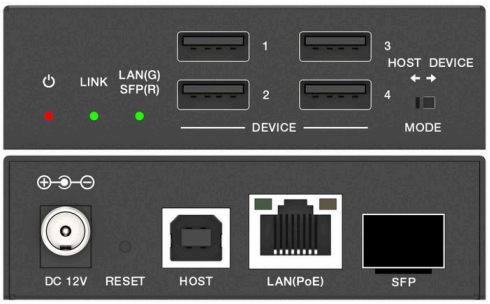
USB 2.0 over IP 1GbE Network Extender with SFP Fiber, PoE & 4-Port USB-A

Extend USB Over the Existing LAN Without a Dedicated Cable Run — 4-Port USB 2.0, Copper or Fiber, PoE-Powered at Either End



Puts four USB 2.0 ports wherever the building network reaches, with no dedicated cable run between the computer and its peripherals. The EXT-USB2IP is a compact black metal unit (3.35 x 4.63 x 1.00 in) that carries USB 2.0 at up to 480Mbps across a managed 1GbE network over RJ45 copper or SFP fiber. A switch on the panel sets each unit as the Host, which takes one Type-B connection to the computer, or the Device, which gives four Type-A ports for peripherals. Power comes from PoE as an IEEE 802.3at Class 4 or 802.3af powered device, or from the included 12V locking supply, so the far end needs no outlet. It is the right choice for conference rooms, lecture halls, control rooms and dispatch centers where reaching across the existing LAN matters more than USB 3.0 bandwidth or a point-to-point cable.

Copper and fiber are in the same housing. The unit selects between them automatically and gives fiber priority when both are connected, so one part covers a copper drop at one end and a fiber link at the other. Keyboard and mouse extension works one-to-one and one-to-many, so one host can be operated from more than one station. It runs on the same Gigabit switch as AV-over-IP encoders and decoders, which puts USB beside the video at every endpoint. The strongest advantage is that one SKU serves both ends: the same unit becomes the Host or the Device, so a project stocks one part number and one spare covers either end of every link. Each extension link uses two units; the second unit is sold separately.

> **Surge Protection Recommended —** This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

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1. Features

- ✓ USB 2.0 extension over a 1GbE network, with data at up to 480Mbps through the Type-B USB Host port
- ✓ One USB Host port (Type-B) and four USB 2.0 Device ports (Type-A)
- ✓ Host and Device functions built into one unit; a mode switch selects the role
- ✓ 1G RJ45 copper and 1G SFP fiber ports with automatic selection; fiber takes priority when both are connected, and either port can also be selected manually
- ✓ One-to-one USB data transmission with configurable pairing, parameter settings and device discovery
- ✓ Keyboard and mouse (KM) extension, one-to-one and one-to-many
- ✓ Works with USB flash drives, cameras, printers, fax machines, touch panels, keyboards, mice and other USB 2.0 devices
- ✓ Power over Ethernet as a powered device (PD): IEEE 802.3at Class 4, also compatible with 802.3af; the included 12V/2.5A locking supply takes priority when both are present
- ✓ Up to 5V 1A from each Device port on local power, 5V 0.9A per port on 802.3at PoE, and 5V 1.2A total on 802.3af PoE
- ✓ Up to 328ft (100m) to the network switch over CAT6/6A/7
- ✓ Discoverable on the network with Bonjour (mDNS); defaults to Auto IP (169.254.x.x) after a reset
- ✓ Front-panel POWER, LAN/SFP and LINK LEDs show power, the active port and pairing status
- ✓ ESD protection to IEC 61000-4-2: +/-15kV air-gap, +/-8kV contact
- ✓ Compact black metal enclosure; mounting ears and screws included

2. Package Contents

- ✓ 1x USB 2.0 over IP 1GbE Network Extender
- ✓ 1x 12V/2.5A locking power supply
- ✓ 2x Mounting ear
- ✓ 4x Machine screw (KM3x6)

