FireNEX™-U4F-DP

USB-C Fiber Repeater, 10Gbps and 10K Display



OVERVIEW

FireNEX™-U4F-DP is a USB-C fiber optic repeater that extends USB 3.2 Gen 2 data and DisplayPort Alt Mode video up to 700 meters over single-mode fiber. Supporting data transfer speeds up to 10Gbps and video resolutions up to 10K, it enables long-distance connectivity for USB-C devices in professional AV, computer vision, VR, and other applications that require equipment to be located far from the host computer.

The Remote Unit features a USB-C port that combines 10Gbps USB 3.2 Gen 2 data, DisplayPort 1.4 video via DP Alt Mode, and USB Power Delivery up to 20W, providing data, video, and power through a single connection to the device. Backward compatibility with USB 3.0 and USB 2.0 / 1.1 peripherals, along with support for Windows, macOS, and Ubuntu, simplifies integration into existing systems. Fiber optic transmission maintains signal integrity over long distances and provides EMI immunity along the fiber link.

FEATURES

- **USB-C Data and Video Extension over Fiber**
  Extends USB 3.2 Gen 2 data and DisplayPort Alt Mode video over fiber through a single USB-C connection
- **Long-distance USB-C Extension up to 700m**
  Supports extension distances of up to 700 meters over a single-mode fiber optic cable
- **Up to 10K Video via DisplayPort Alt Mode**
  Remote Unit's USB-C port supports DisplayPort 1.4 via DP Alt Mode, delivering video resolutions up to 10K
- **10Gbps USB Data Transfer**
  Supports USB 3.2 Gen 2 data transfer at speeds up to 10Gbps for connected USB-C devices
- **USB Power Delivery up to 20W**
  Provides up to 20W of power to the connected USB-C device, with support for 5V / 9V / 12V / 20V USB PD profiles
- **High Signal Integrity and EMI Immunity**
  Fiber optic transmission preserves signal integrity over long distances and provides immunity to electromagnetic interference along the fiber link
- **Secure Connections and Surface Mounting**
  USB-C ports with screw locking, compliant with USB-IF and USB3 Vision standards, ensure secure connections, while built-in mounting holes allow easy surface mounting
- **Backward Compatibility**
  Supports USB 3.0 and USB 2.0 / 1.1 peripherals
- **Hot Plug-and-play Support**
  Maintains host system stability when the fiber link is disconnected or the remote unit is powered off
- **Broad OS Compatibility**
  Compatible with Windows, macOS, and Ubuntu

