5/22/2024

Datasheet

# Coaxlink CXP-12 to QSFP+ Converter

Four-connection CoaXPress CXP-12 to CoaXPress-over-Fiber converter


- Provides easy cable length extension using CoaXPress-over-Fiber
- Allows connecting a CXP-12 camera to a Coaxlink QSFP+ frame grabber
- Four CoaXPress CXP-12 connections on the camera side
- One QSFP+ port compliant with 40 Gbps optical modules on the frame grabber side
- 5,000 MB/s camera bandwidth
- PoCXP camera power supply

# Main benefits

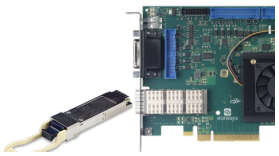
## Acquire images from the fastest and highest resolution cameras

- Highest data acquisition rate in the industry
- Up to 5,000 MB/s bandwidth from camera to host PC memory

## CoaXPress-over-Fiber is a light but significant extension of the existing CoaXPress specification

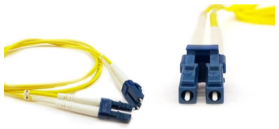
CoaXPress (CXP) is the de-facto standard for high-bandwidth computer vision applications. CoaXPress 2.1, the latest version of the specification, specifies the CXP-12 speed, a 12.5 Gbps (Gigabit per second) connection over a coaxial copper cable.

As link aggregation is common with CoaXPress, bandwidths of 50 Gbps (12.5 x 4) are easily achievable with four CXP-12 connections. CoaXPress-over-Fiber has been designed as an add-on to the CoaXPress specification. It provides a way to run the CoaXPress protocol, as it is, unmodified, over a standard Ethernet connection, including fiber optics. As such, CoaXPress-over-Fiber uses standard electronics, connectors and cables designed for Ethernet, but the protocol is CoaXPress, not Ethernet, not GigE Vision.



## What are the cable options for CoaXPress-over-Fiber?

One of the most important benefits of CoaXPress-over-Fiber is the wide variety of connectivity options already available from multiple companies. The initial connectivity options for CoaXPress-over-Fiber and the Coaxlink QSFP+ at 10 Gbps are SFP+ and QSFP+ (Quad, or four times SFP+) modules.
The advantage of using modules compared to fixed interfaces is that ports can be equipped with any suitable type of transceiver as required by the application. A variety of transmitter and receiver types is available, allowing users to select the appropriate transceiver to provide the required optical reach over multi-mode or single-mode fiber.



## What is the maximum cable length with single-mode fibers?

With a standard 40GBASE-ER4 QSFP+ LC DOM Optical Transceiver Module and an LC-Duplex single-mode fiber cable, the maximum cable length is 40 kilometers. This solution is suitable, for example, for video transmission applications.

## What is the maximum cable length with multi-mode fibers?

With a standard 40GBASE-SR4 QSFP+ Optical Transceiver Module and an MTP/MPO multi-mode fiber cable, the maximum cable length is 150 meters. This solution is suitable for machine vision applications.

PoCXP
Power over CoaXPress

## Power over CoaXPress

- Feed your camera up to 17 W per channel under 24 VDC with automatic device detection, measurement and overload protection.
- Total and per-channel voltage and current measurement is possible, allowing validation and performance deviation monitoring.

eGrabber
Powerful Image Acquisition

## Compatible with eGrabber

- eGrabber Studio: eGrabber's new interactive evaluation and demonstration application
- GenICam Browser: An application giving access to the GenICam features exposed by the GenTL Producer(s)
- GenTL Console: A command-line tool giving access to the functions and commands exposed by the Euresys GenTL Producer

GEN<i>CAM

## Compliant with GenICam

Including support for:

- GenApi
- The Standard Feature Naming Convention (SFNC)
- GenTL

# Other benefits

## What are the pros and cons of using fiber optics?

Pros

- First and foremost, cable length is not an issue anymore as fiber connectivity is basically not limited in length.
- Fiber optics provide more bandwidth, as connectivity at 10 and 25 Gbps per fiber is standard today and widely used in data centers.
- Fiber optics are immune to electrical noise, which will be a significant advantage on the production floor and in some medical applications.
- Fiber optics are lighter and smaller in size than the equivalent copper cabling, making it appropriate for applications where this characteristic is essential, like in aircrafts or vehicles.

Cons

- There is no “power over fiber”. As signals in fiber optics are transmitted using light, there is no way to transfer power over fiber optics and devices such as cameras must be powered separately.

## What are the benefits of using CoaXPress-over-Fiber for my application?

- Available as CXP to nGMII (device) or nGMII to CXP (host) Bridge IP Cores
- Ultra-high data/frame rates
- Many accessory and cabling options to cover any length requirement
- Low CPU overhead, low latency, low jitter image acquisition
- Highest camera count per PC performance
- Very competitive cost/performance ratio
- Wide industry acceptance due to JIIA standardization

## What are the jitter and latency of CoaXPress-over-Fiber? How do they compare to "traditional" CoaXPress?

CoaXPress-over-Fiber is based on the CoaXPress protocol and it exhibits the same high performance as CoaXPress in terms of jitter and latency. In addition, as CoaXPress-over-Fiber supports higher transmission speed compared to CoaXPress.