3. Specifications

TECHNICAL	
USB Standard	USB 2.0, maximum data rate 480Mbps
Network Bandwidth	1Gbps
Maximum Transmission Distance	328ft (100m) over CAT6/6A/7
Port Selection	Automatic copper/fiber detection (default), fiber priority; LAN or SFP selectable manually
USB Device Port Power, 12V Local Power	5V 1A per port (four ports)
USB Device Port Power, PoE 802.3at	5V 0.9A per port (four ports)
USB Device Port Power, PoE 802.3af	5V 1.2A total across all four ports
Keyboard / Mouse Extension	One-to-one and one-to-many
Device Discovery	Bonjour (mDNS)
Default IP Mode	Auto IP (169.254.x.x)
ESD Protection	IEC 61000-4-2: +/-15kV (air-gap discharge), +/-8kV (contact discharge)
CONNECTIONS	
USB Host	1x USB Type-B, 4-pin female

continued

USB Device	4x USB 2.0 Type-A, 4-pin female
LAN	1x 1G RJ45, PoE (IEEE 802.3at / 802.3af)
Fiber	1x 1G SFP
Power Input	1x DC 12V, locking
CONTROLS AND INDICATORS	
Mode Switch	HOST/DEVICE slide switch: left for Host (default), right for Device
Reset Button	Hold 5 seconds with power on to reset it to KanexPro default settings
POWER LED (Red)	Flashing during startup, on when ready, off when powered down
LAN/SFP LED (Green/Red)	Active port: green for LAN, red for SFP. With no link: yellow for auto detect, green for LAN selected, red for SFP selected
LINK LED (Green)	Off: no network link. Flashing: linked, not paired. On: linked and paired
NETWORK SWITCH REQUIREMENTS	
Switch Type	Layer 3 / managed switch
Bandwidth	Gigabit
Multicast	IGMP snooping
Recommended Models	Cisco SG500, Cisco Catalyst series, Huawei S5720S-28X-PWR-LI-AC, ZyXEL GS2210, Luxul AMS-4424P
POWER	
Power Supply	Input: 100–240V AC, 50/60Hz; Output: 12V DC, 2.5A
PoE	IEEE 802.3at (Class 4) and 802.3af, PD mode
Power Priority	Local 12V supply takes priority over PoE
Power Consumption	Host: 1.92W (max); Device: 2.76W (max)
PHYSICAL	
Enclosure	Metal
Color	Black
Dimensions (W x D x H)	3.35 x 4.63 x 1.00 in (85 x 117.5 x 25.5 mm)
Weight	0.65 lbs (297 g)
ENVIRONMENTAL	
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Relative Humidity	20% to 90% RH, non-condensing
CERTIFICATIONS	
Power Supply	CE / FCC / UL
ESD	Tested to IEC 61000-4-2

4. Safety Notice

This product contains sensitive electrical components that electrical spikes, surges, electric shock and lightning strikes can damage. We strongly recommend a surge protection system to protect the equipment and extend its life.

For best performance and safety, read these instructions carefully before you connect, operate or adjust the product, and keep this manual for future reference.

5. Introduction

The EXT-USB2IP is a USB 2.0 over IP 1GbE network extender. It connects over fiber or copper and switches between them automatically. When both are connected, fiber takes priority.

