

ADPT-MX-X4G3-FF-X4G3-MTP

Firefly to MTP backside adapter

XIMEA Accessories

Technical Manual

Version v260903

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: Camera with ADPT-MX-X4G3-FF-X4G3-MTP

The ADPT-MX-X4G3-FF-X4G3-MTP is a backside adapter for connecting XIMEA X4G3 Firefly cameras to an 12-fiber MTP fiber-optic cable. The backside adapter converts the camera's PCIe Gen3 x4 copper Firefly interface to an MTP fiber-optic interface.

The adapter provides power and I/O connections through separate connector for camera synchronization and triggering.

The camera is connected to the backside adapter using CBL-PCUO-X4G3-0M15. See the caption for CBL-PCUO-X4G3-0M15 for cable details.

Suitable for xiX-XL and xiX-Xtreme camera families.

Note: This backside adapter must be attached by XIMEA service.

2 Dimensional drawings

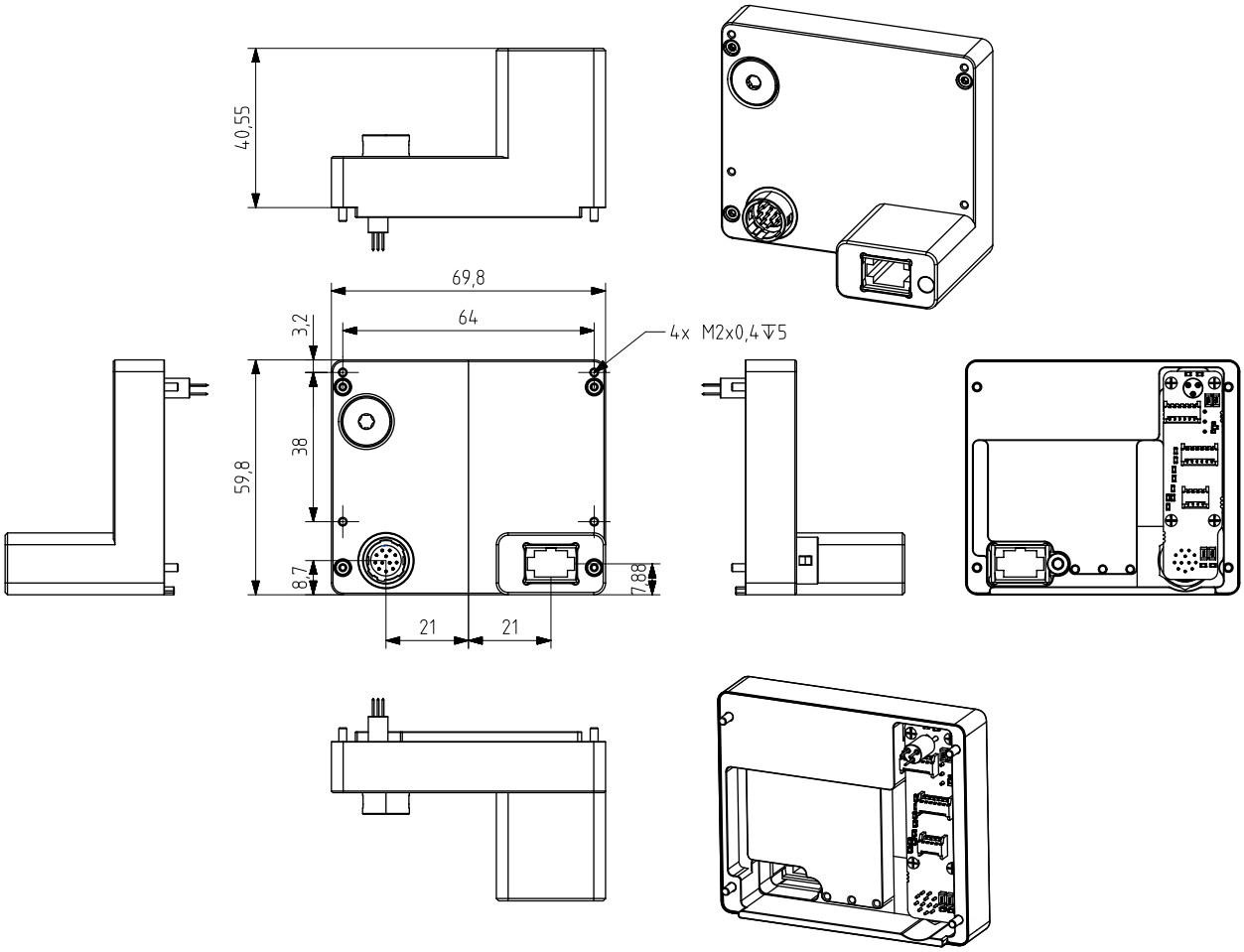


Figure 2: Dimensional drawing of ADPT-MX-X4G3-FF-X4G3-MTP

Width [W]	Height [H]	Depth [D]	Mass [M]	Material and technology	Cooling options
69.8 mm	59.8 mm	40.55 mm	154 g[1]	Machined Aluminum alloy	air / water cooled heatsink[2]

[1]This weight is for mainbody
[2]See Section Cooling possibilities

Table 1: Parameters and mass of ADPT-MX-X4G3-FF-X4G3-MTP

3 Connectors

