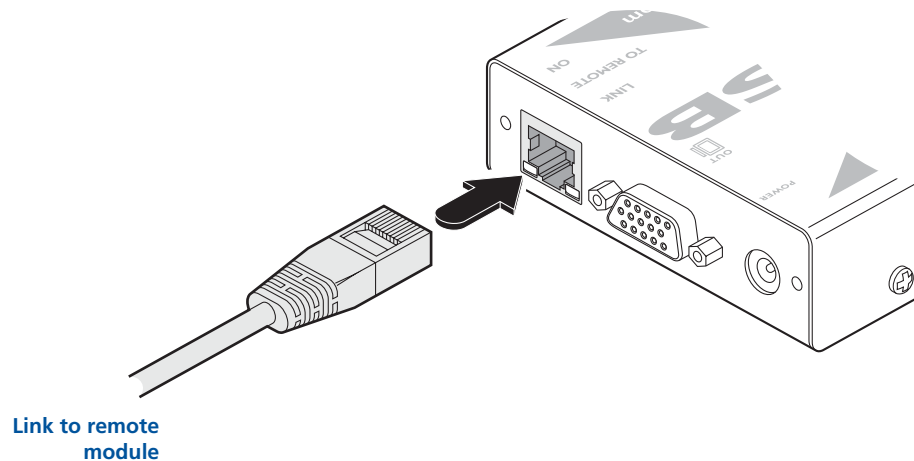
X-USBPRO 可与系统中的其他USB集线器一起使用，但请注意，由于电源限制，本地单元不应连接到总线供电USB集线器的下游端口。此外，X-USBPRO-MS2本地单元必须始终使用其提供的电源适配器供电。有关详细信息，请参见第8页。

- 4 可选择将计算机的扬声器端口连接到本地模块的音频输入端口，以建立音频链接。

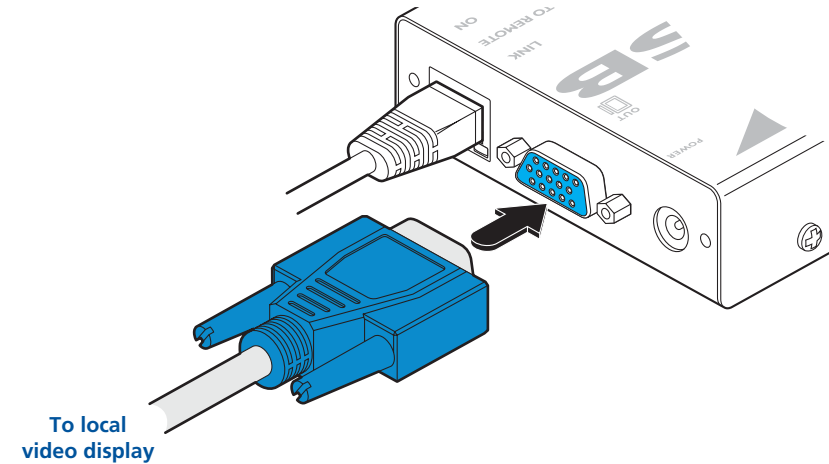


- 5 可选择将本地扬声器连接到本地模块的音频输出端口。

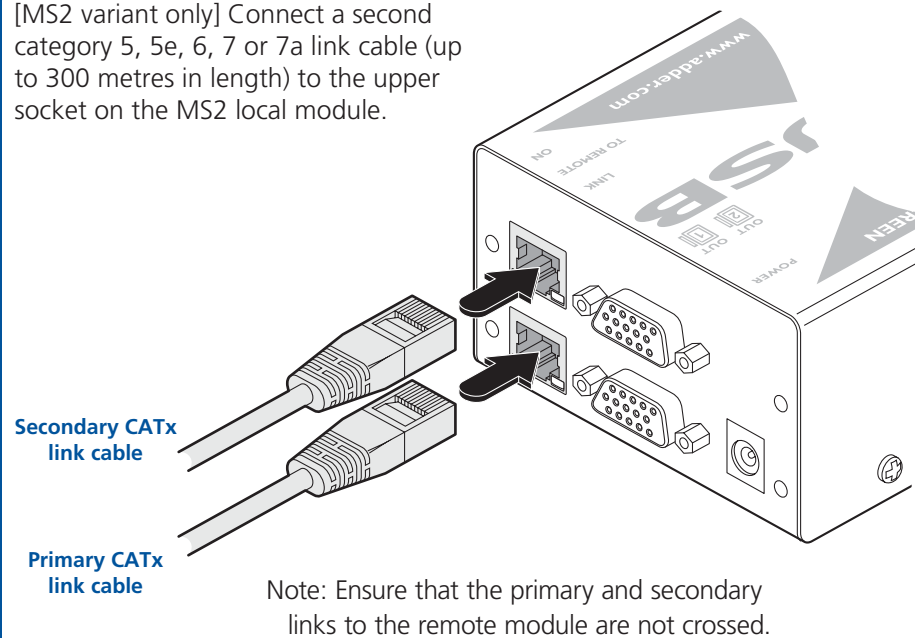
- 5 Connect a category 5, 5e, 6, 7 or 7a link cable (up to 300 metres in length) to the 'TO REMOTE' socket on the local module.



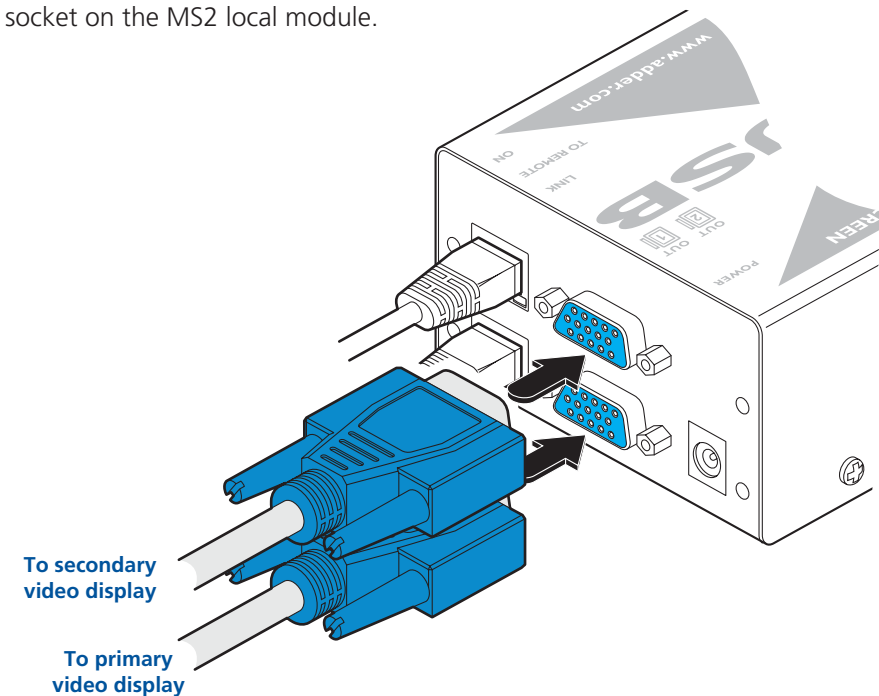
- 6 Optionally connect a local video display to the video out feed-through connector on the local module.



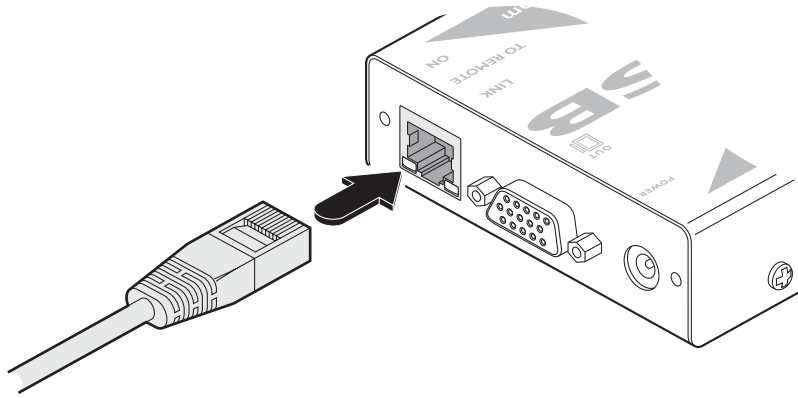
[MS2 variant only] Connect a second category 5, 5e, 6, 7 or 7a link cable (up to 300 metres in length) to the upper socket on the MS2 local module.



[MS2 variant only] Optionally connect a second local video display to the upper socket on the MS2 local module.

