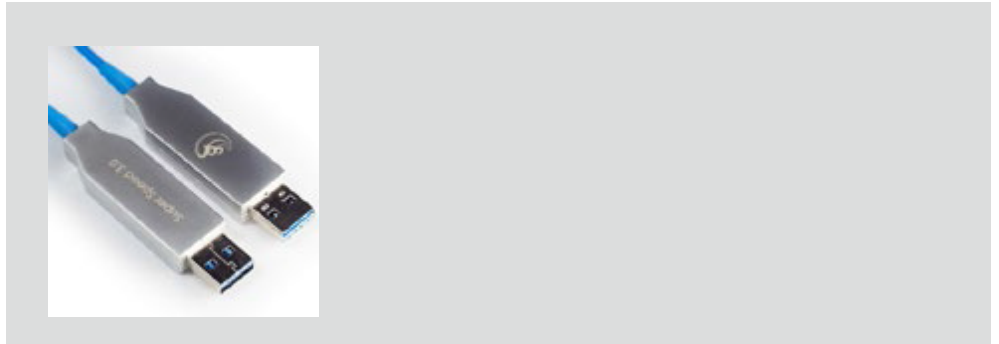




USB3.0 Active Optical Cable (U3C)

Description



U3C series products refer to the first USB3.0 AOC in the industry, which uses optical fiber to replace copper as the transmission medium, thus greatly extending the transmission distance of USB3.0. And the maximum transmission distance may exceed 100 m without adding any relay equipment. Such product is compatible with USB3.0 specification completely. After being matched with USB3.0-to-2.0 dongle or hub integrating SuperTT technology, it is capable of being backward compatible with USB 2.0 equipment and greatly increasing the transmission bandwidth of USB2.0 equipment.

Feature

- Long distance transmission, over 100 meters
 - Super speed up to 5Gbps
 - Plug and play without driver dependent
 - Thinner and lighter than conventional copper cable
 - Highly resistant with EMI and RFIBackward compatible with USB2.0/1.1 when work with SuperTT build-in devices
 - Powered by USB VBUS (U3D or U3H can provide power for U3C)
 - Only work with self-powered USB devices
- ★ Attention:Optical fiber can not be bent 180 degree,and the bending radius is no less than 20mm.

Specification

Cable Length	
Up to 100m	
Catalog	10m/20m/30m/50m/100m
Interface	
USB3.0 type A pluggable - USB3.0 type A pluggable	
Speed	
USB3.0 super speed, up to 5Gbps (not backward compatible with USB2.0/1.1)	



Power

Powered by USB VBUS

Current	116mA
---------	-------

Power Consumption

0.58W

Mechanical / Condition

Cable diameter	3mm
Bend Radius	20mm
Operating Temp	0 - 55°C
Storage Temp	-20 - 80 °C

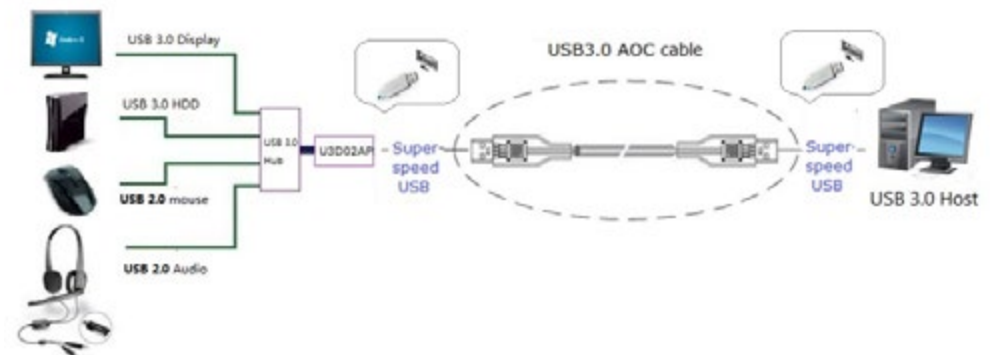
Application

- Machine Vision Camera Extension
- Industry Print System
- High definition Video Surveillance System
- Digital Signage and TV Wall Cloud Client Connectivity
- Remote Storage



Hardware Install

Connect one AOC terminal to the Host USB3.0 A female connector, and connect the other AOC terminal to USB3.0 A female connector of the device (as Hub or Dongle etc.) which need to connect peripherals. It could realize plug and play.