3.1 Location of connectors

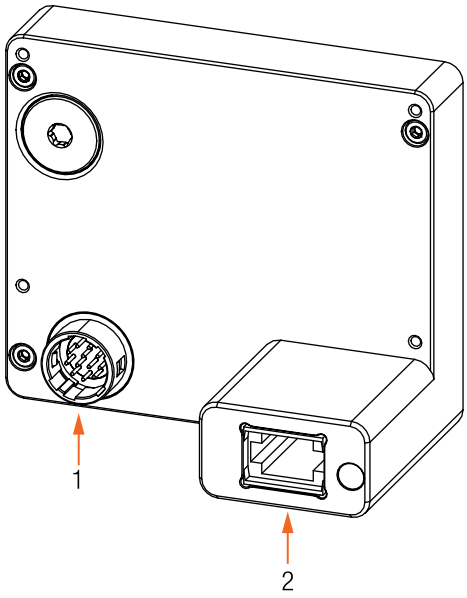


Figure 3: Location of connectors

num.	connector
1	IO connector, I/O and Power 12-pin Alysium 60-30-1112
2	Multifiber Termination Push-on (MTP) optical fiber connector

Table 2: Description of connectors

3.2 Data interfaces

3.2.1 MTP optical fiber connector

The MTP connector on the backside adapter is a 12-fiber male MTP connector. For proper operation, use MTP cables with a 12-fiber female connector, such as CBL-MTP-X4G3-FF-xxxM0, see Section CBL-MTP-X4G3-FF-10M0.

Item	Value
Connector	MTP Male 12-fiber connector (see CBL-PCU0-X4G3-0M15)
Signals	PCIe Gen3 x4, RX lanes, TX lanes
Mating Connectors	US Conec MTP (Pinless) Female connector
Mating Cable	Ximea PN: CBL-MTP-X4G3-FF-5M0, CBL-MTP-X4G3-FF-10M0, CBL-MTP-X4G3-FF-20M0, CBL-MTP-X4G3-FF-30M0, CBL-MTP-X4G3-FF-53M0

Table 3: MTP connector general description

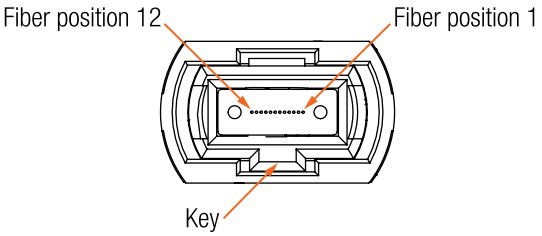


Figure 4: MTP connector pinout

Pin	Name	Description
1	Rx0	Receive channel 0
2	Rx1	Receive channel 1
3	Rx2	Receive channel 2
4	Rx3	Receive channel 3
5	NC	Not connected
6	NC	Not connected
7	NC	Not connected
8	NC	Not connected
9	Tx3	Transmit channel 3
10	Tx2	Transmit channel 2
11	Tx1	Transmit channel 1
12	Tx0	Transmit channel 0

