

APPLICATION NOTE

AN-P10

CHEETAH CAMERA SERIES CXP-C9440 Link Configuration

Abstract: This application note describes how to change CXP link configuration on the Imperx Cheetah CoaXPress CXP-C9440 camera.

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Introduction

This application note provides procedures on configuring the number of CXP channels (links) and speed per one channel. It also provides guidelines on connecting the Cheetah CXP-C9440 camera.

The Cheetah CXP-C9440 camera is pre-configured for operation with four CXP channels (cables). To re-configure the camera to use only one or two channels, connect the camera to a quad-input frame grabber with four coax cables, change the CXP link configuration, and save the new configuration to the camera's non-volatile memory as described in the [Changing the Camera's Configuration](#) section.

Once the camera has been re-configured, disconnect it from the frame grabber and attach it to a single- or dual-input frame grabber (as required by your design).



Always plug as many coax cables as determined by the current CXP link configuration. A frame grabber may not detect the camera or an image may be incorrect if fewer cables are used.

NOTE * The frame grabber, connectors, and coaxial cables **MUST** comply with the CoaXPress v1.1 standard.

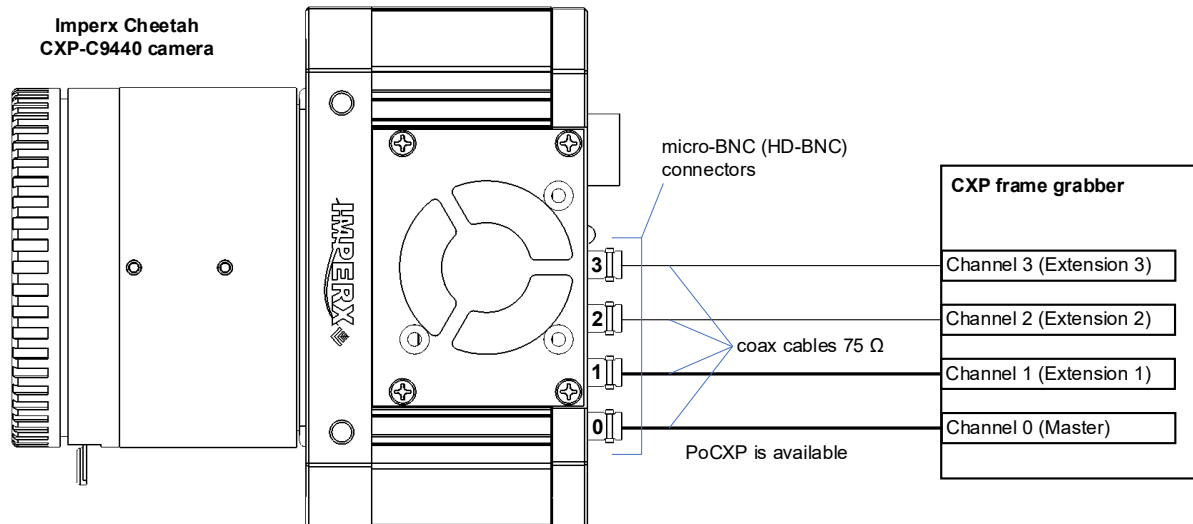
Use CoaXPress cables with micro-BNC (HD-BNC) connectors.

When connecting the CXP-C9440 camera to a frame grabber, always attach the camera's Channel 0 (Master) to the frame grabber's Master channel (refer to the documentation on your frame grabber).

Changing the Camera's Configuration

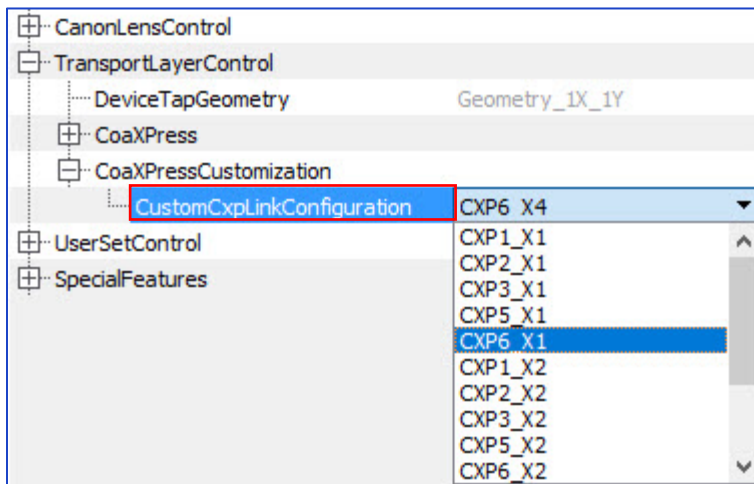
By default, the CXP-C9440 camera operates via four CXP channels delivering 6.25 Gbps per each channel. If your application requires using fewer channels and/or lower speed change the camera's configuration.