- * The product requires no software to drive it.
- * It is possible when using SuperTT dongle made by EverPro if need to connect USB2.0/1.1 devices as shown in the above sketch map.



USB3.0 Hybrid Cable (U3HC)

Description



In order to compensate for ordinary USB3.0 active fiber cable's defect that can't supply power to device, EverPro introduce new generation of USB3.0 hybrid cable (U3HC). On the basis of the use of optical fiber as the transmission medium, U3HC integrate copper to achieve the purpose of supplying power to device. The hybrid cable length can be up to 50m without adding any relay device which is suitable for the scene of having no on-site power supply. This production can meet the USB3.0 spec. Its build-in unique SuperTT technology is capable of realizing mutual conversion between USB3.0 and USB2.0 protocols, so as to enable USB2.0 equipment to share the super speed bandwidth (5Gbps) of USB3.0. Using with USB hub, multiple USB2.0 equipment may exclusively share the peak bandwidth of 480Mbps.

Feature

- Support USB3.0/2.0/1.1 devices
- The maximum cable length can be up to 50m
- The maximum transition speed can be up to 5Gbps
- A substantial increase in USB2.0 device bandwidth with Build-in SuperTT technology
- Without power
- Providing maximum 900mA/5V for the device
- With locking screw holes
- Hot-plugging
- No driver
- Anti-jamming

- * The product features two studs to conveniently mount on host.
- * Can be powered from the host by USB cable connected between the host A type and the product Micro B type receptacle if power supply shortage.



Specification

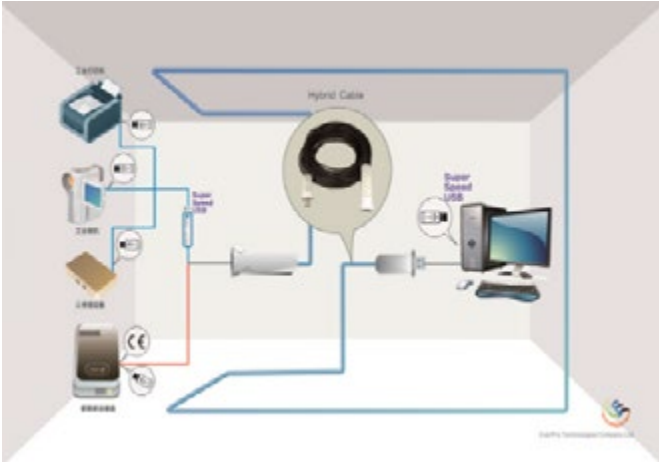
Cable Length	
Up to 50m	
Option cable length	10m/20m/30m/50m
Interface	
Host Side	USB3.0 Standard-A Plug(with locking screws)
	USB2.0 Micro-B Receptacle,Auxiliary power supplyfor device with >2W power dissipation.
Device Side	USB3.0 Standard-AReceptacle(with lockingthreads)
Data rate	
USB 3.0 Super Speed,Up to 5Gbps, backward compatible with USB 2.0/1.1	
Power	
Host Side	USB Bus Power Supply
Device Side Supply Current	Maximum5V 900mA(10m/20m/30m)/600mA(50m)(Need to connect Auxiliary power supply to host side)
Power Dissipation	
0.94W	
Physical/Environmental	
Dimension of T he End	Host Side:44mm/27mm/13mm
	Device Side:82mm/26mm/14.5mm
Weight of The End	TBD
Cable Diameter	3mm
Bend Radius	20mm
Operating Temperature	0 - 55°C
Storage Temperature	-20 - 80 °C

Application

- Machine vision system
- Industrial print system
- Safety surveillance system
- Digital signage system
- Cloud Client system
- Remote storage system

Hardware Install

Connect U3HC A type plug to the host USB3.0 A type receptacle, and connect U3HC A type receptacle to devices by one USB cable. Connection diagram as follows



- * Requires a separate power supply for the HUB if the U3HC's downstream port connect to HUB.
- * Attention, don't be scalded by the interface shell because the temperature may be high if long time use the product.