Table 4: MTP connector pin assignment

3.2.2 GPIO

Item	Value
Connector	I/O and Power 12-pin Alysium 60-30-1112
Signals	Opto-isolated trigger input and non-isolated I/O plus camera power
Mating Connectors	Alysium 60-41-1012, 60-41-1112, 60-01-1012, 60-01-1112, 60-03-1012, 60-03-1112
Mating Cable	Ximea PN: CBL-MT-PWR-SYNC-3M0 for 3 m cable

Table 5: GPIO connector general description

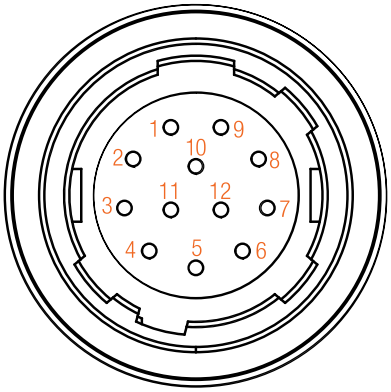


Figure 5: GPIO connector pinout

Pin	Name	GPI/GPO index API	Type
1	IN2	2/-	Optically isolated Digital Input (IN)
2	IN1	1/-	Optically isolated Digital Input (IN)
3	OUT2	-/2	Optically isolated Digital Output (OUT)
4	OUT1	-/1	Optically isolated Digital Output (OUT)
5	AUX PWR	None	Power input
6	GND	None	External grounds for power and non-isolated I/O
7	INOUT1	3/3	Non-isolated digital lines - Digital Input-Output (INOUT)
8	INOUT3	5/5	Non-isolated digital lines - Digital Input-Output (INOUT)
9	INOUT2	4/4	Non-isolated digital lines - Digital Input-Output (INOUT)
10	IN GND	None	Ground for Opto-Isolated Inputs
11	OUT GND	None	Ground for Opto-Isolated Out
12	INOUT4	6/6	Non-isolated digital lines - Digital Input-Output (INOUT)

Table 6: GPIO connector pin assignment

4 Usages

4.1 Mounting points

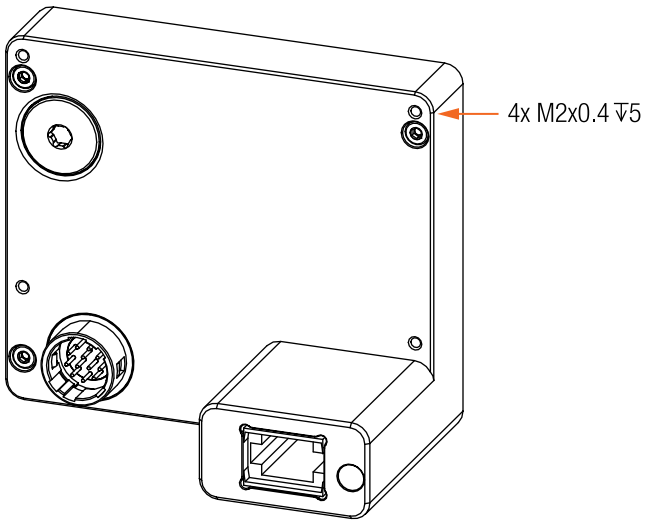


Figure 6: Mounting points for cooling options

5 Additional information

5.1 Cables

5.1.1 CBL-MTP-X4G3-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 x4 with a data rate of 20 Gbit/s. It uses US Conec MTP® (pinless) female-to-female connectors and contains 12 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, 20 m, 30 m, and 53 m lengths.

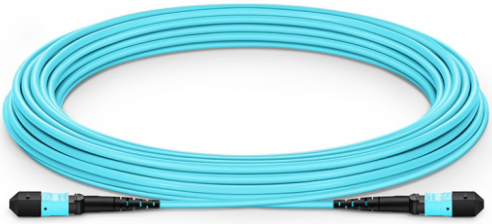


Figure 7: CBL-MTP-X4G3-FF-10M0 cable

5.1.2 CBL-PCUO-X4G3-0M15

The product includes the CBL-PCUO-X4G3-0M15, a 15 cm MTP to Firefly 12-fiber cable supporting PCIe Gen3 x4.