PRODUCT IMAGES

Front View



Local Unit



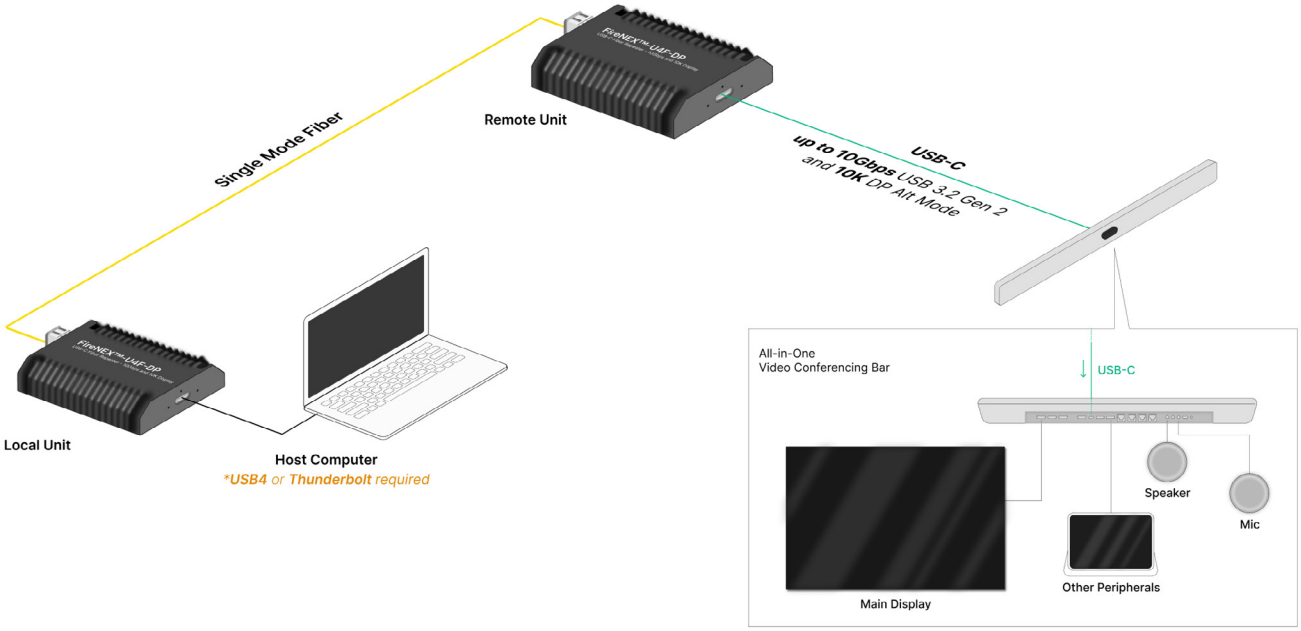
Back View



Remote Unit



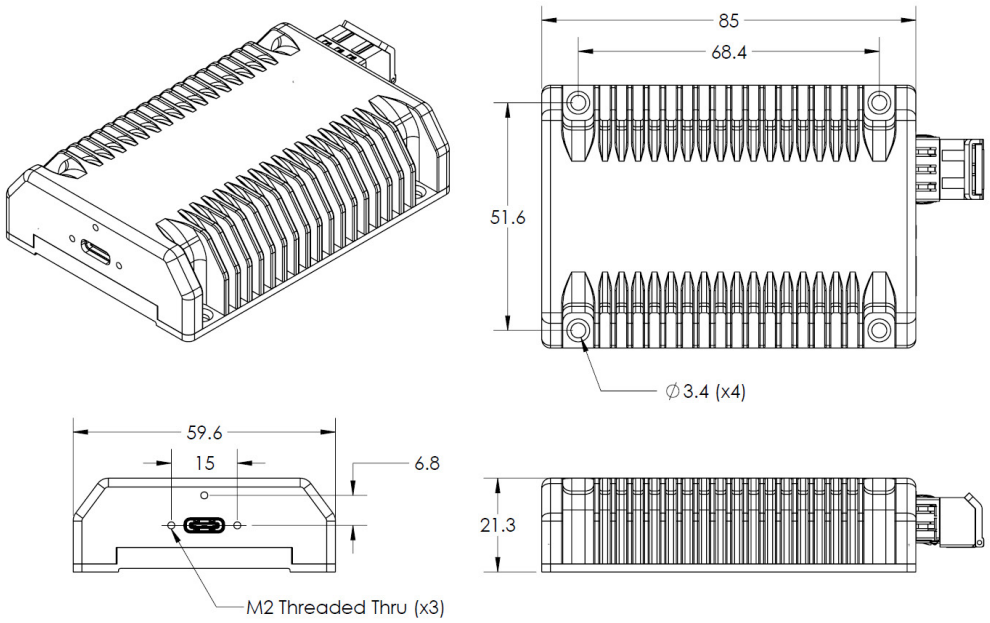
APPLICATION DIAGRAM



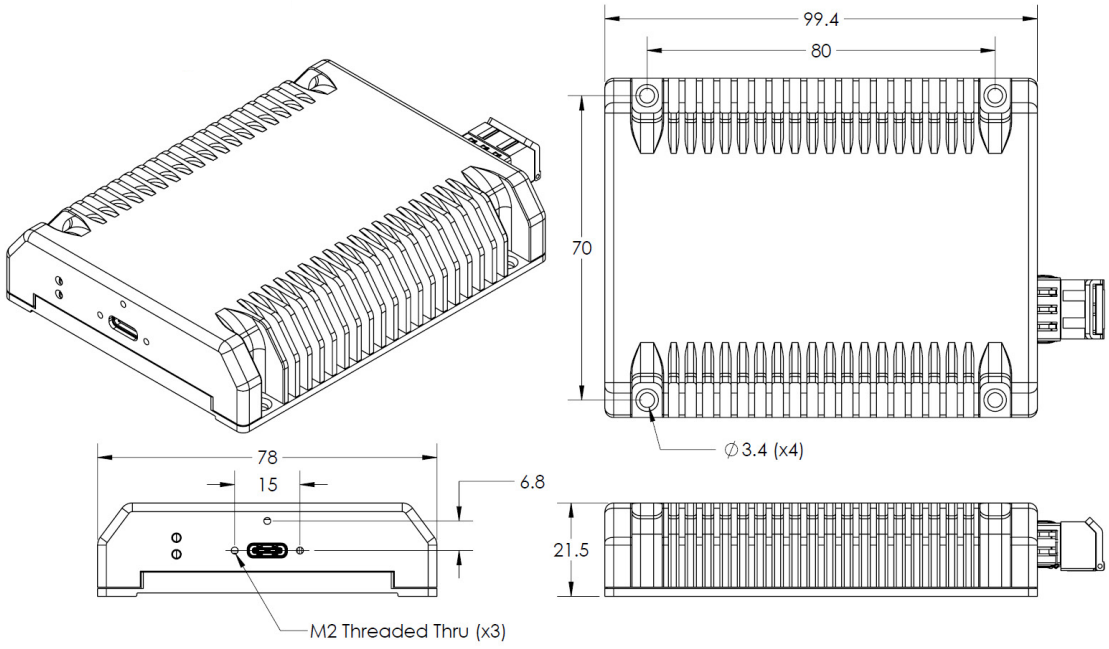
PRODUCT DRAWING

units: mm
unless otherwise noted

Local Unit



Remote Unit



PACKAGE CONTENTS

- FireNEX™-U4F-DP Local Unit × 1
- FireNEX™-U4F-DP Remote Unit × 1
- 1m USB4 Type-C Cable × 1
- 12V DC Power Supply × 2
- FireNEX™-U4F-DP User Guide × 1

SPECIFICATIONS

Max. Extension Range	
USB 3.2 Gen 2, 10Gbps	Up to 300m
USB 3.2 Gen 1, 5Gbps (USB 3.0)	Up to 700m
DisplayPort Alt Mode Video	Up to 700m
USB Hub Tier Count	0

Host Compatibility*	
USB4	Supported
Thunderbolt	Thunderbolt 3, 4, 5

** **Note:** The Local Unit must connect to a USB4 or Thunderbolt™ USB-C host port. Do not connect it to a USB 3.2 Gen 2 port.*

Video	
DP Alt Mode	DisplayPort 1.4
(via USB-C)	Up to 10K at 60Hz / 4K at 144Hz

Local Unit	
Dimensions (W x D x H)	60 x 85 x 21mm (2.4 x 3.3 x 0.8”)
Weight	141g
Enclosure Material	Aluminum Alloy
Upstream USB Port	1× USB-C, Locking (Single & Dual Screw)
Optical Connector	1× Duplex LC
Power Input	12V DC, 2.5A
DC Power Jack	2.1 x 5.5 x 10mm center positive