Common Problems

- The wire cable is not connected.
 Check the appearance of the wire cable to see if there is abrasion, incompleteness and crack.
 Check if the product has been connected to the host or devices normally.
 Supply power from the host by the USB cable between the A type receptacle of host and the micro B type plug of U3HC.



AOC Optical Fiber

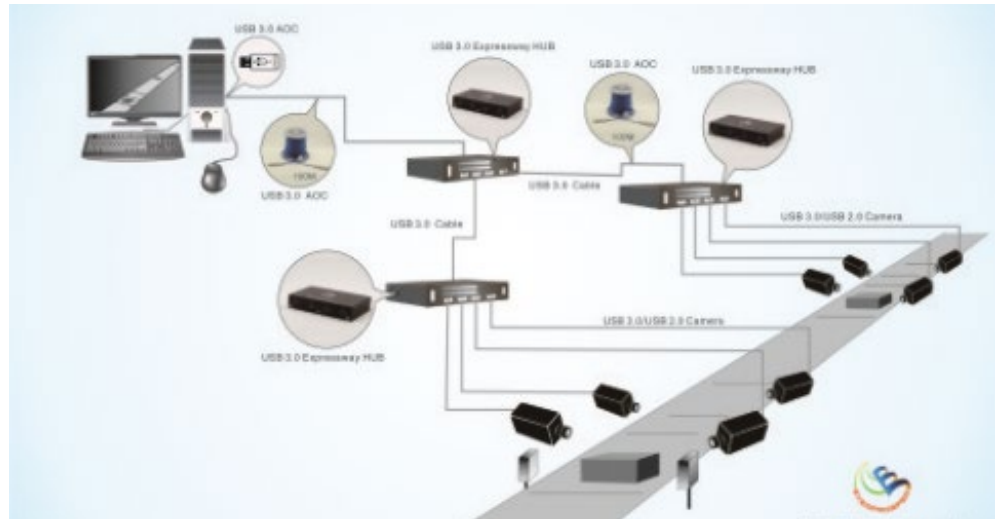
Characteristics

- Graded refractive index profile with special design.
- Higher (or Customized) NA.
- Ultra low bending loss in low to 1.5mm bending radius.
- High tolerance for large number bending times.
- Special graded refractive index profile optical fiber design for the interconnection between PC and other consumer electronic devices.
- The ultra low bending loss of the optical fiber support for the application environment of the winding desktop, extremely refined refractive index profile support for long transmission length in 10Gbps I/O transmission speed.
- Use optical cable replace the copper cable for the interconnection between consumer electronic devices will be the final solution to uniform the complex consumer electronic I/O ports.



USB3.0 AOC Solution for Machine Vision System

Description



EverPro provide world's most advanced long-distance and super-speed USB3.0 interconnection solution for machine vision system. USB3.0 Active Optical Cable (AOC) can extend transmission distance to more than 100 meters. And USB3.0 Expressway Hub/Dongle with SuperTT technology can make every USB2.0 cameras get the dedicated full bandwidth of 480Mbps.

Application scenario

- Production line online monitoring system
- Peripheral surveillance system
- Traffic control system