# Specifications

## Mechanical

### Form factor

Stand-alone device

### Cooling method

Air cooling, fan-cooled heatsink

### Housing

Aluminum housing

### Mounting

Desktop

### Connectors

'COAXPRESS A B C D (INPUT)' on front panel:

- 4 x Micro-BNC 75 Ohms coaxial receptacles
- CoaXPress Host Interface

'QSFP+ (OUTPUT)' on rear panel:

- Enhanced Quad Small Form-factor Pluggable port
- CoaXPress-over-Fiber Device Interface

'POWER' on rear panel:

- 2-pin 5.08mm pitch terminal socket
- 24 V DC power input

### LED indicators

'A', 'B', 'C', 'D' on front panel:

- Bi-color red/green LEDs
- CoaXPress Host connector indicator

'A', 'B', 'C', 'D' on rear panel:

- Bi-color red/green LEDs
- CoaXPress-over-Fiber Device connector indicator

'STATUS' on rear panel:

- Bi-color red/green LED
- FPGA status indicator

'POWER' on rear panel:

- Bi-color red/green LED

Board status indicator

### Dimensions

L x W x H: 208 mm x 113 mm x 56.5 mm [8.2 in x 4.45 in x 2.22 in]

### Weight

Net weight: 776 g [27.4 oz]

Gross weight: 930 g [32.8 oz]

## Camera / video inputs

### Camera interface standard

CoaXPress

### Interface standard(s)

CoaXPress 1.0, 1.1, 1.1.1, 2.0, 2.1, CoaXPress-over-Fiber Bridge Protocol 1.1

### Maximum link speed

CXP-12

### Maximum link width

4 connections

### Camera powering

PoCXP

### Connectors

Four micro-BNC 75 Ohms (also known as HD-BNC™) CXP-12

### Status LEDs

One CoaXPress Host connection status LED per connection

### Number of cameras

Area-scan cameras:

- One 1- or 2- or 4-connection camera
- Four 1-connection cameras (Contact us)

Line-scan cameras:

- One 1- or 2- or 4-connection camera

### Maximum number of cameras

4

### Line-scan cameras supported

Yes

### Maximum aggregated camera data transfer rate

50 Gbps (5,000 MB/s)

### Supported CXP down-connection speeds

1.25 Gbps (CXP-1), 2.5 Gbps (CXP-2), 3.125 Gbps (CXP-3), 5 Gbps (CXP-5), 6.25 Gbps (CXP-6), 10.0 Gbps (CXP-10), and 12.5 Gbps (CXP-12)

### Supported CXP up-connection speeds

Low-speed 20.83... Mbps (CXP-1 to CXP-6)

Low-speed 41.66... Mbps (CXP-10, CXP-12)

### Number of CXP data streams (per camera)

1 data stream per camera

### Maximum CXP stream packet size

16,384 bytes

### PoCXP (Power over CoaXPress)

PoCXP Safe Power:

- PoCXP Device detection and automatic power-on
- Overload and short-circuit protections

The +24V power source (POWER) must be able to deliver the power required by the converter and camera(s)

## Frame grabber / video outputs

### Interface standard

CoaXPress-over-Fiber

### Interface standard(s)

CXP-over-Fiber Bridge Protocol 1.1

### Maximum link speed

CoF-10

### Maximum link width

4 connections

### Maximum data rate

50 Gbps (5,000 MB/s)

### Connectors

One Enhanced Quad Small Form-factor Pluggable port (QSFP+)

### Status LEDs

One CoaXPress-over-Fiber Device status LED per connection

## Electrical

### Supply voltage

24 V DC +/- 3% (23.25 V - 24.25 V), via external power supply (not included)

### Power connector

**'POWER' connector on rear side:**

2-pin 5.08 mm pluggable terminal block socket

### Power consumption

19.5 W for internal use

4 x 17 W for PoCXP

## Software

### Driver name

eGrabber

### First release

eGrabber 24.10

### Current release

eGrabber 25.05

## Environmental conditions

### Operating ambient air temperature

0 °C to +50 °C / +32 °F to +122 °F

### Operating ambient air humidity

10% to 90% RH non-condensing

### Storage ambient air temperature

-20 °C to +70 °C/ -4 °F to +158 °F

### Storage ambient air humidity

10% to 90% RH non-condensing

## Certifications

### EMC standards

European Council EMC Directive 2014/30/EU

United States FCC rule 47 CFR 15

### EMC - Emission

CISPR 32:2015 + A1:2019 Class A

EN 55032:2015 + A11:2020 Class A

### EMC - Immunity

CISPR 35:2016

EN 55035:2017 + A11:2020

IEC 61000-6-2:2016 / EN 61000-6-2:2019

EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-6

### KC Certification

Korean Radio Waves Act, Article 58-2, Clause 3

### Flammability

PCB compliant with UL 94 V-0

### RoHS

European Union Directive 2015/863 (ROHS3)

### REACH

European Union Regulation 1907/2006

### WEEE

Must be disposed of separately from normal household waste and must be recycled according to local regulations

# Ordering Information

## Product status

Released

## Product code - Description

PC3629 Coaxlink CXP-12 to QSFP+ Converter

## Related products

PC1676 AC-DC Power Adapter, 24V, 160W

# Offices

- Europe, Middle East & Africa
  Euresys SA
  **Contact support : support.europe@euresys.com**

  Sensor to Image GmbH
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