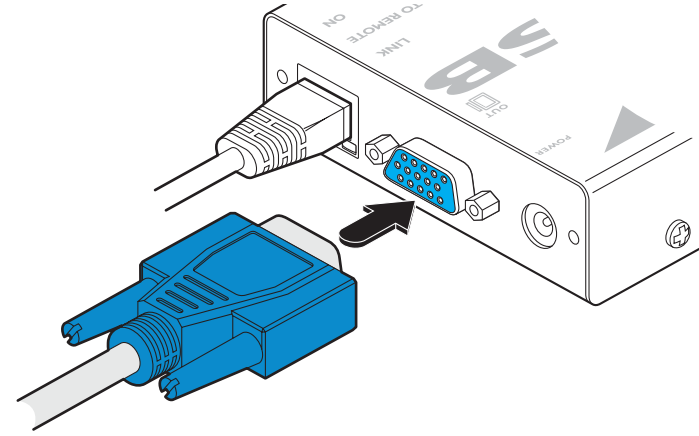


5 将5类、5e、6、7或7a型连接电缆（最长300米）连接到本地模块上的“TO REMOTE”插座。



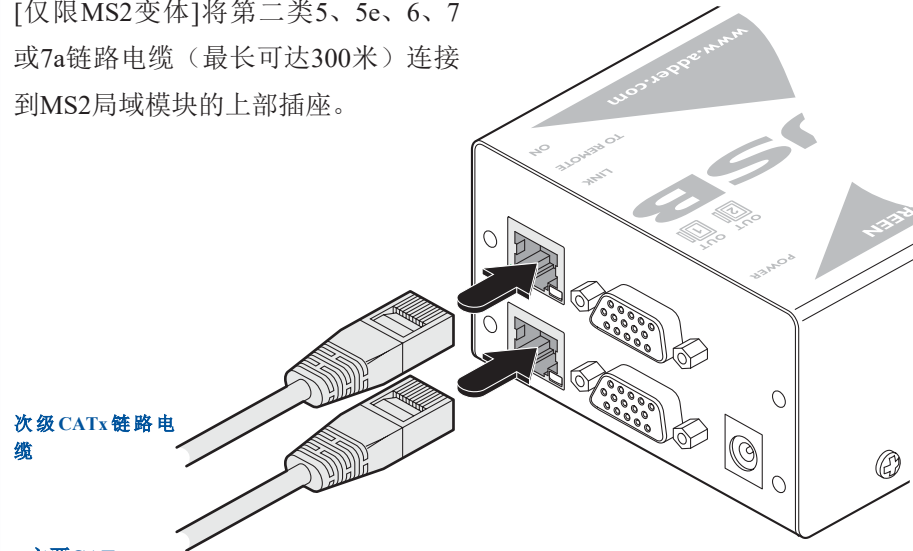
远程模块链接

6 可选择将本地视频显示器连接到本地模块上的视频输出直通连接器。



本地
视频显示器

[仅限MS2变体]将第二类5、5e、6、7或7a链路电缆（最长可达300米）连接到MS2局域模块的上部插座。

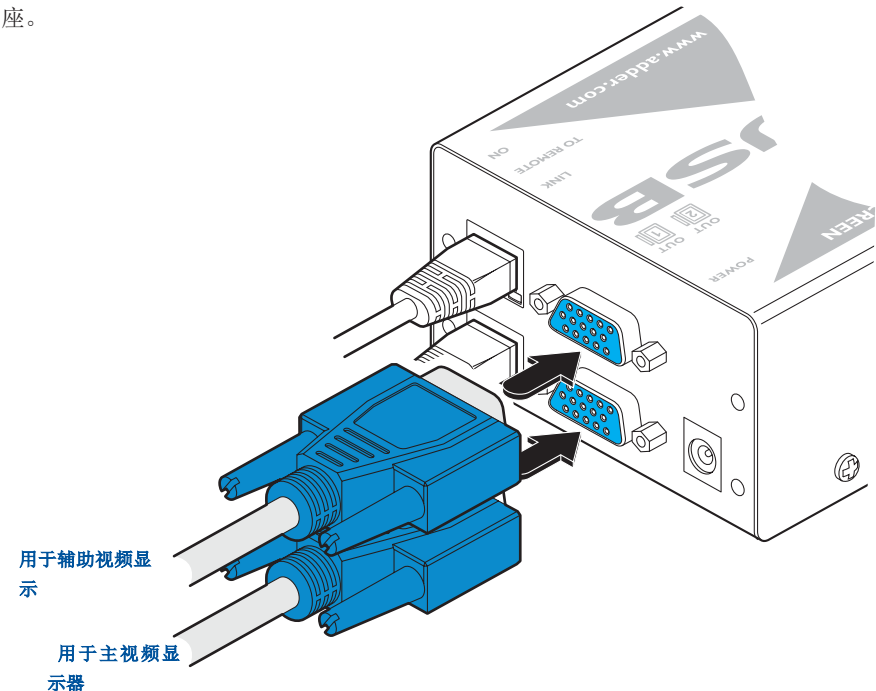


次级CATx链路电
缆

主要CATx
链接电缆

注意：确保连接到远程模块的主链路和次链路没有交叉。

[仅限MS2变体]可选地，将第二个本地视频显示器连接到MS2本地模块上的上部插座。



用于辅助视频显
示

用于主视频显
示器

Local module power connection

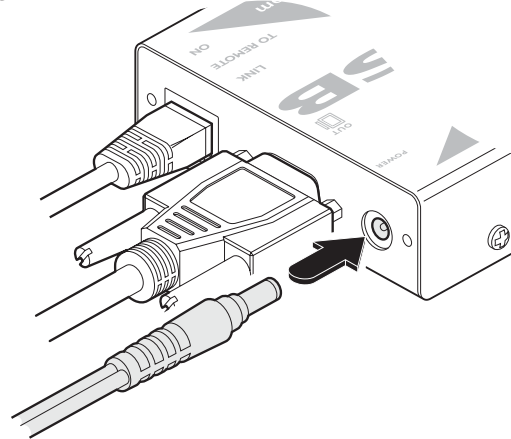
The standard X-USBPRO and the X-USBPRO-MS local modules differ in the way that they are powered:

- The X-USBPRO local module is designed to derive its power from the host computer via the USB connection. If this is not possible, then use an optional Adder power adapter (part number: PSU-IEC-5VDC-2.5A), available from your Adder stockist
- The X-USBPRO-MS2 local module always requires the use of a power adapter and hence two power adapters are supplied with all X-DVIPRO-MS2 units.

For all X-USBPRO-MS2 and optionally for X-USBPRO units:

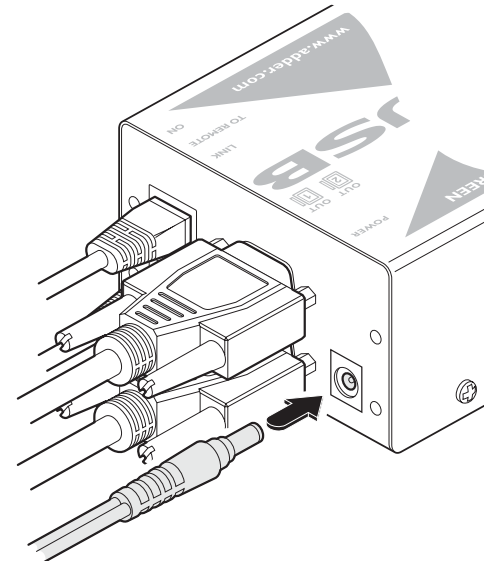
- 1 Connect the output lead of the optional power adapter to the socket labelled 'POWER' on the local module.

X-USBPRO: Use an optional power adapter only if power from the host (via USB) is not possible.

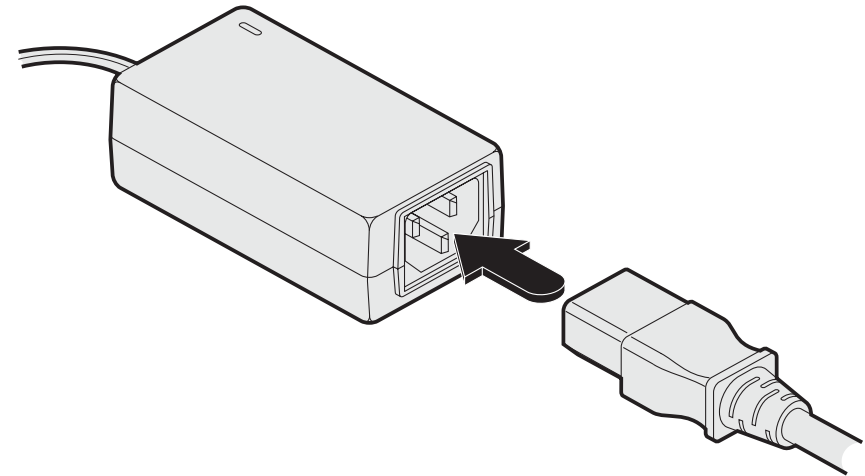


Note: After all connections are made, power up the monitor and the REMOTE module first (followed by the LOCAL module, if using the X-USBPRO-MS2 variant) and then switch on the computer.

X-USBPRO-MS2: Use the supplied power adapter for all installations.



- 2 Insert the IEC connector of the separate power lead into the corresponding socket of the power adapter.



- 3 When all other connections have been made at the transmitter and receiver modules, connect the other end of the power cable to a nearby earthed power outlet.

本地模块电源连接

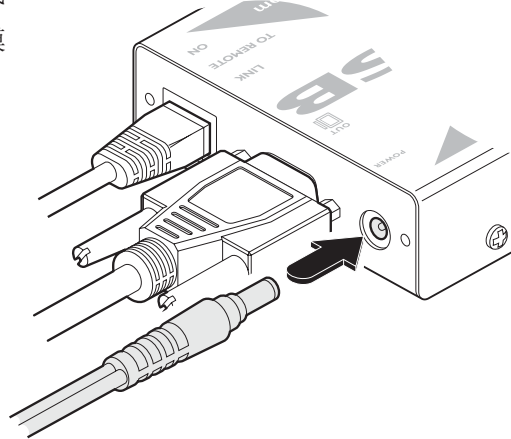
标准X-USBPRO和X-USBPRO-MS本地模块的供电方式不同：

- X-USBPRO本地模块的设计原理是通过USB连接从主机获取电源。如果无法实现该功能，可使用可选的Adder电源适配器（零件号：PSU-IEC-5 VDC-2.5A），该产品可从Adder经销商处获得。
- X-USBPRO-MS2本地模块始终需要使用电源适配器，因此所有X-DVIPRO-MS2设备均配备两个电源适配器。

对于所有X-USBPRO-MS2和可选的X-USBPRO设备：

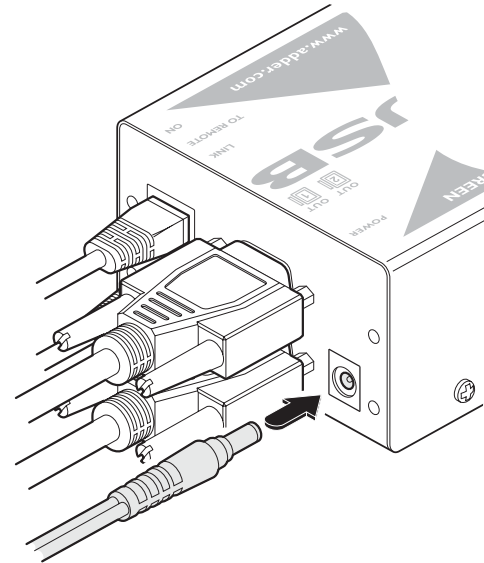
- 1 将可选电源适配器的输出导线连接至标有“POWER”的本地模块插座。

X-USBPRO： 仅在无法通过USB从主机获取电源时使用可选电源适配器。

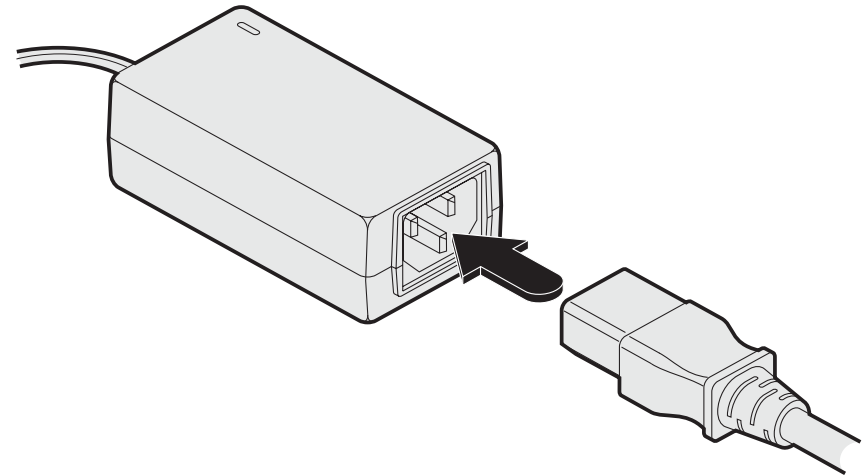


注：完成所有连接后，首先为显示器和远程模块通电（如果使用X-USBPRO-MS2变体，则随后为本地模块通电），然后打开计算机。

X-USBPRO-MS2： 所有安装均使用提供的电源适配器。



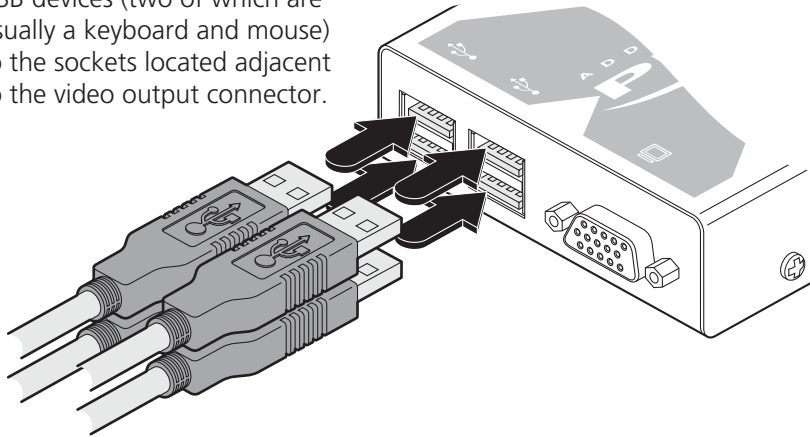
- 2 将独立电源导线的IEC连接器插入电源适配器的对应插座。



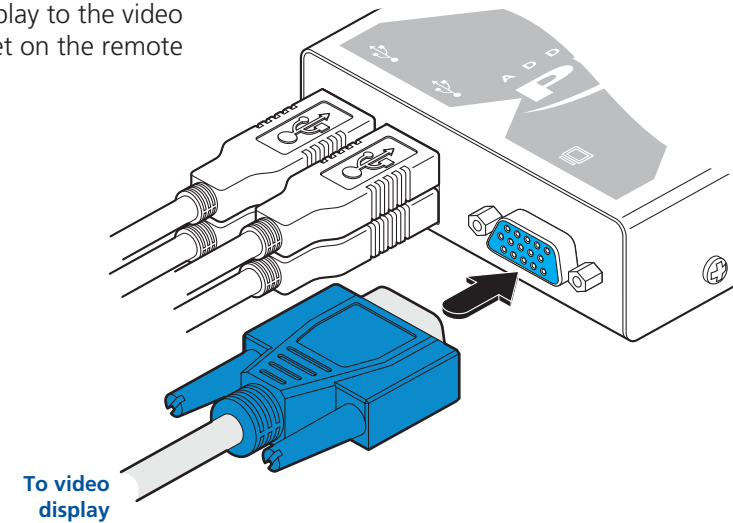
- 3 在发送器和接收器模块上完成所有其他连接后，将电源线的另一端连接到附近的接地电源插座。