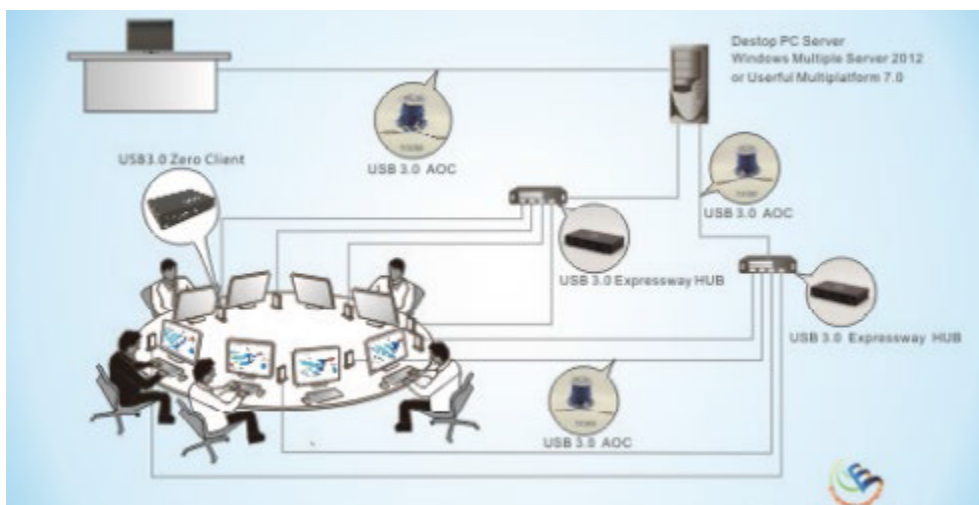
Characteristics

- Super speed data transmission between Hosts and devices
 - 5Gbps bandwidth
 - Each USB2.0 device has dedicated 480Mbps transmission speed
- Long Transmission distance
 - 5Gbps bandwidth
 - Extended Range from 3-5 meters to 100 meters
- Good EMI/ESD performance to satisfy industrial environment requirements
 - Fiber transmission instead of Copper
- Easy to use
 - Easy to Expand, Easy to Setup [Plug and Play]
 - Easy to layout [Thin Cable], Easy to Maintains
- Cost advantage
 - Commercial products——Low BOM cost
 - Easy to Use——Low maintain cost



Super Speed Interconnection Solution for Cloud Client System

Description



EverPro Super speed interconnection solution for Cloud client system includes Cloud client station, USB3.0 AOC, and Expressway hub.

The USB 3.0 based Cloud client brings 10x total bandwidth from current 480Mbps to 5Gbps. The AOC extends the location of a Cloud client from 5 meters to 100 meters away from the host. It essentially removes the distance limitation from traditional USB based Multipoint Systems, and broadens the applications from geographically confined small space to broad business and industrial environments.

The expressway hub ensures that every USB 2.0 device can have its own maximal 480 Mbps bandwidth without having to share the bandwidth with other devices

Application scenario

- Education: classrooms, libraries, labs, etc.
- Various offices such as bank, health, etc and industrial environments.
- Inquiry system in public areas: railway station, airport, square, etc.

Characteristics

- 10x performance increase over USB 2.0, 5x over Gigabit Ethernet based client
- Option to extend distance up to 100 meters by using USB 3.0 AOC
- Lower cost per client
- Power usage can be as low as 1/50th of fat client
- Flexible and easy to set up, plug and play like normal USB devices.
- Support Microsoft Windows Multipoint OS and other OS such as Linux.



USB3.0 SuperTT Dongle

Description



part Number	Description
U3D01AR	1 SuperTT IC
U3D02AR	1 SuperTT IC + 1USB3.0 HubIC

U3D02 is the second generation product in EverPro USB3.0-to-2.0 dongle series. Its unique built-in SuperTT technology is capable of realizing mutual conversion between USB3.0 and USB2.0 protocols, so as to enable USB2.0 equipment to share the super speed bandwidth (5 Gbps) of USB3.0. Using with USB hub, multiple USB2.0 equipment may exclusively share the peak bandwidth of 480 Mbps. It also can be matched with USB3.0 AOC to greatly extend the transmission distance. And the maximum transmission distance may exceed 100 m without adding any relay equipment.

Feature

- Compatible with USB3.0/2.0 specification
- Plug and play without driver dependent
- Double-color LED for state indication
- Firmware upgrading support
- +5V power
- Compatible with USB3.0 AOC and supply +5V power for it

Specification

Interface	
USB 3.0 Upstream Port	1x USB3.0 type A receptacle
USB 3.0 Downstream Port	1x USB3.0 type A receptacle



Power Supply	
DC Input	5V, 2A, 5%
Connector Size	4.0 *1.7mm
Power Consumption	
Active Mode	1.5W
Dimension/Weight/Condition	
Dimension (LWH)	72.6 x 32 x 15mm
Weight	NT
Operating Temp	5 - 35°C
Storage Temp	-20 - 70 °C