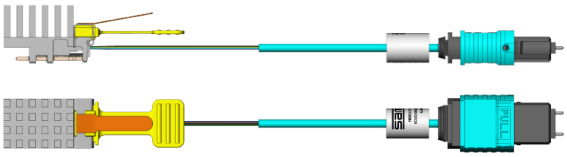


Figure 8: CBL-PCUO-X4G3-0M15 cable

5.1.3 CBL-MT-PWR-SYNC-3M0

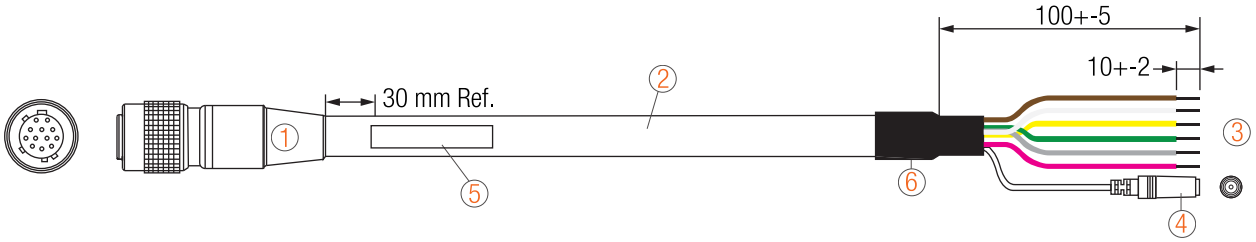


Figure 9: CBL-MT-PWR-SYNC-3M0 drawing

1 Series60 Female Circular Plug 60-01-1112 IO <BLK>
2 TBAUL20276 4STP#28 + 4C#28 + 2C#24 [OD=6.80mm] <BLK>
3 Process end with wire end stripped and tin soldered
4 DC power in socket female (OD5.5/ID2.1) <BLK>
5 Cable label
6 Heat shrinkable tube

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Signal	IN2	IN1	OUT2	OUT1	AUX PWR	GND	INOUT1	INOUT3	INOUT2	IN GND	OUT GND	INOUT4

Table 7: CBL-MT-PWR-SYNC-3M0 pin assignment

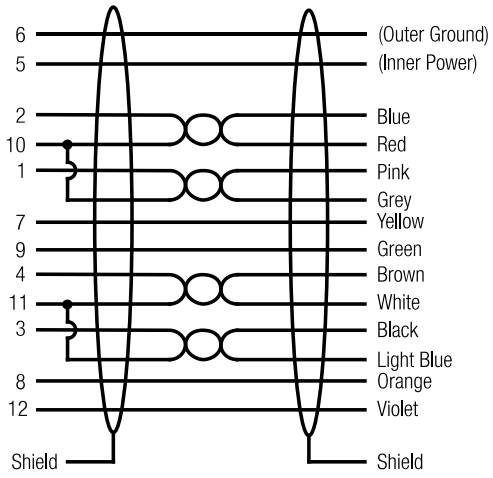


Figure 10: Wiring diagram of the CBL-MT-PWR-SYNC-3M0

5.2 Cooling possibilities

Back part attachment is compatible with ADPT-MX-MTP-FAN-COOLER or ADPT-MX-MTP-WAT-COOLER. To attach or detach the fan module, you will need four M2x0.4 screws.



Figure 11: Backside adapter cooling options

5.2.1 Water cooler tube connection

There are various 6 mm OD tubes available from multiple manufacturers that can be used with the camera cooler. It is recommended to consult the websites of the push-in fitting manufacturer for a list of compatible tubes and specific tube specifications necessary to ensure a leak-free connection. Adherence to their provided installation instructions is crucial. Always conduct a leak inspection after making tube connections. XIMEA disclaims any liability for damages resulting from improper installation. Following these guidelines correctly is vital for protecting your equipment and ensuring its peak performance.

