

ADPT-4P-X2G3-FF-X8G3-MTP

Firefly to MTP adapter

XIMEA Accessories

Technical Manual

Version v260831

Introductions

About this manual

Dear customer,

Thank you for purchasing a product from XIMEA.

We hope that this manual can answer your questions, but should you have any further queries or if you wish to claim a service or warranty case, please contact your local dealer or refer to XIMEA Support on our website: www.ximea.com/support

The purpose of this document is to provide a description of XIMEA Accessories and to describe the correct way to install related software, drivers and run it successfully. Please read this manual thoroughly before operating your new XIMEA Accessories for the first time. Please follow all instructions and observe the warnings.

This document is subject to change without notice.

About XIMEA

XIMEA is one of the worldwide leaders for innovative camera solutions with a 30-year history of research, development and production of digital image acquisition systems. Based in Slovakia, Germany and the US, with a global distributor network, XIMEA offers their cameras worldwide. In close collaboration with customers XIMEA has developed a broad spectrum of technologies and cutting-edge, highly competitive products.

XIMEA's camera centric technology portfolio comprises a broad spectrum of digital technologies, from data interfaces such as USB 2.0, USB 3.1 and PCIe to cooled digital cameras with CCD, CMOS and sCMOS sensors, as well as X-ray cameras.

XIMEA has three divisions – generic machine vision and integrated vision systems, scientific imaging and OEM/custom.

Our broad portfolio of cameras includes thermally stabilized astronomy and x-ray cameras, as well as specialty cameras for medical applications, research, surveillance and defense.

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1 General description



Figure 1: Connected ADPT-4P-X2G3-FF-X8G3-MTP

- Adapter to connect XIMEA FireFly cameras to MTP cable
- Connects 4x PCIe Gen3 x2 cameras
- Copper FireFly cable from camera turns to fiber optic MTP cable
- Offers Power and IO connectors for synchronization and triggering
- Suitable for cameras from: xiX family

This adapter offers a streamlined way to connect your PCIe/FireFly camera directly to your PC, eliminating the need for an xSwitch. A FireFly ECUE copper cable is needed for connecting a camera(s) to the adapter. The adapter features an integrated Samtec PCUO module. This allows for a high-speed connection to your PC using an optical MTP cable. The adapter comes bundled with a power cable (CBL-XEC2-PWR-0M15) to ensure smooth operation. The adapter have connectors for GPI/GPO signals from the camera, enabling control and synchronization with other devices (cables required for GPI/GPO functionality).

1.1

LEDs Description

LED	Color	ON meaning	Description
1	Red	The power is provided	Power
2	Green	Not active - device did not reset on PCIe	PERST signal
3	Blue	Connected to PC	PRSNT signal