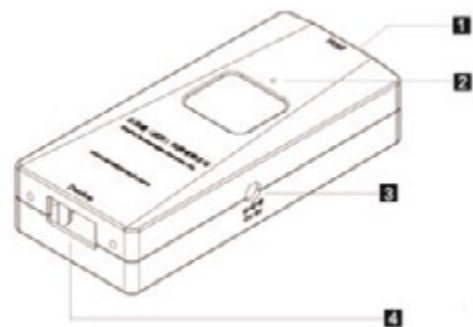
Application

- Machine vision system
- High-definition video surveillance system
- Digital Signage System
- Industrial print system
- High-speed data acquisition system

Hardware Introduction

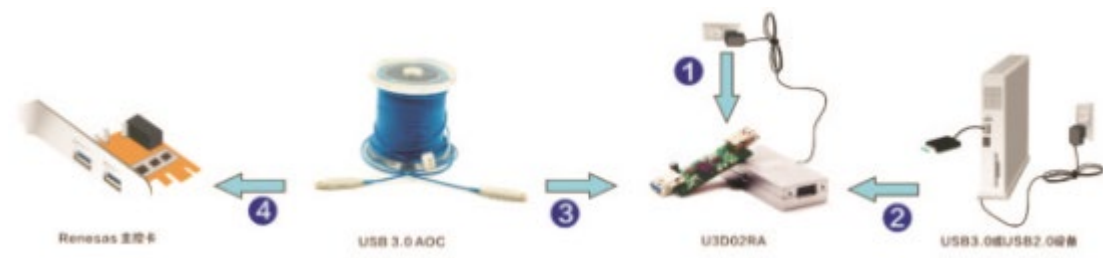
Port Introduction

1. USB3.0 upstream port
2. Work status indicator(5V power on, green light;Working on SuperTT status, red light)
3. DC 5V input
4. USB3.0 downstram port





Hardware install



Step one: Connect the power adapter to EPU3D02AR.

Step two: Connect the USB3.0 or USB2.0 device to the EPU3D02AR downstream port. Please connect the power adapter to the device if it is needed.

Step three: Connect USB3.0 AOC to the EPU3D02AR upstream port.

Step four: Connect USB3.0 AOC to the Renesas USB3.0 card on the Host.

Troubleshooting and Confirming Setup

- LED power light is not on
Please check if power adapter is working normal and the contact of the joint is getting loose.
- The connected device could not be identified
Please check if the USB connector between the upstream and downstream port is effective, and check if the connecting direction is correct.
- ★ When connect AOC to the EPU3D02AR upstream port and connect USB 3.0 hub to its downstream port, the hub's USB3.0/USB2.0 function is normal as usual.



USB3.0 Expressway Hub

Description



part Number	Description
U3H00AR	4 DownPorts,only Support USB3.0 device using with USB3.0 AOC
U3H01AR	4 USB3.0 DownPorts,Support Both USB3.0 and USB2.0 Device using with USB3.0 AOC,and each port can give USB2.0 Full Bandwidth.
U3H02AR	3 USB3.0 DownPorts,1 USB2.0 DownPorts,Support Both USB3.0 and USB2.0 Device using with USB3.0 AOC

U3H01 refer to a USB3.0-to-2.0 super speed hub specially designed by EverPro for improving the performance of multiple USB2.0 equipment. Its SuperTT technology integrated internally can realize mutual conversion between USB3.0 and USB2.0 protocols, so as to enable USB2.0 equipment to share the super speed bandwidth (5Gbps) of USB3.0. U3H01 can make four USB2.0 equipment exclusively share USB2.0 bandwidth of 480Mbps. It also can be matched with USB3.0 AOC to greatly extend the transmission distance. And the maximum transmission distance may exceed 100 m without adding any relay equipment.