XIMEA has conducted tests and endorses the use of PISCO brand tubes (part number UCQ06-2F-20-C) along with insert rings (part number WR0640) for creating secure and leak-proof connections. The recommended procedure for connecting and disconnecting tubes is as follows

Please refer to the pictures and steps below for the correct connection of the water cooler.

Ring inserting

The insert ring is designed to prevent deformation of the tube. A soft tube can be connected to the Fitting.

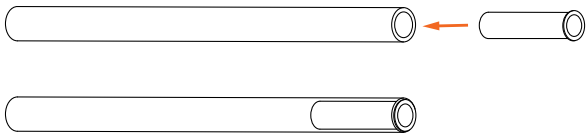


Figure 12: Inserting the ring into the tube

Tube insertion

Insert the tube into the Push-In Fitting until it reaches the end. The collet will secure the tube automatically, while the elastic sleeve creates a seal around it.

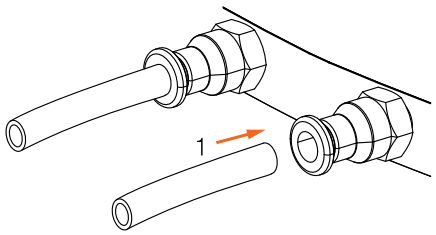


Figure 13: Tube insertion

Tube disconnection

To disconnect the tube, simply push the collet. Ensure that the water supply is halted before disconnecting the tube.

Step 1. Push the collet.

Step 2. Pull the tube out.

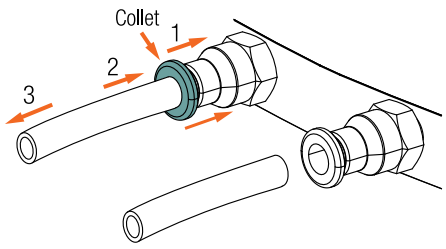


Figure 14: Tube disconnection

6 Quickstart guide

6.1 Hardware setup

6.1.1 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.

- XIMEA camera with ADPT-MX-X4G3-FF-X4G3-MTP backside adapter
- host PC supporting MTP conneciton
- optical MTP cable (e.g. CBL-MTP-X4G3-FF-10M0)
- power/sync cable CBL-MT-PWR-SYNC-3M0

6.1.2 Connecting the components

Ensure the power supply and the computer are turned off before connecting any cables. The order of cable connections is not strictly specified, but you can follow the steps 1 to 4 in this order:

Step 1. Connect optical MTP cable (CBL-MTP-X4G3-FF-10M0) to backside adapter (ADPT-MX-X4G3-FF-X4G3-MTP)

Step 2. Connect optical MTP cable (CBL-MTP-X4G3-FF-10M0) to PC

Step 3. Connect power/sync cable (CBL-MT-PWR-SYNC-3M0) to adapter, then to power source

Step 4. Power up computer.

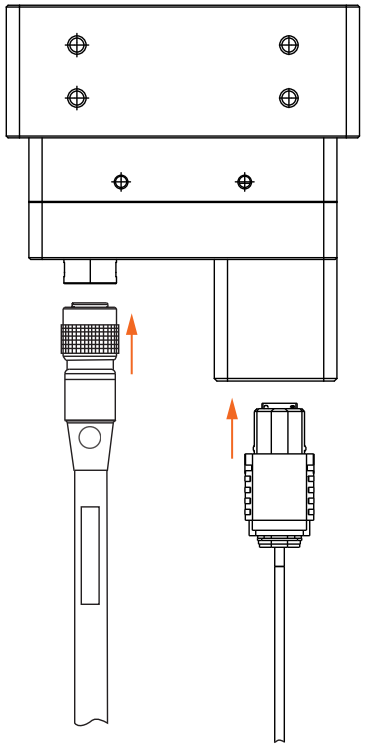


Figure 15: Connection steps

For more information about ADPT-MX-X4G3-FF-X4G3-MTP please contact: sales@ximea.com.

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