Table 1: LED Description

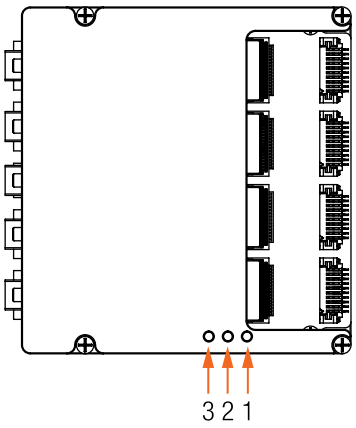


Figure 2: LEDs position

2 Dimensional drawings

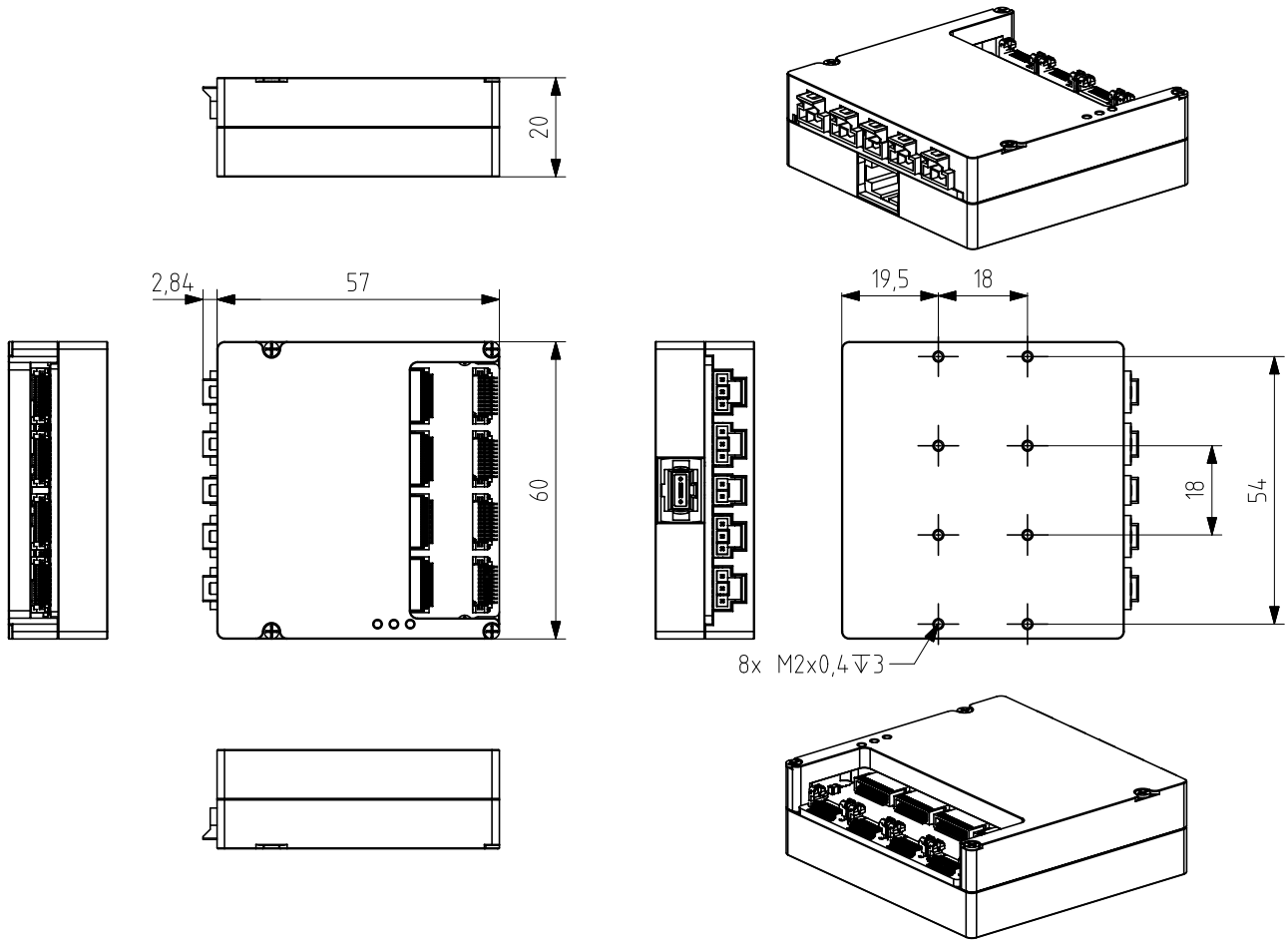


Figure 3: ADPT-4P-X2G3-FF-X8G3-MTP dimensional drawing

Width [W]	Height [H]	Depth [D]	Mass [M]
60 mm	20 mm	59.84 mm	TBD g

Table 2: Mechanical parameters

3 Connectors

3.1 Location of connectors

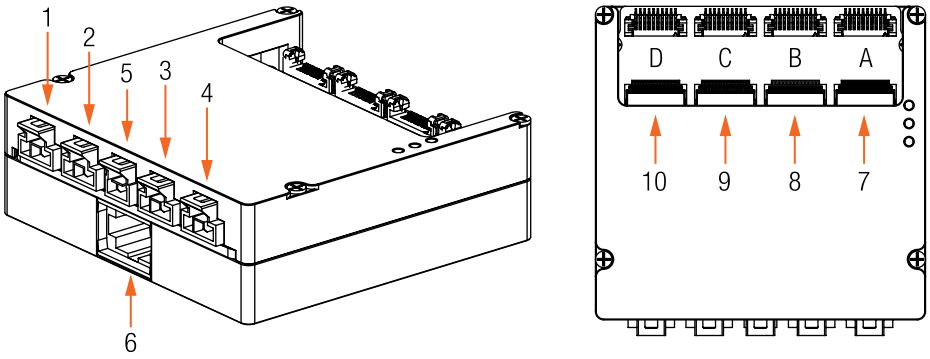


Figure 4: ADPT-4P-X2G3-FF-X8G3-MTP location of connectors

num.	connector
1	IO connector D
2	IO connector C
3	IO connector B
4	IO connector A
5	PWR connector
6	X8G3 MTP optical connector (24 fiber)
7	FireFly connector A
8	FireFly connector B
9	FireFly connector C
10	FireFly connector D

Table 3: Description of connectors

Usage	Identification
IO connector	1053131203
Power connector	1053131202

Table 4: Global identification of the connectors

3.2 Data interfaces

3.2.1 MTP optical fiber connector

The MTP connector on the xSwitch is a 24-fiber male MTP connector. For proper operation, use MTP cables with a 24-fiber female connector, such as CBL-MTP-X8G3-FF-xxxM0, see Section CBL-MTP-X8G3-FF-10M0.