Related Product

- U3C, EverPro's USB3.0 active optical cable
- U3HC, EverPro's USB3.0 active hybrid optical cable
- H2C, HDMI2.0 active optical cable
- FbC, 1394b active optical cable
- U3COE, USB3.0 optical electrical conversion module
- U3D01/02, EverPro's SuperTT dongle
- U3H02, EverPro's USB expressway hub, SuperTT technology supported.
- U3Z00/01, EverPro's zero client
- USB3.0 zero client system development kit
- USB3.0 active optical cable system development kit



Feature

- All downstream ports support USB3.0/2.0/1.1 devices
- Provide 480Mbps bandwidth for each USB2.0 device separately
- Plug and play without driver dependent
- LED for state indication
- Firmware upgrading support
- Support +5V or +12V power
- Compatible with USB3.0 AOC and supply +5V power for it

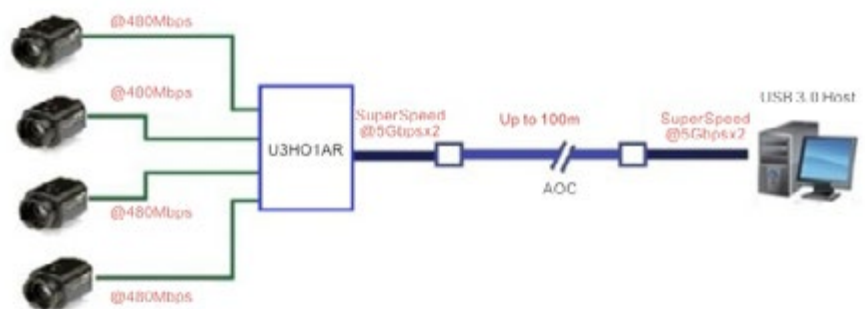
* Note: When connect USB3.0 AOC at upstream port and normal USB 3.0 hub at downstream port, USB2.0 part of hub can't work normally.

Specification

Interface	
Upstream Port	1x USB3.0 type A receptacle
Downstream Port	4x USB3.0 type A receptacle
Power Supply	
DC Input	5V, 4A, 5% or 12V, 2.5A
Connector Size	5.5*2.1mm
Power Consumption	
Active mode	2.5W
Dimension/Weight/Condition	
Dimension (LWH)	122 x 67.5 x 23mm
Weight	NT
Operating Temp	-20 - 80°C
Storage Temp	-55 - 125 °C

Application

- Industrial print system
- Machine vision system
- Digital Signage System
- High-definition video surveillance system
- High-speed data acquisition system

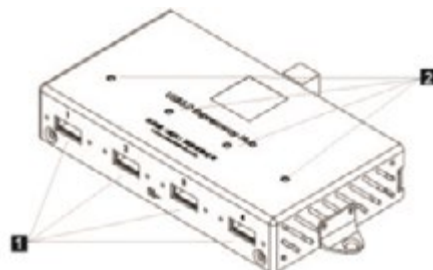


Machine vision system

Hardware Introduction

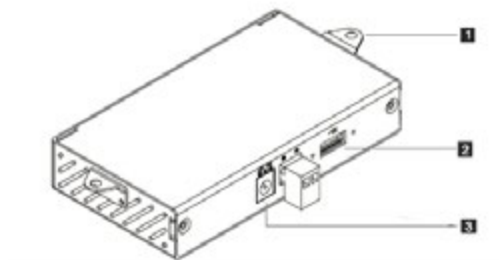
Port Introduction

1. USB3.0 downstream port
2. USB3.0 downstream port LED indicator

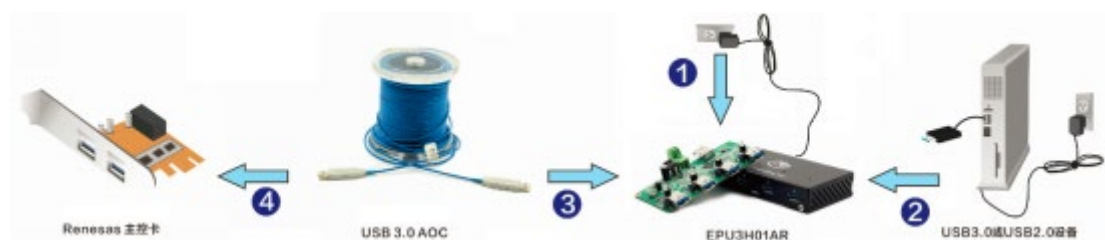


Work status	LED indicator status
Connect upstream port to USB3.0 host, Connect downstream port to USB3.0 device	LED is green
Connect upstream port to USB3.0 host, Connect downstream port to USB2.0 device	LED is red
Connect upstream port to USB2.0 host	LED is green

1. Fixed film(In the package, users can choose to use as needed)
2. USB3.0 upstream port
3. DC 5V/12V power input(Users can choose the power input as needed)



Hardware install



Step one: Connect the power adapter to EPU3H01AR.