Connections at the remote module

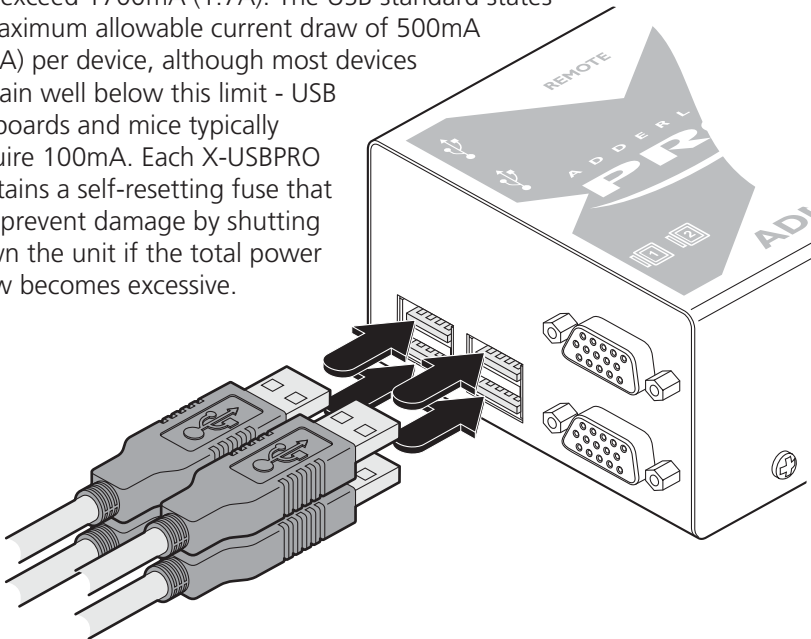
- 1 Place the remote module adjacent to the user location.
- 2 Attach the leads of up to four USB devices (two of which are usually a keyboard and mouse) to the sockets located adjacent to the video output connector.



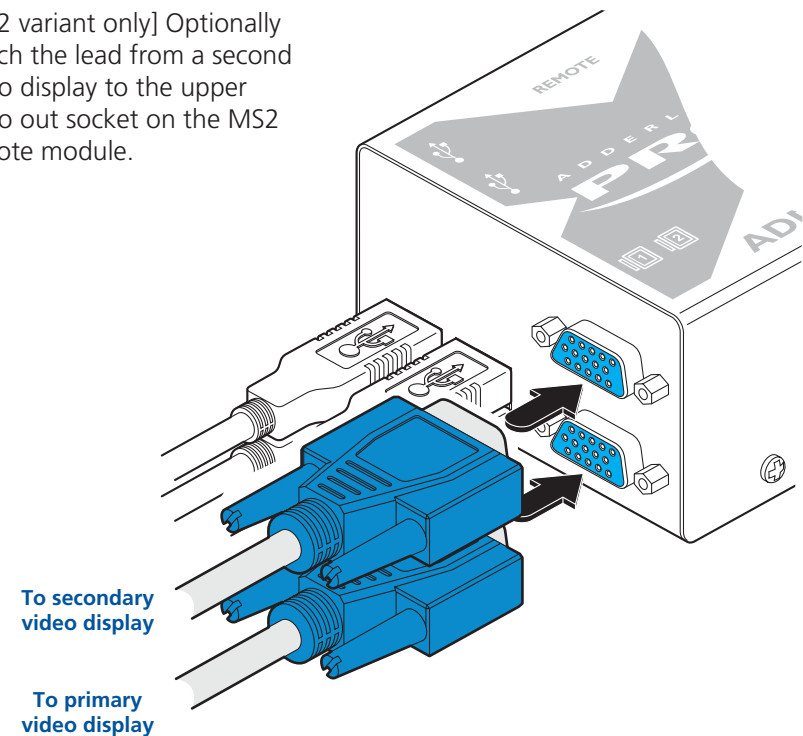
- 3 Attach the lead from the video display to the video out socket on the remote module.



[MS2 variant only] When connecting four USB devices to the unit, ensure that their total power requirements do not exceed 1700mA (1.7A). The USB standard states a maximum allowable current draw of 500mA (0.5A) per device, although most devices remain well below this limit - USB keyboards and mice typically require 100mA. Each X-USBPRO contains a self-resetting fuse that will prevent damage by shutting down the unit if the total power draw becomes excessive.

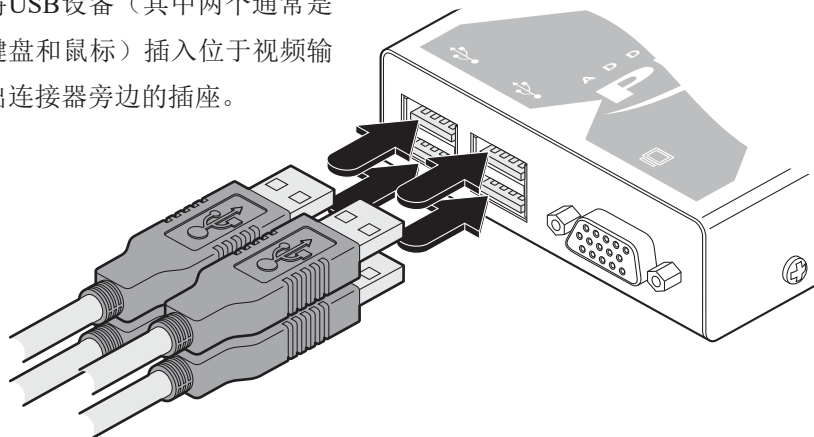


[MS2 variant only] Optionally attach the lead from a second video display to the upper video out socket on the MS2 remote module.

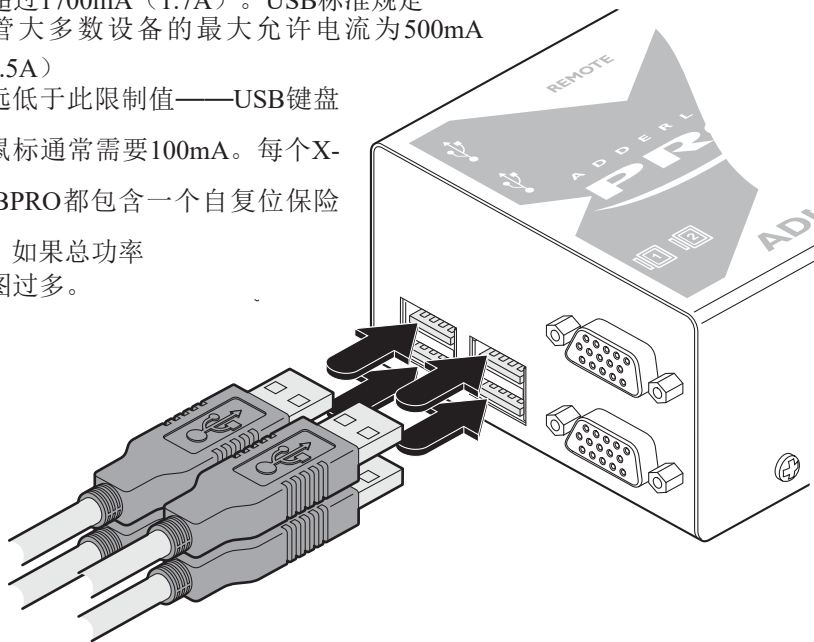


远程模块上的连接

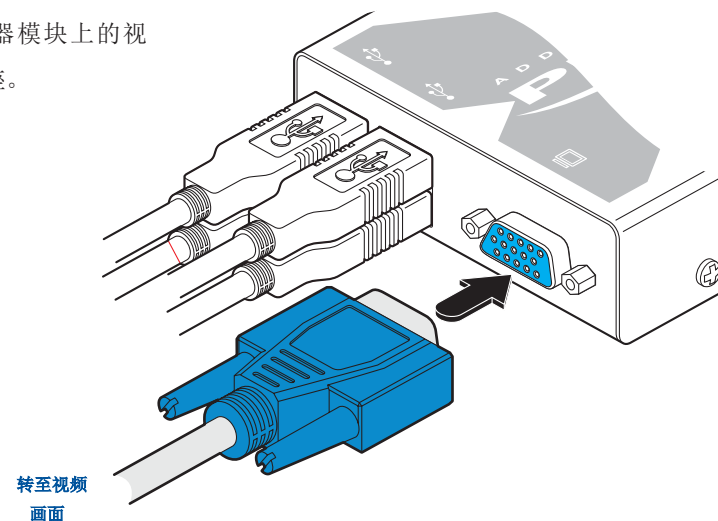
- 1 将远程模块放置在用户位置附近。
- 2 最多可连接四根导线
将USB设备（其中两个通常是
键盘和鼠标）插入位于视频输
出连接器旁边的插座。



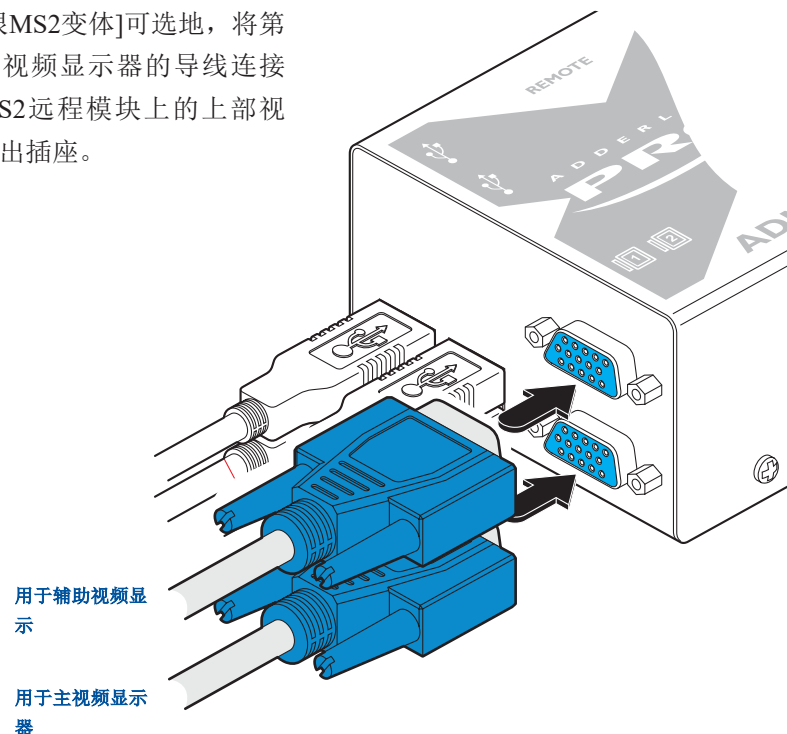
[仅限MS2变体]将四个USB设备连接到装置时，确保它们的总功率需求符合要求。
不超过1700mA（1.7A）。USB标准规定
尽管大多数设备的最大允许电流为500mA
（0.5A）
仍远低于此限制值——USB键盘
和鼠标通常需要100mA。每个X-
USBPRO都包含一个自复位保险
丝，如果总功率
绘图过多。