Item	Value
Connector	MTP Male 24-fiber connector (see CBL-PCUO-X8G3-0M15)
Signals	PCIe Gen3 x8, RX lanes, TX lanes
Mating Connectors	US Conec MTP (Pinless) Female connector
Mating Cable	Ximea PN: CBL-MTP-X8G3-FF-5M0, CBL-MTP-X8G3-FF-10M0, CBL-MTP-X8G3-FF-20M0, CBL-MTP-X8G3-FF-30M0, CBL-MTP-X8G3-FF-40M0, CBL-MTP-X8G3-FF-50M0

Table 5: MTP connector general description

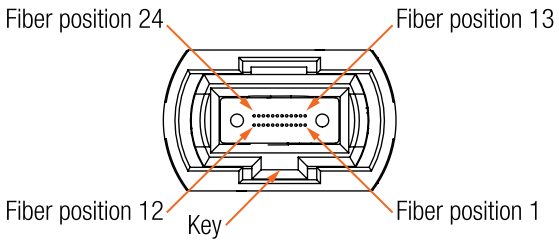


Figure 5: MTP connector pinout

Pin	Name	Description	Pin	Name	Description
1	Rx0	Receive channel 0	13	Tx0	Transmit channel 0
2	Rx1	Receive channel 1	14	Tx1	Transmit channel 1
3	Rx2	Receive channel 2	15	Tx2	Transmit channel 2
4	Rx3	Receive channel 3	16	Tx3	Transmit channel 3
5	NC	Not connected	17	NC	Not connected
6	NC	Not connected	18	NC	Not connected
7	NC	Not connected	19	NC	Not connected
8	NC	Not connected	20	NC	Not connected
9	Rx4	Receive channel 4	21	Tx4	Transmit channel 4
10	Rx5	Receive channel 5	22	Tx5	Transmit channel 5
11	Rx6	Receive channel 6	23	Tx6	Transmit channel 6
12	Rx7	Receive channel 7	24	Tx7	Transmit channel 7

Table 6: MTP connector pin assignment

3.2.2 FireFly connector

Item	Value
Connector	Samtec (UEC5-019-1-H-D-RA-1-A + UCC8-010-1-H-S-1-A)
Signals	PCIe, IO, GND
Mating cables	Ximea PN: CBL-ECUE-X4G3-1M0, CBL-ECUE-X4G3-2M0

Table 7: FireFly connector description

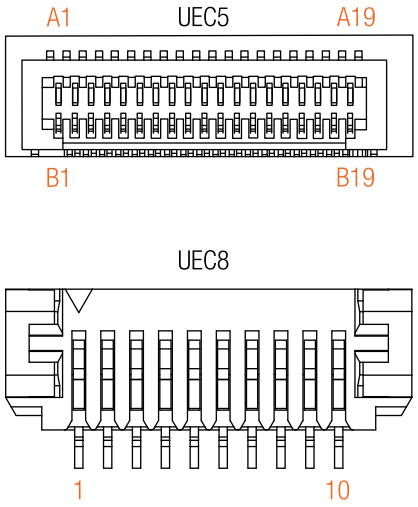


Figure 6: Firefly connector pinout

Pin	Name	Description
1	VCC_TX	TX Power output
2	GND	Ground
3	PRESENTL	Module presence detect
4	SELECT	Signal for selection
5	CPERST	PCIe reset signal
6	CPRSNT	Card presence detect
7	SDA	I2C data line
8	SCL	I2C clock line
9	GND	Ground
10	VCC_RX	RX power output