1. Connect the camera's Channel 0, Channel 1, Channel 2, and Channel 3 to the frame grabber's Channel 0, Channel 1, Channel 2, and Channel 3 respectively (see the figure below).
The camera uses Channel 0 and Channel 1 for Power over CoaXPress.



2. Optionally, connect the camera to an external power supply (if not using PoCXP).
3. Run the software provided with the frame grabber and connect to the camera.
4. Under the **Transport Layer Control** category, select **CoaXPressCustomization** and set *CustomCxpLinkConfiguration* to a new value.

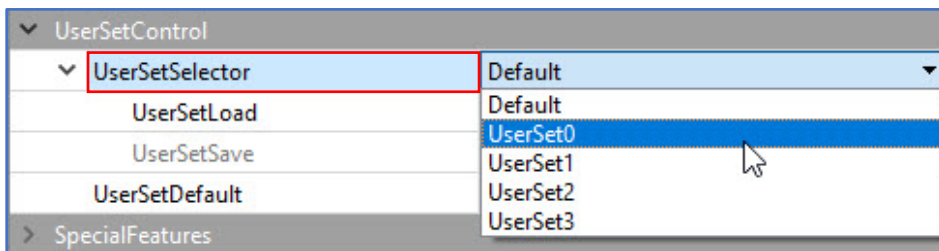
TIP ⓘ For some frame grabbers, you might need to select **Guru** in the *Visibility* drop-down list to be able to access the **CoaXPressCustomization** category.



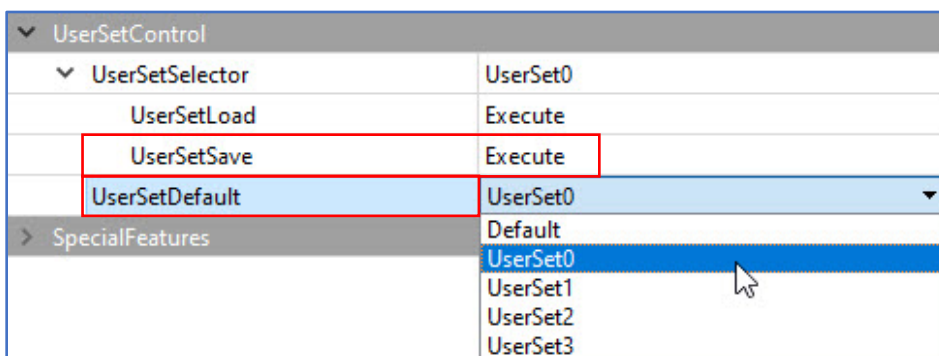
You can select the number of channels (X1 for one CXP channel, X2 for two CXP channels) and speed (Gbps) per one channel:

CustomCxpLinkConfiguration setting	Number of CXP channels (number of CXP cables)	Speed per one channel, Gbps	Total speed, Gbps
CXP1_X1	1	1.250	1.250
CXP2_X1	1	2.500	2.500
CXP3_X1	1	3.125	3.125
CXP5_X1	1	5.000	5.000
CXP6_X1	1	6.250	6.250
CXP1_X2	2	1.250	2.500
CXP2_X2	2	2.500	5.000
CXP3_X2	2	3.125	6.250
CXP5_X2	2	5.000	10.000
CXP6_X2	2	6.250	12.500
CXP1_X4	4	1.250	5.000
CXP2_X4	4	2.500	10.000
CXP3_X4	4	3.125	12.500
CXP5_X4	4	5.000	20.000
CXP6_X4	4	6.250	25.000

- Select one of the User Sets in the *UserSetSelector* drop-down list. The options are UserSet0, UserSet1, UserSet2, or UserSet3. The Default is a factory configuration that cannot be changed.



- Execute **UserSetSave** command to save your configuration to the camera’s non-volatile memory.
- Select your User Set (must be the same as in step 5) in the **UserSetDefault** drop-down list. The camera loads and activates this User Set upon the next reset or upon power-up.



8. Power-cycle the camera for the changes to take effect.
9. Disconnect the camera from the frame grabber and unplug the cables that are not used in your application.
10. Connect the camera to a single- or dual-input frame grabber (as required by your application).
Refer to the section [Connection Diagrams](#) for more information.