Step two: Connect the USB3.0 or USB2.0 device to the EPU3H01AR downstream port. Please connect the power adapter to the device if it is needed.

Step three: Connect USB3.0 AOC to the EPU3H01AR upstream port.

Step four: Connect USB3.0 AOC to the Renesas USB3.0 card on the Host.

* Notice: The product requires no software to drive it.



Troubleshooting and Confirming Setup

LED power light is not on

Please check if power adapter is working normal and the contact of the joint is getting loose.

When one downstream port could not identify the connected device

Please check if USB joint is getting loose.

All the downstream ports could not identify the device

- Please check if USB joint in the upstream port is getting loose.
 - Check and ensure to connect to the USB 3.0 port of the Host.
 - Check if the wire is copper wire connecting the Host, and ensure the copper wire is for USB 3.0.
 - Check if USB 3.0 Hub in device manager could normally enumerated.
- * Notice: Use USB 3.0 copper wire to replace USB 3.0 AOC is feasible from the perspective of only realizing the function. However, USB 3.0 copper wire could not enjoy the long distance transmission advantage embraced by USB 3.0 AOC.



1394b Active Optical Cable

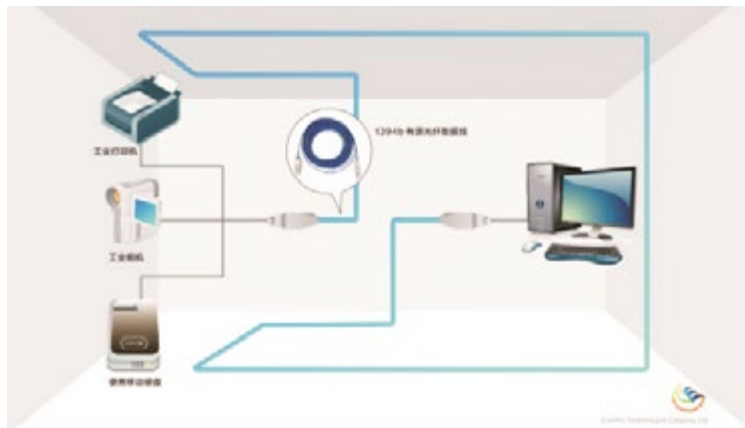
Description



EverPro FbC series products refer to the first 1394b AOC in the industry, which uses optical fiber to replace copper as the transmission medium, thus greatly extending the transmission distance of 1394b. And the maximum transmission distance may exceed 500m without adding any relay equipment. Such product allows for transfer rates up to 800 Mbps and is compatible with the IEEE-1394 specification completely. After being matched with Everpro 1394b Repeater, it is capable of being backward compatible with 1394a equipment. It allows for simple "plug & play" connections for devices such as printers, scanners, digital cameras and other firewire peripherals. The host-side of AOC does not require external power and the device side requires an 12V external power supply.

Related Product

- Machine Vision Camera Extension
- High definition Video Surveillance System
- Digital Signage and TV Wall USB3.0 active optical cable system development kit





Feature

- Maximum transfer rate up to 800Mbps, 1394b 9-Pin connector, not backward compatible with 1394a
 - Superfine, bending cable
 - Use multimode fiber
 - Hot swappable, over-current protection
 - Extend the transmission distance of 1394b S800 up to 500m
- * Note:Using with Everpro 1394b Repeater, 1394b AOC can be backward compatible with 1394a equipment

Application

- Machine Vision Camera Extension
- High definition Video Surveillance System
- Digital Signage and TV Wall