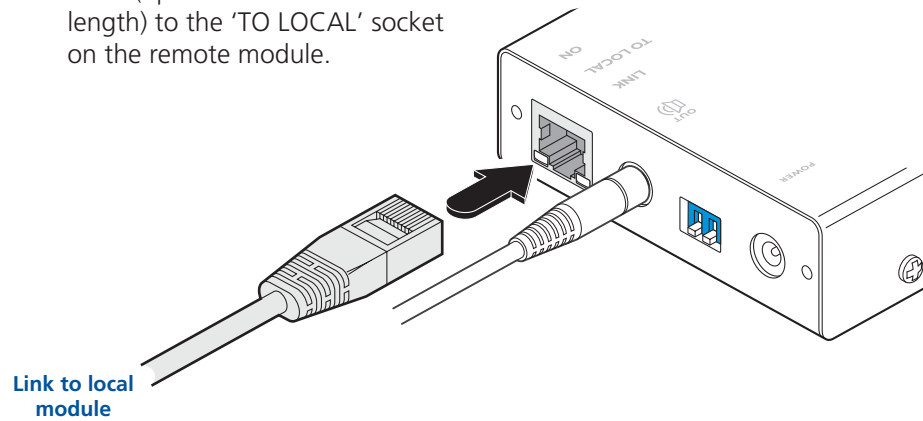
- 3 将视频显示器的导线连
接至遥控器模块上的视
频输出插座。



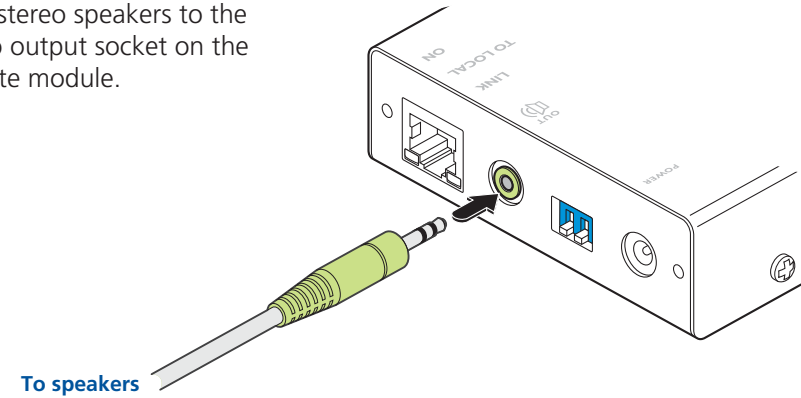
[仅限MS2变体]可选地，将第
二个视频显示器的导线连接
到MS2远程模块上的上部视
频输出插座。



- 4 Attach the connector of the category 5, 5e, 6, 7 or 7a link cable (up to 300 metres in length) to the 'TO LOCAL' socket on the remote module.

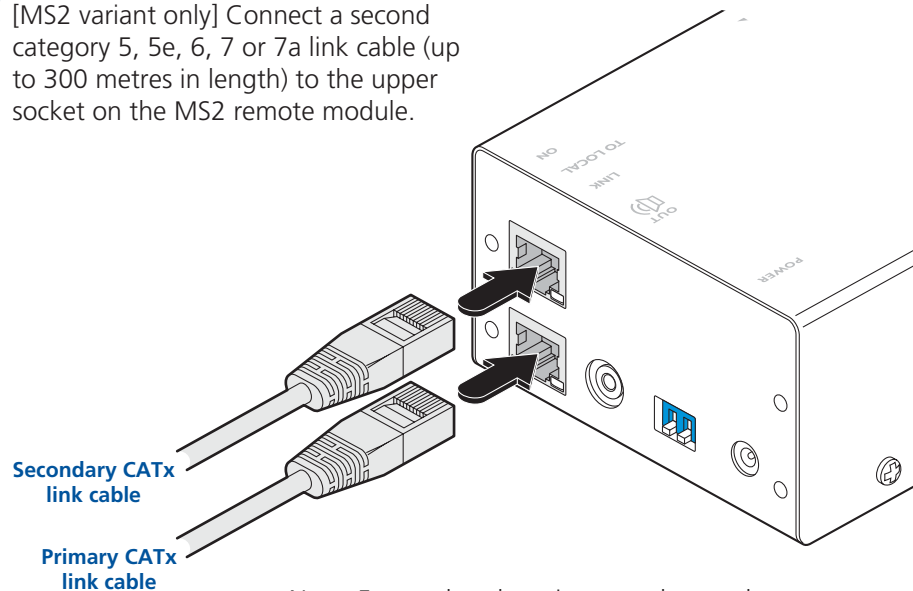


- 5 Optionally attach the lead from your stereo speakers to the audio output socket on the remote module.



continued

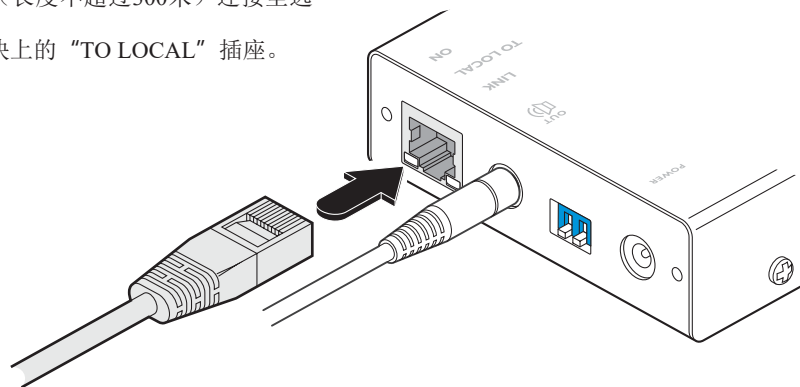
[MS2 variant only] Connect a second category 5, 5e, 6, 7 or 7a link cable (up to 300 metres in length) to the upper socket on the MS2 remote module.



Note: Ensure that the primary and secondary links from the local module are not crossed.

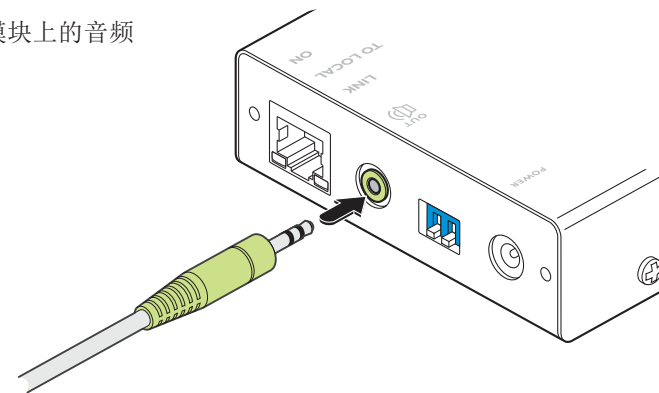
- 4 连接5类、5e类、6类、7类或7a类链路的连接器
电缆（长度不超过300米）连接至远程模块上的“TO LOCAL”插座。