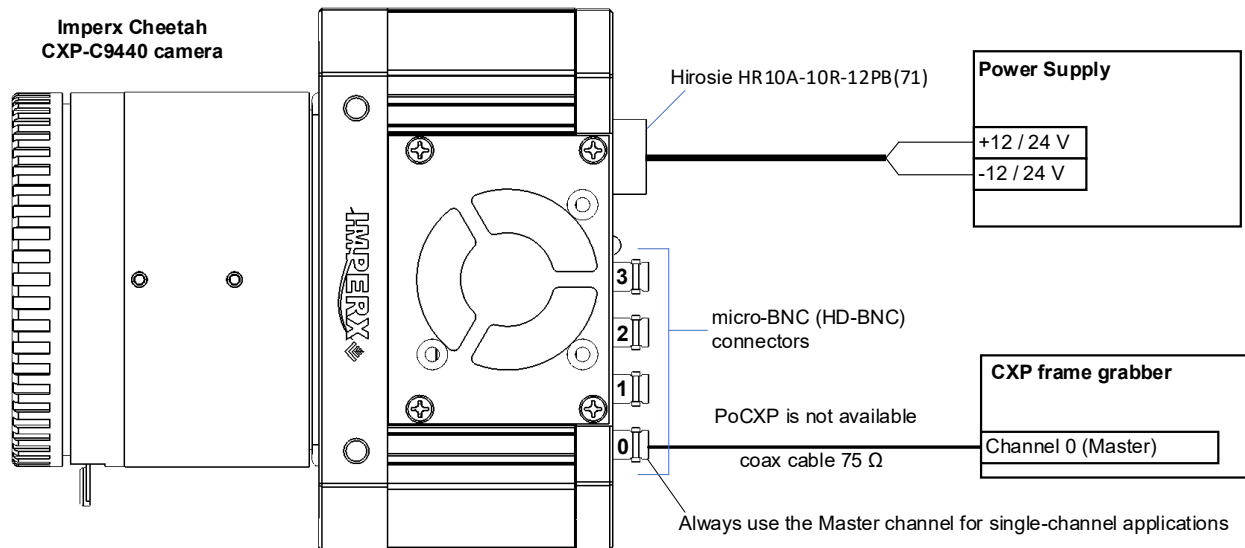
Connection Diagrams

Single-Channel Configuration

Connect the camera's Channel 0 (Master) to the frame grabber's Channel 0.

An external power supply is required for applications with one CXP channel. The camera does not support PoCXP (Power over CoaXPress) when only one CXP channel is used.

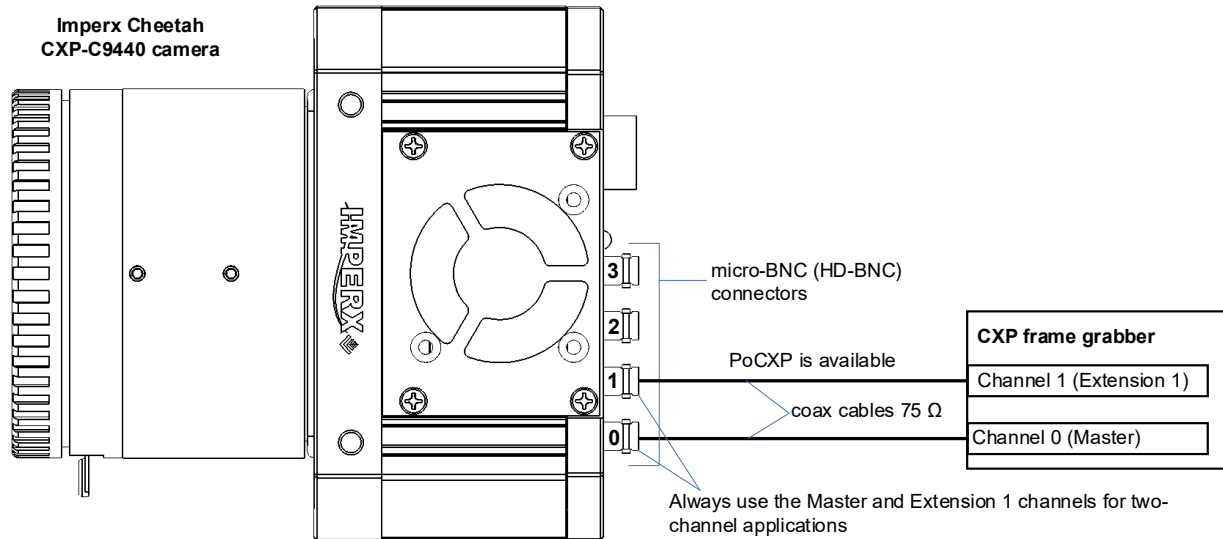
Imperx recommends using the PS12V04A power adapter for powering the CXP-C9440 camera (refer to the *Cheetah GMAX Camera with CoaXPress Interface User Manual* for more information).



Dual-Channel Configuration

Connect the camera's Channel 0 (Master) and Channel 1 (Extension 1) to the frame grabber's Channel 0 and Channel 1 respectively.

The camera uses Channel 0 and Channel 1 for PoCXP. Optionally, an external power supply can be used. Imperx recommends using the PS12V04A power adapter for powering the CXP-C9440 camera (refer to the *Cheetah GMAX Camera with CoaXPress Interface User Manual* for more information).



Quad-Channel Configuration

Connect the camera's Channel 0, Channel 1, Channel 2, and Channel 3 to the frame grabber's Channel 0, Channel 1, Channel 2, and Channel 3 respectively.

The camera uses Channel 0 and Channel 1 for PoCXP. Optionally, an external power supply can be used. Imperx recommends using the PS12V04A power adapter for powering the CXP-C9440 camera (refer to the *Cheetah GMAX Camera with CoaXPress Interface User Manual* for more information).