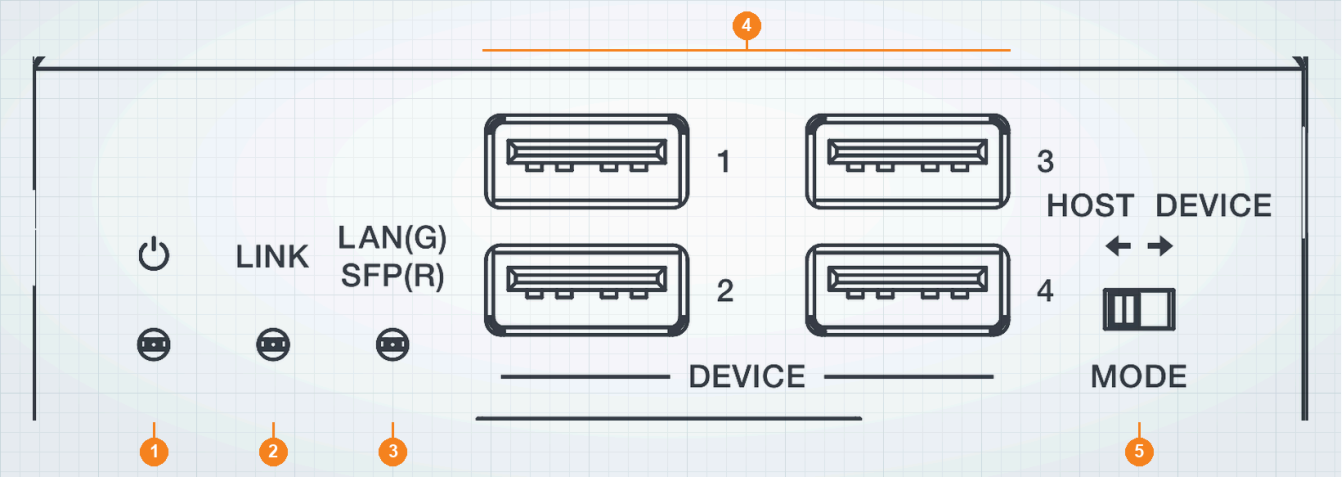
Each extender has one USB Host port and four USB Device ports. Set a unit to **Device mode** and it accepts up to four USB 2.0 devices, such as a mouse, keyboard, USB flash drive, camera, touch screen or printer. Set a unit to **Host mode** and it provides one USB 2.0 Host connection to a computer.

The extender runs on a Linux-based system, which allows flexible control. It is compact and highly compatible, and suits education, medical, enterprise, command-and-dispatch centers and other project installations.

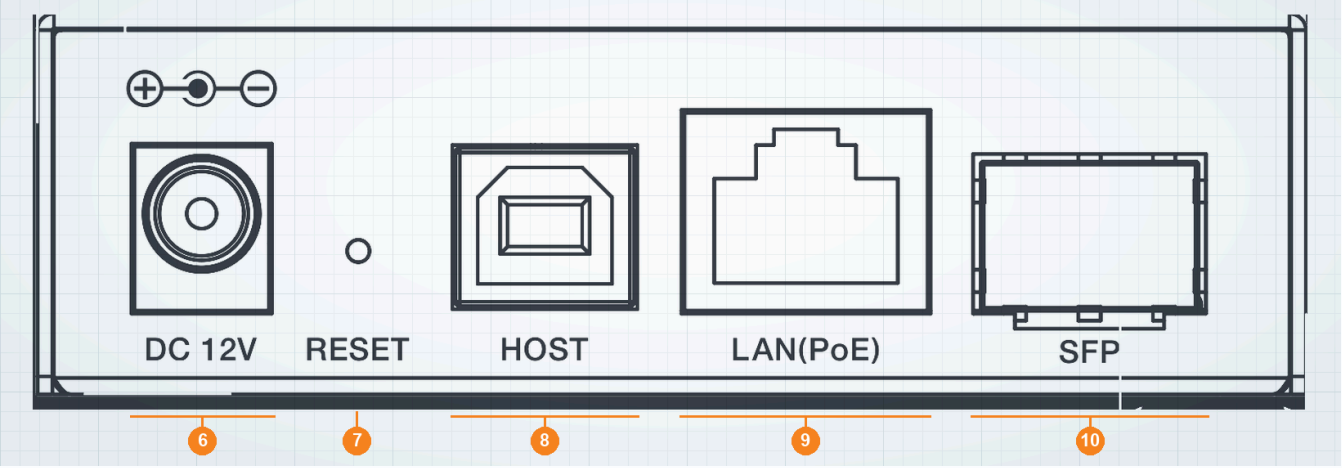
6. Certifications

The manual states that the included 12V/2.5A power supply is **CE, FCC and UL certified**. The extender's ESD protection is rated to **IEC 61000-4-2**. The manual gives no certification for the extender itself.