Table 8: FireFly connector UCC8 pin assignment

Pin	Name	Description	Pin	Name	Description
A1	GND	Signal and power ground	B1	GND	Signal and power ground
A2	PCIe_PETN_2	PCIe TX differential pair 2	B2	PCIe_PETN_3	PCIe TX differential pair 3
A3	PCIe_PETP_2	PCIe TX differential pair 2	B3	PCIe_PETP_3	PCIe TX differential pair 3
A4	GND	Signal	B4	GND	Signal and power ground
A5	PCIe_PETN_1	PCIe TX differential pair 1	B5	PCIe_PETN_0	PCIe TX differential pair 0
A6	PCIe_PETP_1	PCIe TX differential pair 1	B6	PCIe_PETP_0	PCIe TX differential pair 0
A7	GND	Signal and power ground	B7	GND	Signal and power ground
A8	SPARE	Unused/reserved pin	B8	PWR	Power input
A9	CPERST	PCIe reset signal	B9	PWR	Power input
A10	GND	Signal and power ground	B10	GND	Signal and power ground
A11	ISO_GND	Isolated Ground	B11	ISO_GND	Isolated Ground
A12	ISO_GPI	Isolated Input	B12	ISO_GPO	Isolated Output
A13	GND	Signal and power ground	B13	GND	Signal and power ground
A14	PCIe_PERP_2	PCIe RX differential pair 2	B14	PCIe_PERN_3	PCIe RX differential pair 3
A15	PCIe_PERN_2	PCIe RX differential pair 2	B15	PCIe_PERP_3	PCIe RX differential pair 3
A16	GND	Signal and power ground	B16	GND	Signal and power ground
A17	PCIe_PERP_1	PCIe RX differential pair 1	B17	PCIe_PERN_0	PCIe RX differential pair 0
A18	PCIe_PERN_1	PCIe RX differential pair 1	B18	PCIe_PERP_0	PCIe RX differential pair 0
A19	GND	Signal and power ground	B19	GND	Signal and power ground

Table 9: FireFly connector UEC5 pin assignment

3.2.3 Power connector

Item	Value
Connector	Power Connector Header Through Hole, Right Angle 2 position 1053131202
Signals	Power, Ground
Mating Connectors	2 Position, Rectangular Socket
Mating Cable	XIMEA PN: CBL-XEC2-PWR-0M15

Table 10: Power connector general description

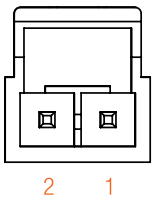


Figure 7: Power connector pinout

Pin	Name	Signal
1	GND	Ground
2	PWR	12 to 24 V

Table 11: Power connector (2POS) pin assigment

3.2.4 GPIO

Item	Value
Connector	Connector Header Through Hole, Right Angle 3 position 1053131203
Signals	Input, Output, Ground
Mating Connectors	3 Position, Rectangular Socket

Table 12: IO connector general description

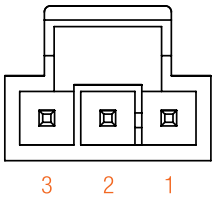


Figure 8: IO connector pinout

Pin	Name	Signal
IO A		
1	ISO_GPI	Opto-isolated input
2	ISO_GND	Isolated ground for the IO subsystem
3	ISO_GPO	Opto-isolated output
IO B		
1	ISO_GPI	Opto-isolated input
2	ISO_GND	Isolated ground for the IO subsystem
3	ISO_GPO	Opto-isolated output
IO C		
1	ISO_GPI	Opto-isolated input
2	ISO_GND	Isolated ground for the IO subsystem
3	ISO_GPO	Opto-isolated output
IO D		
1	ISO_GPI	Opto-isolated input
2	ISO_GND	Isolated ground for the IO subsystem
3	ISO_GPO	Opto-isolated output

Table 13: IO connectors (3POS) pin assigment

4 Additional information

4.1 Cables

4.1.1 CBL-MTP-X8G3-FF-10M0

To connect product with MTP connector to MTP host connector you can use a 10-meter MTP fiber-optic trunk cable supporting PCIe Gen3 x8 with a data rate of 64 Gbit/s. Cable has (pinless) female-to-female connectors and contains 24 Corning ClearCurve glass fibers. The cable features a minimum bend radius of 7.5 mm and a plenum (OFNP)-rated outer jacket.

It is also available in 5 m, 10 m, 20 m, 30 m, 40 m, and 50 m lengths.



Figure 9: CBL-MTP-X8G3-FF-10M0 cable

4.1.2 CBL-ECUE-X4G3-1M0/2M0/3M0

The FireFly copper cables are bidirectional and flexible. PCIe Gen3 x4 lanes with performance to 28 Gbps, 12 differential pairs. Both sides are equipped with locking mechanism. The cable is available in 1 m ,2 m, and 3 m lengths. The EMI/EMC performance should be evaluated by customer.

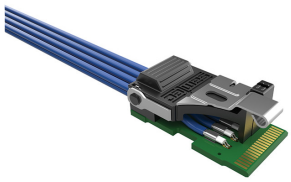


Figure 10: CBL-ECUE-X4G3-1M0

4.1.3 CBL-PCUO-X8G3-0M15

The product includes the CBL-PCUO-X8G3-0M15, a 15 cm MTP to Firefly 24-fiber cable supporting PCIe Gen3 x8.