本地链接
模块



- 5 可选择将来自立体声扬声器的导线连接到遥控模块上的音频输出插座。

致发言人

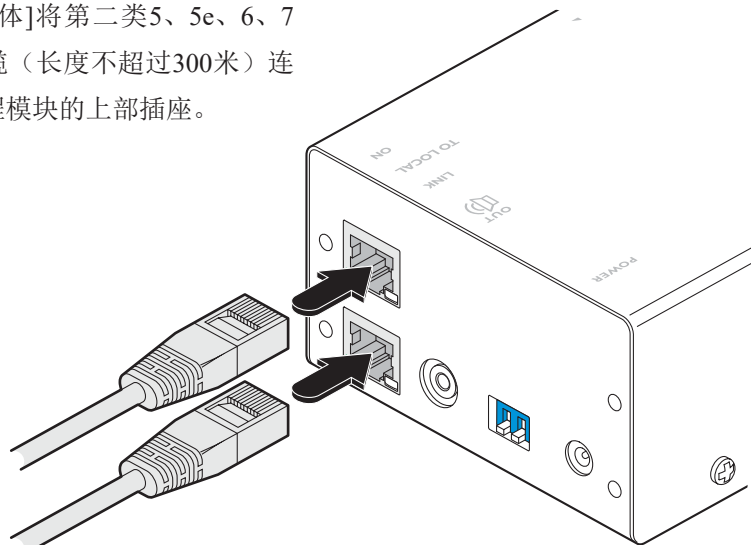


继续的

[仅限MS2变体]将第二类5、5e、6、7或7a链路电缆（长度不超过300米）连接到MS2远程模块的上部插座。

次级CATx
链接电缆

主要CATx
链接电缆



注意：确保本地模块的主链接和次链接没有交叉。



内容

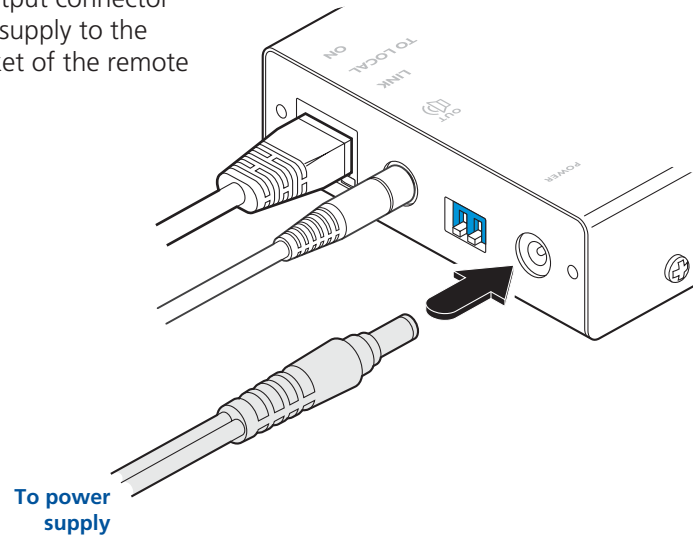
欢迎

安装

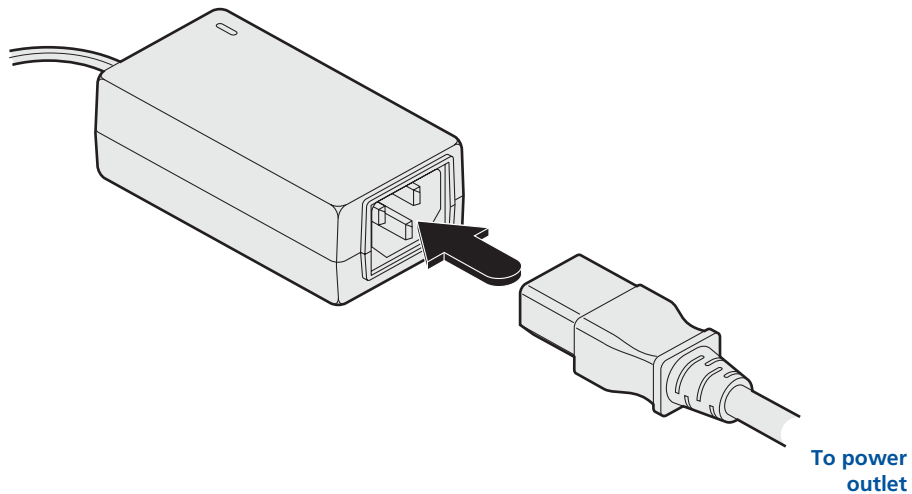
活动

其他信息

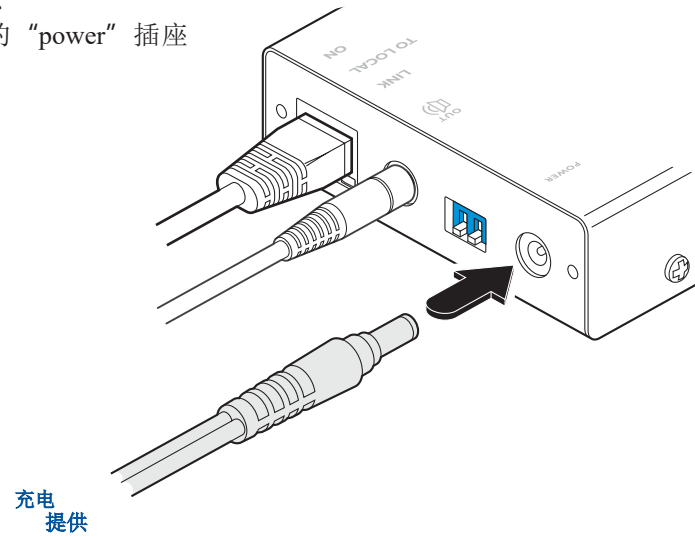
- 6 Attach the output connector of the power supply to the 'POWER' socket of the remote module.



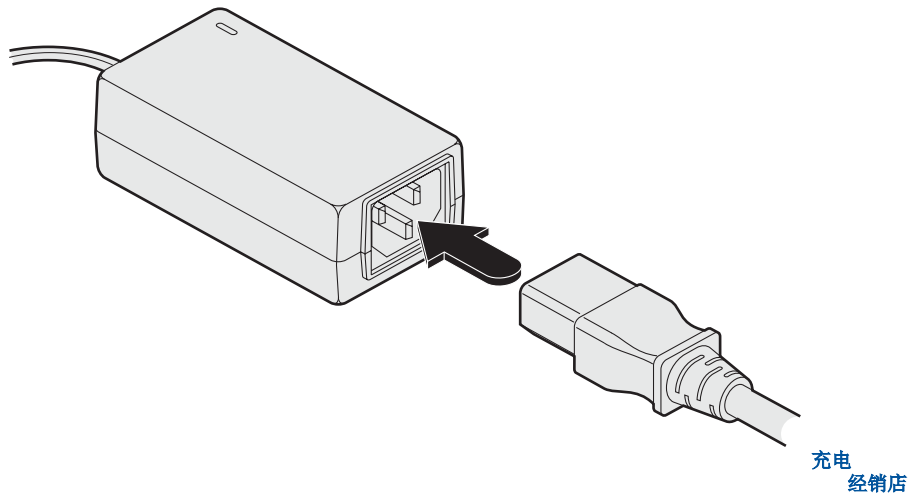
- 7 Attach the IEC power lead to the power supply body and insert the mains plug of the lead to a nearby earthed power outlet.



- 6 连接输出接头
为远程模块的“power”插座
供电。

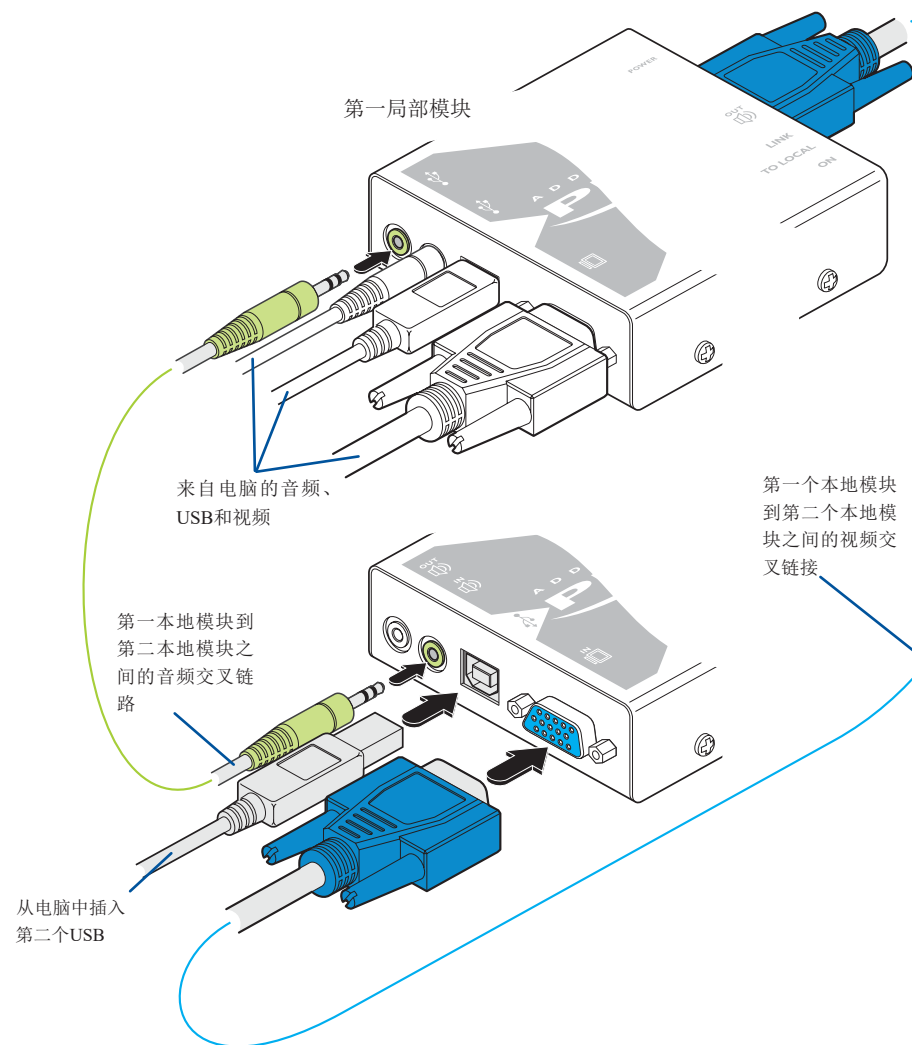
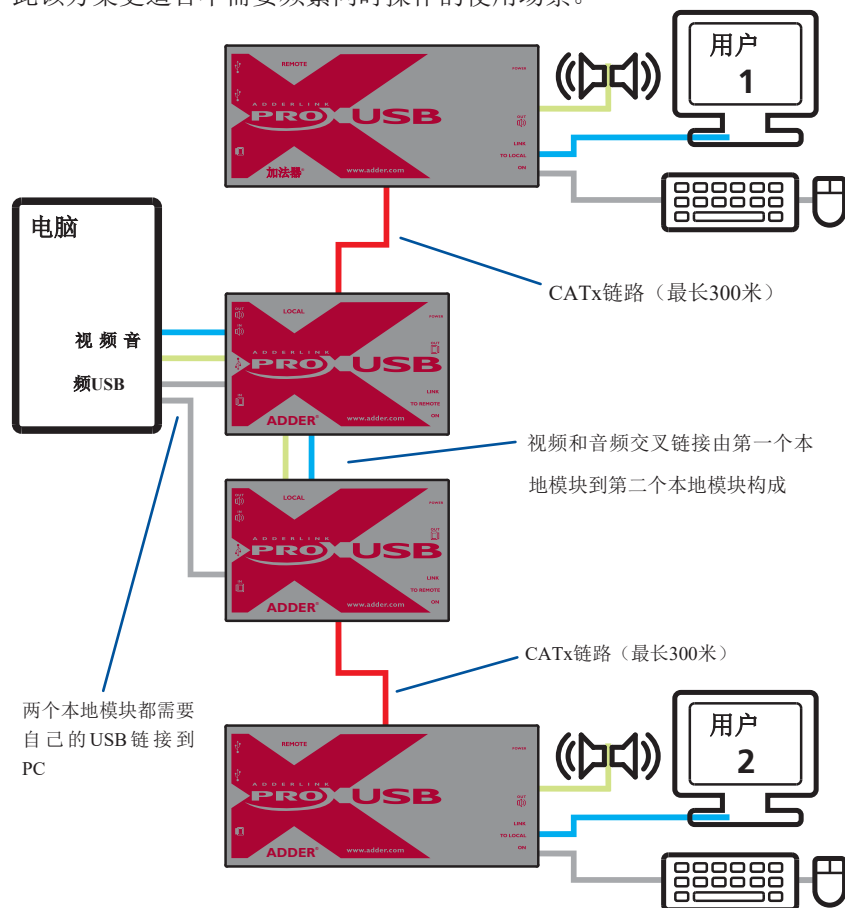


- 7 将IEC电源线连接到电源设备上，然后将电源线的插头插入附近的接地
电源插座。



双用户配置

您可将两套Adder X-USBPRO（或X-USBPRO-MS2）扩展器组合使用，构建双用户配置方案。这种设置能让单台计算机实现双点控制：每个控制点都能获得相同的音视频输出，并享有平等且同步的设备操控权限。系统通过计算机的USB接口实现两控仲裁，因此该方案更适合不需要频繁同时操作的使用场景。



大多数连接方式与标准配置类似。主要区别在于第二个本地模块的接口连接方式：使用音频线将第一个本地模块的音频输出口连接到第二个本地模块的音频输入口；同样地，使用视频线将视频输出端口与视频输入端口相连。第二个本地模块还需通过USB线直接连接到计算机。其余所有步骤均需遵循标准操作指南，完成CATx线缆连接及远程模块的所有接口配置。

Video display (DDC) information

The Display Data Channel (or DDC) is an industry standard scheme that allows video displays to declare their capabilities to the computer's video adapter circuitry, allowing the latter to optimise their outputs accordingly. Since the widespread adoption of the scheme, video adapters have become increasingly dependent on receiving relevant DDC information during startup, before they will output anything more than a rudimentary video signal.

It is not possible to transmit DDC data back from the video display that is attached to the remote module to the computer's video adapter. Therefore, during startup of the local module, it will search for a video display connected to its local feed-through connector:

- If a local video display is found, its DDC information will be compared to the information already stored and, if different, will be copied, stored and presented to the video adapter upon request.
- If no local video display is found, the local module will make available its previously stored set of DDC parameters to the video adapter upon request; or, if none were stored, a default set.

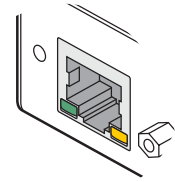
In either case, the DDC information taken by the video adapter will be used to determine the video output that is sent via the X-USBPRO modules to the remote video display.

If you find that the default DDC information is not completely suitable for your remote display, try temporarily connecting your remote display to the video out port of the local module. When the local module is powered up, it will read and store the DDC information from your display. You can then return the display to its remote position and the new DDC information will be used at every power on.