7. Panel descriptions



Front Panel



Rear Panel

The three LEDs (POWER, LAN/SFP and LINK) are on the front panel.

No.	Name	Description
—	**LAN(G)/SFP(R) LED**	When neither the LAN port nor the SFP port is connected, the LED shows the connection mode. Green and red together (yellow) means automatic detection, green means the LAN port has been selected manually, and red means the SFP port has been selected manually. When either port is connected, the LED shows which one is in use: green for the LAN port, red for the SFP port.
—	**POWER LED (Red)**	When you power on the unit, the red power LED flashes until the system is ready, then stays on. When the unit is off, the LED is off.
3	**RESET button**	Restores the default settings. With the unit powered on, press and hold this button for 5 seconds. When the three LEDs on the front panel flash together, release the button. The unit returns to its defaults: Auto IP, with an IP address of 169.254.xxx.xxx.
—	**LINK LED (Green)**	Off: the unit is not connected through the SFP port or the LAN port. Flashing: the unit is connected through the SFP or LAN port, but pairing has not succeeded. On: the unit is connected and paired.
5	**HOST/DEVICE MODE switch**	Selects Host or Device mode. Slide it to the left for Host mode (the default) or to the right for Device mode.
6	**USB DEVICE 1/2/3/4 ports**	Four USB 2.0 device ports. Connect a mouse, keyboard, USB flash drive, camera, touch screen, printer or other USB device.

continued

No.	Name	Description
7	DC 12V	Power input. You can power the unit in two ways: from the included DC 12V/2.5A power supply, which takes priority when both are present, or by PoE from the network switch, with the unit acting as a powered device (PD).
—	SFP port	1G optical fiber port. Connect it to a 1G switch with a fiber optic cable.
—	HOST port	USB Host port. Connect it to a computer.
—	LAN(PoE) port	1G Ethernet port. Connect it to a 1G switch with a network cable. This port supports PoE and works with both 802.3af and 802.3at.

The LAN(PoE) port and the SFP port use automatic detection by default. You can also select either port manually.

8. Rack Mounting

You can mount the extender in a standard 6U V2 rack, which is sold separately. Contact your supplier to buy one.

Step 1: Using the included screws, fix the rack bracket to one side of an extender and a mounting ear to the other side. Fit a second extender with a rack bracket and a mounting ear in the same way.

Step 2: Insert the two extenders prepared in Step 1 into the 6U V2 rack. The rack holds up to 20 units, installed vertically.

Step 3: Screw the mounting ears to the rack to complete the installation.

9. Device Discovery

You can find the extenders on your network with a Bonjour browsing tool, such as ZeroconfServiceBrowser.

Step 1: Connect the Host extender, the Device extender and your PC to the same network switch, each with a CAT cable.

Step 2: Install a Bonjour browsing tool on the PC and use it to find the IP address of each extender. In ZeroconfServiceBrowser, select "Workgroup Manager" under Services in the Browser panel. Then select the extender under Service-Instances, and read its IP address from the Address field under Instance-Info.

The lower-left window lists every device on the current network. The lower-right window shows the selected device's host name, IP address and port number.

10. Recommended Network Switch

The network switch you use for the system must have these features:

1. Layer 3 / managed switch. 2. Gigabit bandwidth. 3. IGMP snooping.

These switch models are highly recommended:

MANUFACTURER	MODEL NUMBER
Cisco	SG500
Cisco	Catalyst series
Huawei	S5720S-28X-PWR-LI-AC
ZyXEL	GS2210
Luxul	AMS-4424P

11. USB 2.0 Extension Application

A pair works straight out of the box. When the extenders are in their default state, or after you reset them with the RESET button:

1. Connect a computer to the extender set to Host mode. 2. Connect your USB devices to the extender set to Device mode. 3. Link the two extenders with a network cable.