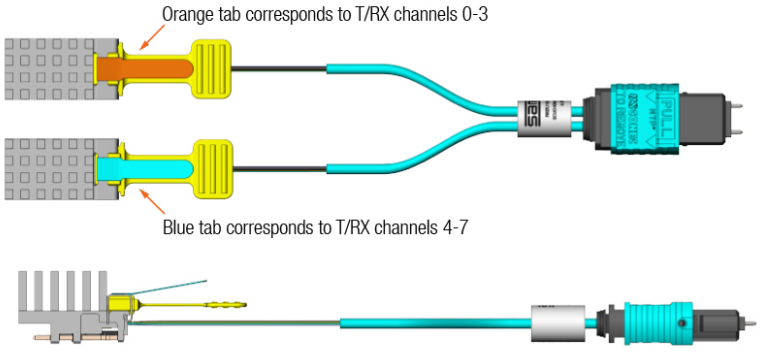


Figure 11: CBL-PCUO-X8G3-0M15 cable

5 Quickstart guide

5.1 Hardware setup

5.1.1 Essential components

It is important that the power is turned off when inserting/detaching the cables. General ESD precautions need to be applied. Failing this requirement may lead to product damage.

- a camera with firefly interface
- host PC
- ADPT-4P-X2G3-FF-X8G3-MTP
- optical MTP cable (CBL-MTP-X8G3-FF-xxxM0)
- Firefly ECUE copper cable (CBL-ECUE-X4G3-xM0)
- power cable (CBL-XEC2-PWR-0M15)

5.1.2 Connecting the components

Step 1. Connect optical MTP cable (CBL-MTP-X8G3-FF-xxxM0) to adapter (ADPT-4P-X2G3-FF-X8G3-MTP)

Step 2. Connect optical MTP cable (CBL-MTP-X8G3-FF-xxxM0) to PC

Step 3. Firefly ECUE cable (CBL-ECUE-X4G3-xM0) to adapter

Step 4. Firefly ECUE cable (CBL-ECUE-X4G3-xM0) to the camera

Step 5. Connect power cable (CBL-XEC2-PWR-0M15)

Step 6. Turn on the power for the adapter

Step 7. Turn on the computer

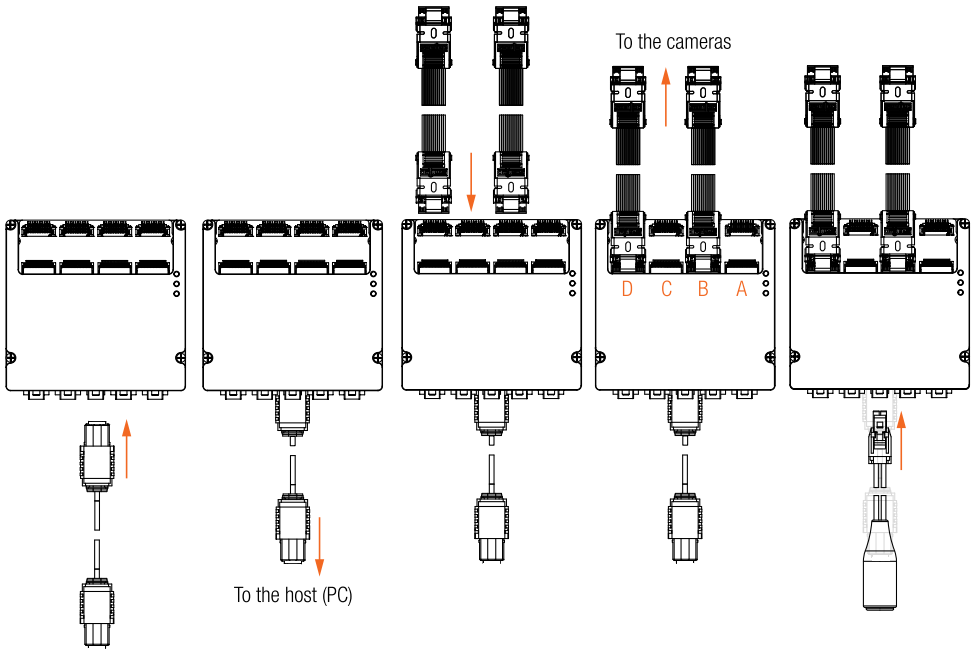


Figure 12: Connecting steps

For more information about ADPT-4P-X2G3-FF-X8G3-MTP please contact: sales@ximea.com.

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