Note: For MS2 variants, the dual video channels are handled separately. Therefore, if you wish to capture both sets of DDC information, you will need to temporarily connect both of your remote video displays to the video output ports of the local module.

DDC indications

When power is first applied to the local module (either from the computer's USB port or an optional power adapter) it will search for valid DDC data on its video out connector. During this process, the green indicator (built into the link connector) will flash to indicate its progress:



- If no valid DDC information is located, the green indicator will give one very short flash, representing an attempt to read data. No changes will be made to the information already stored within the local module.
- If the DDC information is the same as that already stored, no change will be made and the green indicator will give one single flash as the information is checked and normal operation resumes.
- If different DDC information is located, the green indicator will flash rapidly for 2 to 3 seconds while the new information is stored. A single flash will then be given as the information is checked and normal operation resumes.

The local module's green indicator also provides fault indications to assist with troubleshooting:

- Two flashes - Checksum error prior to copying - no information will be programmed.
- Three flashes - Too much data to fit into the module - the module can hold a maximum of two pages of DDC information.
- Rapid flashing followed by four flashes - data was lost during copying - the default data was substituted. Repeat the power on process.
- Rapid flashing followed by five flashes - Checksum error during copying - the default data was substituted. Repeat the power on process.

视频显示器（DDC）信息

显示数据通道（DDC）是行业标准方案，它能让视频显示器向计算机的显卡电路声明自身性能参数，使后者能根据这些信息优化输出效果。自该方案普及以来，显卡在启动时接收相关DDC信息变得至关重要——只有完成这一步骤后，它们才会输出除基础视频信号之外的其他内容。

无法将连接到远程模块的视频显示器中的DDC数据传回计算机的视频适配器。因此，在本地模块启动期间，它将搜索连接到其本地直通连接器的视频显示器：

- 如果发现本地视频显示器，则将其DDC信息与已存储的信息进行比较，如果不同，则复制、存储并在请求时将其呈现给视频适配器。
- 如果未找到本地视频显示器，本地模块将在请求时向视频适配器提供其先前存储的DDC参数集；如果未存储任何参数，则提供默认参数集。

无论哪种情况，视频适配器所采集的DDC信息都将用于确定通过X-USBPRO模块发送至远程视频显示器的视频输出。

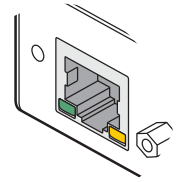
如果发现默认的DDC信息不完全适合您的远程显示器，请尝试将您的远程显示器暂时连接到本地模块的视频输出端口。当本地模块通电时，它将读取并存储来自显示器的DDC信息。然后您可以将显示器放回其远程位置，每次通电时都将使用新的DDC信息。

注：对于MS2变体，双视频通道被单独处理。

因此，如果要捕获两组DDC信息，则需要将两个远程视频显示器临时连接到本地模块的视频输出端口。

DDC指示

当首次为本地模块通电（通过计算机的USB端口或可选电源适配器）时，它将在视频输出连接器上搜索有效的DDC数据。在此过程中，绿色指示灯（内置在链接连接器上）将闪烁以指示其进度：



- 如果未找到有效的DDC信息，绿色指示灯将发出一个非常短的闪光，表示尝试读取数据。不会对本地模块中已存储的信息进行任何更改。
- 如果DDC信息与已存储的信息相同，则不会进行任何更改，绿色指示灯将发出一次单次闪烁，此时正在检查信息并恢复正常操作。
- 如果找到不同的DDC信息，绿色指示灯将在新信息被存储时快速闪烁2至3秒。然后，单次闪烁表示信息已检查完毕，并且正常操作恢复。

本地模块的绿色指示灯也提供故障指示，以帮助进行故障检修：

- 两次闪光——复制前的校验和错误——将不会编程任何信息。
- 三次闪光——数据量太大，无法装入模块——该模块最多只能容纳两页DDC信息。
- 快速闪烁，随后出现四次闪烁——复制过程中数据丢失——默认数据被替换。重复开机过程。
- 快速闪烁，随后出现五次闪烁——校验和错误，复制默认数据时被替换。重复开机过程。

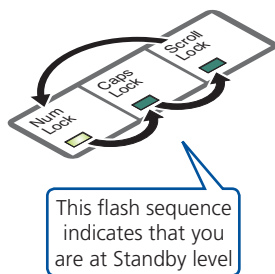
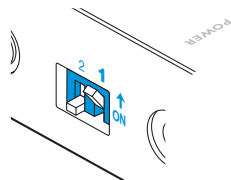
Video compensation

The X-USBPRO modules include a video compensation system that allows you to get the best results from your remote video display(s). Using this special mode you can configure:

- **Cable type** - Select the type of link cable used.
- **Cable length** - Enter the length of the link cable.
- **Video gain** - Alter the signal gain for the image.
- **Colour skew** - Adjust the timing of each colour to fine tune the image.

To enter video compensation mode

- 1 Ensure that the two X-USBPRO units are connected to the computer and powered on. A USB keyboard must be connected to the remote unit.
- 2 Arrange your test images on the remote screen. Please refer to the section [Test images while compensating](#).
- 3 On the remote unit, click the miniature switch **1** to its ON position.



The indicators on the keyboard linked to the remote unit will begin to flash in sequence. Also, the green indicator adjacent to the CATx link socket will flash.

Note: During video compensation mode, the keyboard and any other connected USB devices will be temporarily isolated from the computer.

You are now at the **standby level** within video compensation mode.

From standby, you can choose which adjustments to make. Generally you should set the cable type and cable length options first. Then, if necessary, use the video gain and colour skew adjustments to fine tune the remote video image.

[Please see the next page for details about each adjustment >>>](#)

When your adjustments are complete, return the unit to normal operation as described right.

To exit video compensation mode (return to normal operation)

- 1 Ensure that you are at standby level by exiting from any adjustment options.
- 2 On the remote unit, return the miniature switch **1** to its OFF position.
All USB devices will be reconnected to the computer and normal operation will continue.

MS2 variants By default, all video compensation changes that you make will affect both channels equally. If you wish to adjust the channels separately:

- Enter video compensation mode (see left). The green indicators on both link sockets of the remote module will flash.
- From standby, press **[H]**. The keyboard indicators will alternate between the Num Lock and Scroll Lock, and the Caps Lock. Press **[1]** or **[2]** to select the primary or secondary video display, respectively. The green indicator of the link socket corresponding to the chosen video channel will flash (lower=primary, upper=secondary), the other will remain on.
- Make the required compensation changes to the chosen video channel using the techniques described below.
- To return to using both channels, from standby, press **[H]** and then press **[0]**. The green indicators of both link sockets will flash.

视频补偿

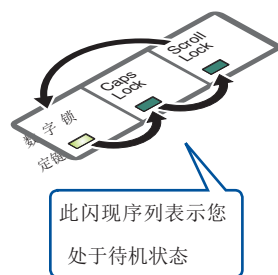
X-USBPRO模块配备视频补偿系统，可让您从远程视频显示器中获得最佳效果。

使用该特殊模式，您可以配置：

- **电缆类型**—选择所使用的链路电缆的类型。
- **电缆长度**—输入链路电缆的长度。
- **视频增益**—更改图像的信号增益。
- **色调**——调整每种颜色的时间，以微调图像。

进入视频补偿模式

- 1 确保两个X-USBPRO设备已连接到计算机并已通电。必须将USB键盘连接到远程设备。
- 2 将测试图像排列在远程屏幕上，请参考**补偿时的测试图像**部分。
- 3 在远程装置上，单击微型开关**1**到其打开位置。



与遥控器相连的键盘上的指示灯将开始按顺序闪烁。

此外，CATx链路插座旁边的绿色指示灯将闪烁。

注意：在视频补偿模式下，键盘和任何其他连接的USB设备将暂时与计算机隔离。

此时，您将处于视频补偿模式下的**待机级别**。

从待机状态，您可以选择要进行的调整。通常应首先设置电缆类型和电缆长度选项。然后，如果需要，使用视频增益和颜色倾斜调整来微调远程视频图像。

[有关每个调整的详细信息，请参见下一页>>>](#)

完成调整后，按照右侧所述说明使设备恢复正常运行。

退出视频补偿模式（返回正常操作）

- 1 退出任何调节选项，确保处于待机状态。
- 2 在远程设备上，将微型开关**1**恢复到关闭位置。所有USB设备都将重新连接到计算机，并且正常操作将继续。

MS2变体默认情况下，您所做的所有视频补偿更改将对两个通道产生同等影响。如果希望单独调整通道：

- 进入视频补偿模式（见左图），遥控器两个链路插口的绿色指示灯会闪烁。
- 从待机状态按下**[H]**。键盘指示灯将在数字锁定键和滚动锁定键之间交替，并且在大写锁定键之间交替。按**[1]**或**[0]**选择主视频显示或副视频显示。所选视频通道对应的链接插座的绿色指示灯将闪烁（下边为主，上边为副），另一个将保持亮起。
- 使用下面描述的技术，对所选视频通道进行所需的补偿更改。
- 要重新使用两个通道，请从待机状态按下**[H]**，然后按下**[0]**两个链路插座的绿色指示灯将闪烁。

Video compensation (continued)

Once you have [entered video compensation mode](#), you can choose which adjustments to make. Generally you should set the cable type and cable length options first. Then, if necessary, use the video gain and colour skew adjustments to fine tune the remote video image.

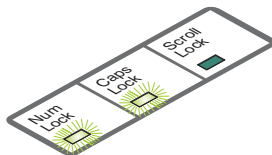
To set the cable type

a From standby, press **C**. The Num Lock and Caps Lock indicators will flash.

b Type the number that corresponds to the category of link cable used:

- Press **1** for **Cat 5**
- Press **2** for **Cat 5e**
- Press **3** for **Cat 6**
- Press **4** for **Cat 7**
- Press **5** for **Cat 7a**

c Press **Enter** to save the value and return to standby. Alternatively, press **Esc** to discard any change and return to standby.



To set the cable length

a From standby, press **L**. The Caps Lock and Scroll Lock indicators will flash.

b Use the keypad to enter the cable length in metres.

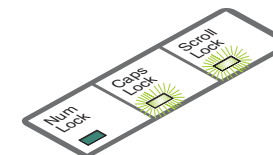
c Press **Enter** to save the value and return to standby.

Alternatively, press **Esc** to discard any change and return to standby.