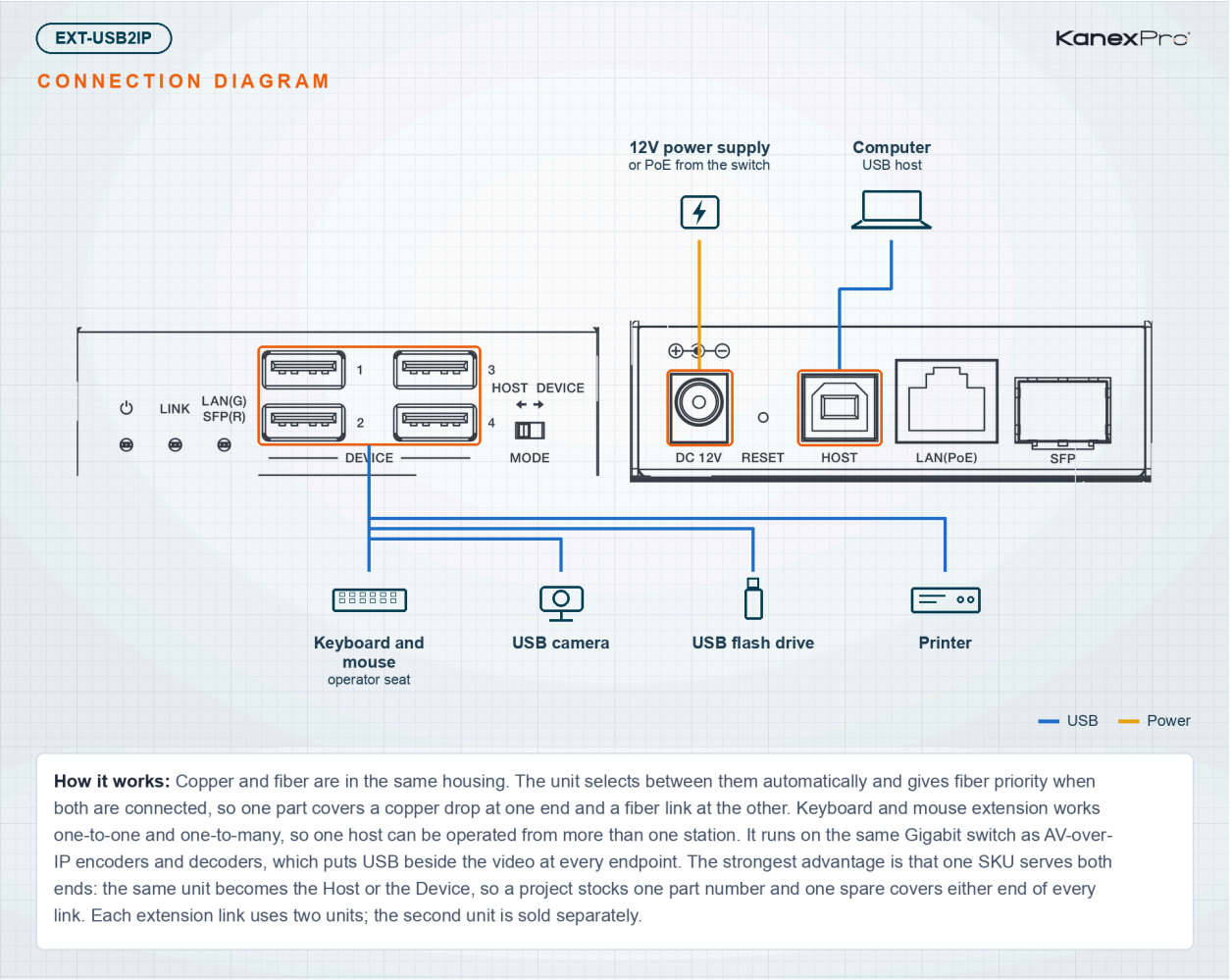
USB 2.0 signals are then extended between the two units. In a typical setup, a PC connects by USB cable to the Host extender. A CAT cable links the Host extender to the Device extender. The Device extender connects by USB cable to a keyboard, mouse, USB flash drive and USB camera.

12. System Topology Diagram

The system diagram shows the extenders working on the same network switch as AV-over-IP encoders and decoders.