Remote Unit	
Dimensions (W x D x H)	78 x 100 x 21.5mm (3.1 x 3.9 x 0.9”)
Weight	213g
Enclosure Material	Aluminum Alloy
Downstream USB Port	1× USB-C, Locking (Single & Dual Screw)
USB Data Support	USB 3.2 Gen 2, up to 10Gbps
Backward Compatibility	USB 3.0, USB 2.0 / 1.1 peripherals
Video Output	DisplayPort 1.4 (via USB-C DP Alt Mode)
USB PD Output Profiles	5V/3A, 9V/2A, 12V/1.66A, 20V/1A
Optical Connector	1× Duplex LC
Power Input	12V DC, 2.5A
DC Power Jack	2.1 x 5.5 x 10mm center positive

Environmental	
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Operating Humidity	10% to 90% relative humidity, non-condensing

Fiber Cable	
Connector	Duplex LC-LC
Type	OS2 single mode, 9/125 µm
Polarity	A-B duplex wiring

Power Adapter	
Available AC Plug Options	US / EU / UK / CN
AC Input	100-240V AC, 50/60Hz, 0.8A
DC Output	12V DC, 2.5A

Compliance	
Machine Vision	USB3 Vision® Compliant
EMC	FCC, CE
Environment	RoHS, REACH
Laser Safety	IEC 60825-1 Class 1 / CDRH Class 1

Support	
Warranty	1-year manufacturer warranty

Newnex Technology Corp.
3041 Olcott St., Santa Clara, CA 95054
www.newnex.com

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