*Note: You can also increase or decrease the cable length setting from the standby level (and view the resulting change in screen image quality) using **↑** and **↓** respectively. If necessary, press **Home** to return to a neutral setting. Such adjustments to the cable length setting are saved automatically.*

To adjust video gain

a From standby, use **←** and **→** to decrease or increase the gain level. If necessary, press **Home** to return to a neutral setting. Gain adjustments are saved automatically.



continued

视频补偿（续）

进入视频补偿 模式后，就可以选择要进行的调整。一般应首先设置线缆类型和线缆长度选项。然后，如果需要，可以使用视频增益和颜色倾斜调整来微调远程视频图像。

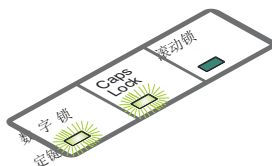
设置电缆类型

a待机状态下，按下[C]。Num键和Caps Lock指示灯将闪烁。

b输入与所用连接电缆类别对应的编号：

- 按压[1] 适用于Cat 5
- 按压[2] 适用于Cat 5e
- 按压[3] 适用于Cat 6
- 按压[4] 适用于Cat 7
- 按回键，Cat 7a

c出版社[Enter] 以保存值并返回待机状态。或者，按[Esc]放弃任何变更并返回待机状态。



设置电缆长度

a待机状态下，按下[L]。Caps Lock和Scroll Lock指示灯将闪烁。

b使用键盘输入以米为单位的电缆长度。

c出版社[Enter] 以保存值并返回待机。

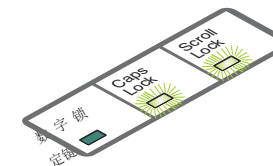
或者，按[Esc] 放弃任何变更并返回待机状态。

注：您也可以从待机水平来增加或减少电缆长度设置（并查看屏幕图像质量的相应变化）[↑]和[↓] 分别。如有必要，请按[Home] 返回到中性设置。对电缆长度设置所做的此类调整将自动保存。

调整视频增益

a待机状态下的使用[←] 和[→] 以降低或提高增益级别。如有必要，请按[Home]

返回到中性设置。增益调整将自动保存。

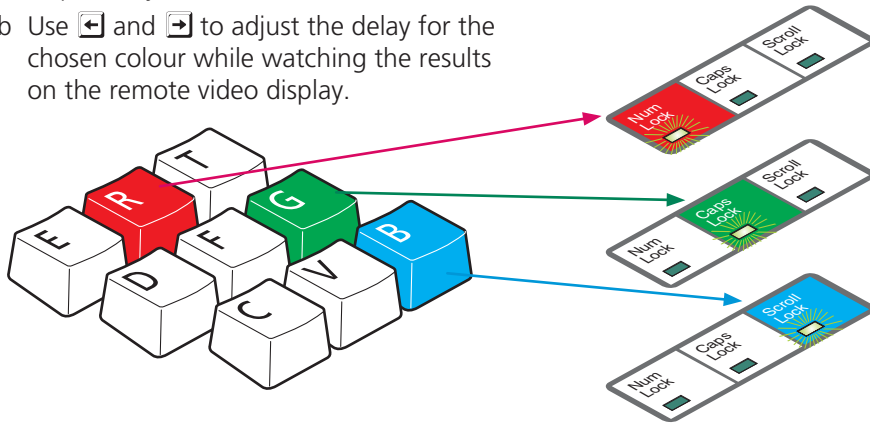


继续的

To adjust colour skew

You will only need to use these adjustments if the video image is not sharp after adjusting the cable type and length. Before entering video compensation mode, display the suggested screen content (see *Test images while compensating* in the box right). Look for colour fringes adjacent to the displayed icons and text. Also check the Adder test pattern generator image to confirm whether the red, green and blue crosses are all vertically aligned.

- From standby, press either **R**, **G** or **B** depending on which colour needs to be adjusted. The Num Lock, Caps Lock or Scroll Lock indicators will flash for the Red, Green and Blue channels respectively.
- Use **←** and **→** to adjust the delay for the chosen colour while watching the results on the remote video display.



*Note: If the screen goes blank during adjustment, either press the opposite arrow key to the one you last pressed or press **Home** to reset all delays.*

- Press **Enter** to save the setting and return to standby.
Alternatively, press **Esc** to discard any change and return to standby.

To exit video compensation mode (return to normal operation)

- Ensure that you are at standby level by exiting from any adjustment options.
- On the remote unit, return the miniature switch **1** to its OFF position.
All USB devices will be reconnected to the computer and normal operation will continue.

What is skew and why is compensation needed?

The twisted pair cabling supported by the X-USBPRO modules consists of four pairs of wires per cable, three of which are used to convey red, green and blue video signals to the remote video display. Due to the slight difference in twist rate between these three pairs, the red, green and blue video signals may not arrive at precisely the correct times. This is visible as separate colour shadows on high contrast screen images. This effect is particularly apparent when using higher screen resolutions and some types of category 5e cables.

The video compensation system within the remote module allows you to delay or advance the timing of any of the colour signals so that they all arrive at the display at the correct times.

Take a close look at a locally connected display. From left to right, groups of pixels are usually arranged in the order: R / G / B and the signals must arrive in the correct order to obtain the optimum screen image. The Adder test pattern generator (see box below) in particular helps to highlight the pixel layout by showing very narrow horizontal and vertical lines.

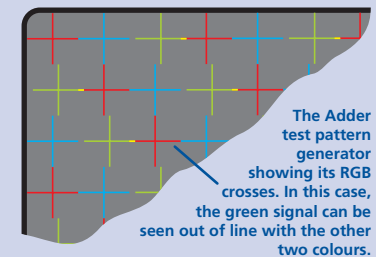
To obtain and run the free Adder test pattern generator

- Visit www.adder.com.
- Click the **PRODUCTS** heading and then choose **Management Software**.
- From the list of software utilities, choose the **ADDER Test Pattern Generator** option.
- Click the **Downloads** tab and choose the **ADDER Test Pattern Generator** option to download the utility.
- Unzip the downloaded file and run the **TESTpatterns.exe** file.
- Click the **SKEW** option.

Test images while compensating

For best results while adjusting video compensation, arrange a combination of elements on the remote display. We suggest the following:

- Roughly half of the screen to display standard operating system colour icons on a mid-green wallpaper.
- A quarter screen of the Adder test pattern generator.
- A quarter screen of standard black text on a white background.



Note: You need to set all of the above BEFORE entering video compensation mode because the USB keyboard will be isolated from the computer.

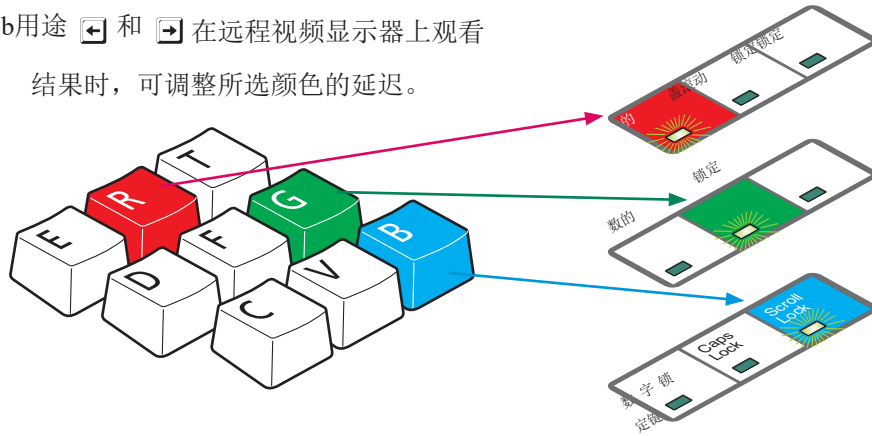
调整颜色偏差

只有在调整线缆类型和长度后视频图像仍不清晰时，才需要使用这些调整。进入视频补偿模式之前，请显示建议的屏幕内容（参见右侧框中的“补偿时测试图像”）。查看显示的图标和文字附近是否存在色彩条纹。同时检查“加法器”测试图案发生器图像，以确认红、绿、蓝三色十字是否均处于垂直对齐状态。

- a从待机状态，按任一回，**[G]** 或 **[B]** 取决于需要调整的颜色。数字锁定键、大写锁定键或滚动锁定键
红色、绿色和蓝色通道的指示灯将闪烁各自地

- b用途 **[←]** 和 **[→]** 在远程视频显示器上观看

结果时，可调整所选颜色的延迟。



注：如果在调整过程中屏幕变黑，请按与您最后按的相反方向的箭头键或按 **[Home]** 重置所有延迟。

- c出版社 **[Enter]** 以保存设置并返回待机。

或者，按 **[Esc]** 放弃任何变更并返回待机状态。

退出视频补偿模式（返回正常操作）

- 退出任何调节选项，确保处于待机状态。
- 在远程设备上，将微型开关1恢复到关闭位置。所有USB设备都将重新连接到计算机，并且正常操作将继续。

什么是偏斜，为什么需要补偿？

X-USBPRO模块支持的双绞线电缆每根包含四对导线，其中三对分别传输红色、绿色和蓝色视频信号至远程视频显示器。由于这三对导线的绞合速率存在细微差异，可能导致红绿蓝三色信号无法精准同步到达。这种现象在高对比度画面中会呈现为分离的色块阴影。当使用更高分辨率屏幕或某些5e类电缆时，该现象尤为明显。

远程模块中的视频补偿系统允许您延迟或提前任何颜色信号的定时，以便它们都能在正确的时间到达显示器。

仔细观察本地连接显示器的结构，从左到右的像素组通常按红/绿/蓝顺序排列。要获得最佳显示效果，信号必须按正确顺序输入。其中，加法器测试图案生成器（见下方方框）通过显示极窄的水平和垂直线条，能有效凸显像素布局特征。

获取并运行免费的Adder测试模式生成器

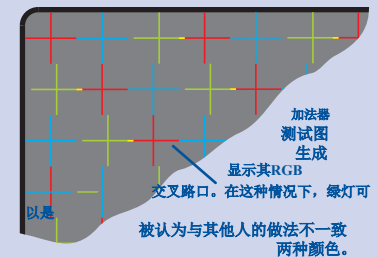
- 1 参观www.adder.com。
- 2 单击“产品”标题，然后选择“管理软件”。
- 3 从软件实用程序列表中，选择**ADDER测试模式生成器**选项。
- 4 单击“下载”选项卡并选择“**ADDER测试模式生成器**”选项下载该实用程序。
- 5 解压缩下载的文件并运行该TESTpatterns.exe文件。
- 6 单击“SKEW”选项。

补偿时的测试图像

要获得最佳的视频补偿调整效果，请在远程显示器上安排组合元素。我们建议如下：

- 大约一半的屏幕显示标准操作系统的颜色图标在中绿色的墙纸上。
- Adder测试图案发生器的四分之一屏幕。
- 白色背景上的标准黑色文本占屏幕的四分之一。

注意：在进入视频补偿模式之前，需要设置上述所有参数，因为USB键盘将与计算机隔离。



Operation



General use

In use, the X-USBPRO (and X-USBPRO-MS2) modules should be transparent - the system and its peripherals should operate exactly as normal, the only difference being that they are now up to 300 metres apart.

In some installations, you may see some 'shadows' to the right of high contrast screen characters. This can be caused by an incorrect video compensation setting and it may be necessary to make adjustments to correct this. Please see [Video compensation](#) in the 'Installation' section.

Dual user arbitration

When using two sets of X-USBPRO modules to allow two users to access a single computer, be aware that arbitration between the users is handled by the USB sub-system of the computer. Unlike with other Adder products, this means that both users can control the computer at exactly the same time and the resulting keyboard and mouse influences will be an amalgam of the two inputs - i.e. a mouse move to the right by one user will cancel out a simultaneous left mouse move by the other. The same is also true when the local module has feed-through peripherals attached to it, adjacent to the computer.

For this reason, the X-USBPRO dual user arrangement is better suited to situations where two users would not often require simultaneous access.

Peripheral operation

USB

Each X-USBPRO remote module provides four USB outlets, each of which can support USB 2.0 peripherals at speeds up to 12Mbps. The X-USBPRO appears to the computer as a four port USB hub.

If the link between the modules is interrupted, any connected USB peripherals will be automatically disabled and re-enabled once the connection is restored.

[MS2 variant only] Note: When connecting four USB devices to the unit, ensure that their total power requirements do not exceed 1700mA (1.7A). The USB standard states a maximum allowable current draw of 500mA (0.5A) per device, although most devices remain well below this limit - USB keyboards and mice typically require 100mA. Each X-USBPRO contains a self-resetting fuse that will prevent damage by shutting down the unit if the total power draw becomes excessive.