- **Sources and encoders:** Sources such as a TV box, laptop, Blu-ray player, media player and PCs connect to encoders by HDMI cable.
- **Host extenders:** Each PC also connects by USB to its own Host extender.
- **Shared switch:** The encoders, the decoders, the extenders, a controller, an amplifier and a laptop, phone or tablet all connect to the same switch.
- **Decoders and Device extenders:** On the display side, each decoder drives a monitor or projector, and a Device extender sits beside it. The Device extenders connect the USB equipment: a USB flash drive, a printer, a fax machine, a USB camera, and the keyboard and mouse at the operator's seat (USB KVM).
  The diagram's key shows HDMI cable, CAT cable, audio cable, USB KVM and USB 2.0 links.

13. Connection Diagram



How it works: Copper and fiber are in the same housing. The unit selects between them automatically and gives fiber priority when both are connected, so one part covers a copper drop at one end and a fiber link at the other. Keyboard and mouse extension works one-to-one and one-to-many, so one host can be operated from more than one station. It runs on the same Gigabit switch as AV-over-IP encoders and decoders, which puts USB beside the video at every endpoint. The strongest advantage is that one SKU serves both ends: the same unit becomes the Host or the Device, so a project stocks one part number and one spare covers either end of every link. Each extension link uses two units; the second unit is sold separately.

14. Troubleshooting

Q: The LINK LED is off. What should I check?
A: An unlit LINK LED means the unit has no network link on either port. Check the cable and the switch port at both ends. Then check the LAN/SFP LED: with no link, green means the unit is locked to LAN, red means it is locked to SFP, and yellow means auto detect, so make sure the selected port is the one actually cabled.

Q: The LINK LED keeps flashing and USB does not pass through. What should I check?
A: A flashing LINK LED means the unit is linked but not paired. Check that one unit's slide switch is set to Host and the other's to Device, that both are on the same Gigabit managed switch with IGMP snooping, and then reset both units. To reset, hold RESET for 5 seconds with the power on and release it when all three front LEDs flash, which restores the out-of-box pairing.

Q: A USB device disconnects or does not work when the unit runs on PoE. Why?
A: On 802.3af PoE, all four USB ports share only 5V 1.2A, which may not be enough for several devices or one that draws a lot of current. Power the Device unit from 802.3at PoE (0.9A per port) or from the included 12V supply (1A per port).

Need help? — For additional support, visit kanexpro.com/support, or scan the QR code below for the product page.

15. Installation FAQ

Q: How do I set a unit as the Host or the Device?
A: Use the HOST/DEVICE slide switch. Slide it left for Host mode, which is the default and connects to the computer's USB port. Slide it right for Device mode, which takes up to four USB devices on its Type-A ports.

Q: What does the network switch need to support?
A: The switch must be a Layer 3 or managed switch with Gigabit bandwidth and IGMP snooping. Connect each unit's LAN (PoE) port or SFP port to it.

Q: Which PoE standards power the unit, and what if both PoE and the 12V supply are connected?
A: The unit works as a powered device on IEEE 802.3at (Class 4) or 802.3af PoE through its LAN port. If the locking 12V DC supply is also connected, the 12V supply takes priority. On 802.3af, the USB ports share only 1.2A, so use 802.3at or the 12V supply for higher-draw USB devices.

16. Integration FAQ

Q: How do I find the units' IP addresses on the network?
A: Connect the units and a PC to the same switch, then run a Bonjour (mDNS) browsing tool on the PC. The units appear under the "Workgroup Manager" service, and selecting one shows its host name, IP address and port.

Q: Can the extenders share a network with AV-over-IP video encoders and decoders?
A: Yes. The extenders, the encoders and decoders, and a controller can all run on the same switch. Each PC connects by USB to its own Host unit, and a Device unit next to each decoder serves the keyboard, mouse, camera, printer or flash drive at that display.

Q: Do the units need setting up before they work as a pair?
A: No. In their default state, connect the computer to the Host unit, connect the USB devices to the Device unit, and link the two over the network, and USB 2.0 is extended between them. Pairing and other settings can also be configured, and keyboard and mouse can be extended one-to-one or one-to-many.