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一般用途

使用时，X-USBPRO（和X-USBPRO-MS2）模块应该是透明的——系统及其外围设备应完全正常运行，唯一的区别是它们现在相距300米。

在某些安装中，您可能会看到高对比度屏幕字符的右侧有一些“阴影”。这可能是由不正确的视频补偿设置引起的，可能需要进行调整来更正此问题。请参阅“安装”部分中的“[视频补偿](#)”。

双用户仲裁

当使用两组X-USBPRO模块让两位用户共享同一台计算机时，需注意用户间的权限仲裁由计算机的USB子系统负责处理。与艾德公司其他产品不同，这意味着两位用户可以同时精确控制计算机，此时键盘和鼠标的输入效果会形成双重叠加——例如当一位用户向右移动鼠标时，另一位用户同时向左移动鼠标的操作就会相互抵消。即使本地模块连接了与计算机相邻的外接设备，这一特性依然成立。

因此，X-USBPRO双用户配置更适合于两个用户不需要经常同时访问的情况。

外周手术

统一的S波段

每个X-USBPRO远程模块提供四个USB接口，每个接口都能支持速度高达12 Mbps的USB 2.0外设。X-USBPRO在计算机上表现为一个四端口USB集线器。如果模块之间的连接中断，任何已连接的USB外围设备将被自动禁用，并在连接恢复后重新启用。

[仅限MS2版本]注意：当连接四个USB设备时，请确保总功率不超过1700毫安（1.7安）。USB标准规定每个设备最大允许电流为500毫安（0.5安），但多数设备实际功耗远低于此限值——例如键盘和鼠标通常只需100毫安。每台X-USBPRO都配备自复位保险丝，当总电流超出限制时，系统会自动关机以防止损坏。

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Getting assistance

If you are still experiencing problems after checking the information contained within this guide, then we provide a number of other solutions:

- **Online solutions and updates** – www.adder.com/support
Check the Support section of the adder.com website for the latest solutions and firmware updates.
- **Adder Forum** – forum.adder.com
Use our forum to access FAQs and discussions.
- **Technical support** – www.adder.com/contact-support-form
For technical support, use the contact form in the Support section of the adder.com website - your regional office will then get in contact with you.

Troubleshooting

Status indicators

The green indicators built into the link connectors on each module provide useful feedback regarding the connection and power status:

During startup (of the local module)

- One very short green flash: no valid DDC information available from a locally connected video display, no changes made to stored DDC information.
- Single green flash: DDC information being read from a locally connected video display, but no changes made to stored DDC information.
- Rapid green flash for 2 to 3 seconds, followed by single flash: New DDC information being read and stored from a locally connected video display.
- Two green flashes - Checksum error prior to copying - no information will be programmed.
- Three green flashes - Too much data to fit into the module - the module can hold a maximum of two pages of DDC information.
- Rapid green flashing followed by four flashes - data was lost during copying - the default data was substituted. Repeat the power on process.
- Rapid green flashing followed by five flashes - Checksum error during copying - the default data was substituted. Repeat the power on process.

During operation (of either the local or remote module)

- Continual yellow: Valid CATx link to other module sensed (on MS2 variants, only the indicator of the **lower** link connector is used for this purpose).
- Continual green: Correct power input sensed.

Important

The X-USBPRO can be used with other USB hubs in the system, but please note that due to power constraints, the local unit should not be connected to the downstream port of a bus-powered USB hub. Additionally, X-USBPRO-MS2 local units must always be powered using their supplied power adapter. Please see page 8 for details.

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获得援助

如果检查本指南中的信息后，您仍然遇到问题，我们还提供其他解决方案：

- **在线解决方案和更新**— www.adder.com/support
查看adder.com网站的“支持”部分，以获取最新的解决方案和固件更新。
- **Adder论坛**— forum.adder.com
使用我们的论坛访问常见问题解答和讨论。
- **技术支持**—www.adder.com/contact-support-form如需技术支持，请使用adder.com网站“支持”部分中的联系表单，随后您所在地区的办事处将与您联系。

故障排除

状态指示器

每个模块上的连接器内置的绿色指示灯可提供有关连接和电源状态的有用反馈：

启动期间（本地模块）

- 一个非常短暂的绿灯：从本地连接的视频显示器中没有可用的有效DDC信息，存储的DDC信息未发生任何变更。
- 单一绿色闪光：从本地连接的视频显示器中读取DDC信息，但未对存储的DDC信息进行任何更改。
- 快速绿灯闪烁2至3秒，随后为单次闪烁：正在读取并存储本地连接视频显示器中的新DDC信息。
- 两次绿色闪光灯——复制前的校验和错误——不会编程任何信息。
- 三个绿色闪光灯——数据量太大，无法装入模块。该模块最多只能容纳两页DDC信息。
- 快速绿色闪烁，随后出现四次闪烁-复制期间数据丢失-默认数据被替换。重复开机过程。
- 快速绿色闪烁，随后出现五次闪烁——复制期间校验和错误——默认数据被替换。重复开机过程。

运行期间（本地或远程模块）

- 持续黄色：检测到与其他模块之间的CATx链路有效（在MS2变体上，仅使用下方链路连接器的指示灯来实现此目的）。
- 持续绿色：检测到正确的电源输入。

重要事项

X-USBPRO 可与系统中的其他USB集线器一起使用，但请注意，由于电源限制，本地单元不应连接到总线供电USB集线器的下游端口。此外，X-USBPRO-MS2本地单元必须始终使用其提供的电源适配器供电。详情请参阅第8页。

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Warranty

Adder Technology Ltd warrants that this product shall be free from defects in workmanship and materials for a period of two years from the date of original purchase. If the product should fail to operate correctly in normal use during the warranty period, Adder will replace or repair it free of charge. No liability can be accepted for damage due to misuse or circumstances outside Adder's control. Also Adder will not be responsible for any loss, damage or injury arising directly or indirectly from the use of this product. Adder's total liability under the terms of this warranty shall in all circumstances be limited to the replacement value of this product.

If any difficulty is experienced in the installation or use of this product that you are unable to resolve, please contact your supplier.

Safety information

- For use in dry, oil free indoor environments only.
- Do not use to link between buildings.
- Ensure that all twisted pair interconnect cables are installed in compliance with all applicable wiring regulations.
- Do not connect CATx link interfaces (RJ45 style connectors) to any other equipment, particularly network or telecommunications equipment.
- Warning – the power adapter contains live parts.
- No user serviceable parts are contained within the power adapter - do not dismantle.
- Plug the power adapter into an earthed socket outlet close to the module that it is powering.
- Replace the power adapter with a manufacturer approved type only.
- Do not use the power adapter if the power adapter case becomes damaged, cracked or broken or if you suspect that it is not operating properly.
- If you use a power extension cord with the remote module, make sure the total ampere rating of the devices plugged into the extension cord do not exceed the cord's ampere rating. Also, make sure that the total ampere rating of all the devices plugged into the wall outlet does not exceed the wall outlet's ampere rating.
- Do not attempt to service the modules yourself.
- The power supply can get warm in operation – do not situate it in an enclosed space without any ventilation.



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质保

艾德科技有限公司承诺，自产品首次购买之日起两年内，本产品在工艺和材料方面均无瑕疵。若保修期内因正常使用导致产品无法正常运作，艾德科技将免费提供更换或维修服务。对于因误用或超出本公司控制范围的情况造成的损坏，本公司概不负责。此外，艾德科技对因使用本产品直接或间接引发的任何损失、损害或人身伤害亦不承担任何责任。根据本保修条款规定，艾德科技的总责任范围应严格限定为产品的重置价值。

如果在安装或使用本产品时遇到无法解决的困难，请联系您的供应商。

安全信息

- 仅限在干燥、无油的室内环境中使用。
- 禁止用于建筑物之间的连接。
- 确保所有双绞线互连电缆的安装符合所有适用的接线规范。
- 请勿将CATx链路接口(RJ45型连接器)连接到任何其他设备，尤其是网络或电信设备。
- 警告：电源适配器包含带电部件。
- 电源适配器内不包含用户可维修部件，因此请勿拆卸。
- 将电源适配器插入一个接地插座，该插座靠近它所供电的模块。
- 请仅用制造商认可的电源适配器进行更换。
- 如果电源适配器外壳损坏、破裂或断裂，或者如果您怀疑它不能正常工作，请勿使用电源适配器。
- 如果将延长线与遥控器一起使用，请确保插入延长线的设备的总安培额定值不超过延长线的安培额定值。同时，确保插入墙壁插座的所有设备的总安培额定值不超过墙壁插座的安培额定值。
- 请勿自行维修模块。
- 电源在运行时可能会发热，因此请勿将其放置在没有通风的密闭空间内。



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Radio Frequency Energy

A Category 5 (or better) shielded twisted pair cable must be used to connect the units in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All other interface cables used with this equipment must be shielded in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

European EMC directive 2004/108/EC



This equipment has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in the European standard EN55022. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses and

can radiate radio frequency energy and if not installed and used in accordance with the instructions may cause harmful interference to radio or television reception. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to correct the interference with one or more of the following measures: (a) Reorient or relocate the receiving antenna. (b) Increase the separation between the equipment and the receiver. (c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. (d) Consult the supplier or an experienced radio/TV technician for help.

FCC Compliance Statement (United States)

This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in Subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canadian Department of Communications RFI statement

This equipment does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques publié par le ministère des Communications du Canada.



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射频能量

必须使用5类（或更好）屏蔽双绞线电缆连接设备，以符合射频能量发射法规

并确保电磁干扰的足够高抗扰度。

与本设备一起使用的其他接口电缆必须带有屏蔽，以保持符合射频能量发射法规并确保对电磁干扰具有足够高的抗扰度。

欧洲EMC指令2004/108/EC



该设备经过测试，符合欧洲标准EN55022中规定的A类计算设备限值。这些限值旨在提供合理的防护以防止有害干扰。该设备生成、使用并

该设备可发射射频能量，若未按说明书正确安装使用，可能对收音机或电视机接收信号造成干扰。但需注意，具体安装环境仍存在干扰风险。若设备确实对收音机或电视机产生干扰（可通过开关设备进行测试），建议用户尝试以下方法消除干扰：(a)调整接收天线的方向或位置；(b)增大设备与接收器之间的距离；(c)将设备接入与接收器不同的电路插座；(d)咨询供应商或专业收音电视师。

面心立方合规声明（美国）

该设备产生、使用和可以辐射射频能量，如果未正确安装和使用，即严格遵照制造商的说明，可能会对无线电通信造成干扰。

经测试发现，该设备符合面心立方规则第15部分J子部分中规定的A类计算设备限制，这些规定旨在为设备在商业环境中运行时提供合理的干扰防护。若在住宅区使用该设备，可能会引发干扰，此时用户需自行承担费用采取必要措施消除干扰。未经制造商明确批准的更改或修改可能使用户操作设备的权限失效。

加拿大通讯部RFI声明

该设备的无线电噪声发射量不超过加拿大通信部无线电干扰条例中规定的数字设备A类限制。

本设备的数字信号不会产生超出加拿大通信部颁布的《无线电干扰条例》中A类数字设备适用限值的射频噪声。



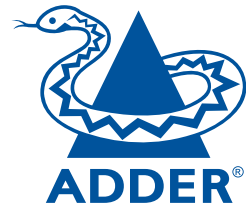
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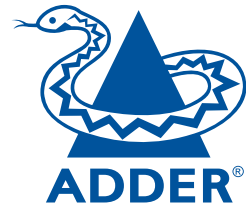
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