

• ADPT-MU-CX3-FV • ADPT-MU-CX3-FL

Adapters with flex line interface for xiMU

XIMEA Accessories •
Technical Manual •
Version v260901 •

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.

Contact XIMEA

XIMEA is a worldwide operating company

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1 General description

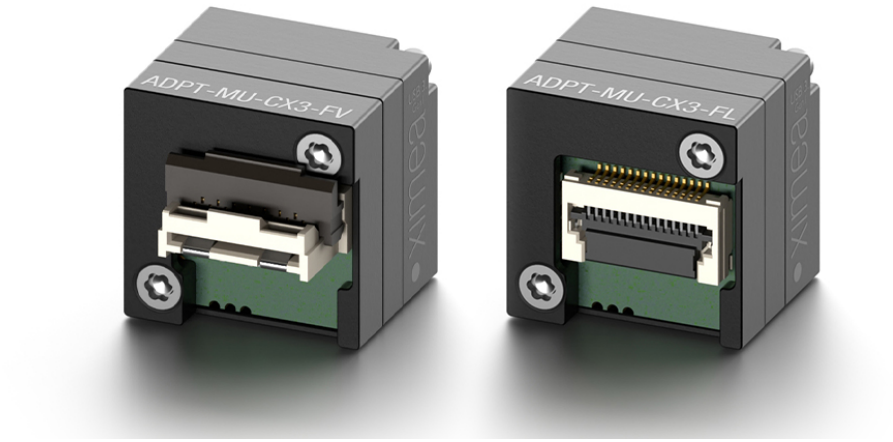


Figure 1: Cameras with adapters

The mini backside adapter extension provides a compact USB3 Flex Line interface for camera triggering and output signaling. Adapter is designed for integration with small-format MU cameras with a 15 x 15 mm form factor.

The interface connector is compatible with MQ-S7-FL accessories. The adapter mounts to the rear of the camera using two M1.6 x 5 countersunk TRX screws.

- Camera compatibility: MU 15 x 15 mm cameras
- Interface: Flex Line
- Functionality: Camera triggering and output signaling
- Accessory compatibility: MQ-S7-FL
- Mounting: 2 x M1.6 x 5 countersunk TRX screws
- Alternative version: 17 x 17 mm variant available for the MU051 camera model
- Connector orientation: horizontal & vertical versions

2 Dimensional drawings

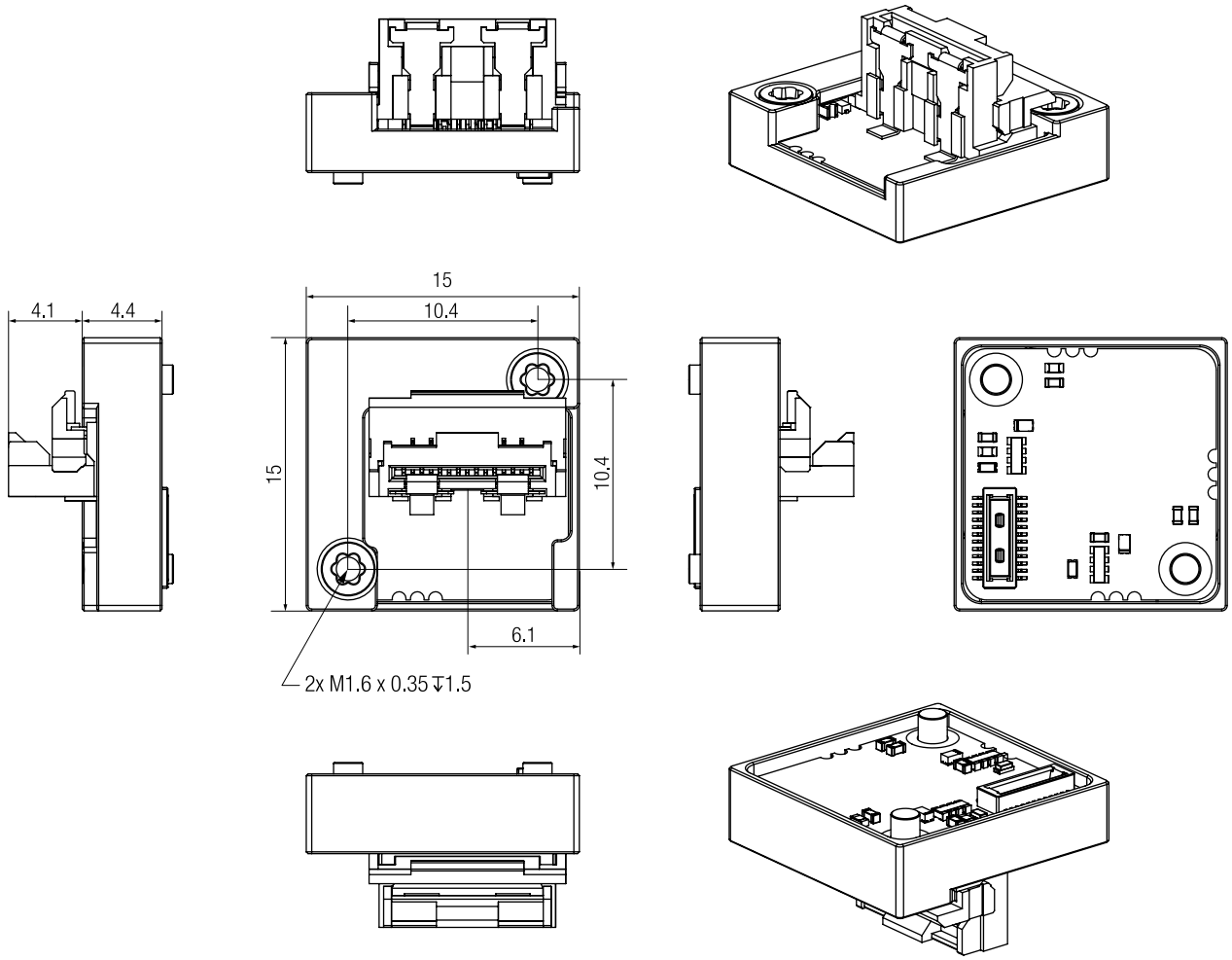


Figure 2: Dimensional drawing of ADPT-MU-CX3-FV

Width [W]	Height [H]	Depth [D]	Mass [M]	Material
15 mm	15 mm	4.4 / 8.5 mm	1.8 g	Machined Aluminum alloy[1]

[1] Anodized to black color

Table 1: Parameters of ADPT-MU-CX3-FV

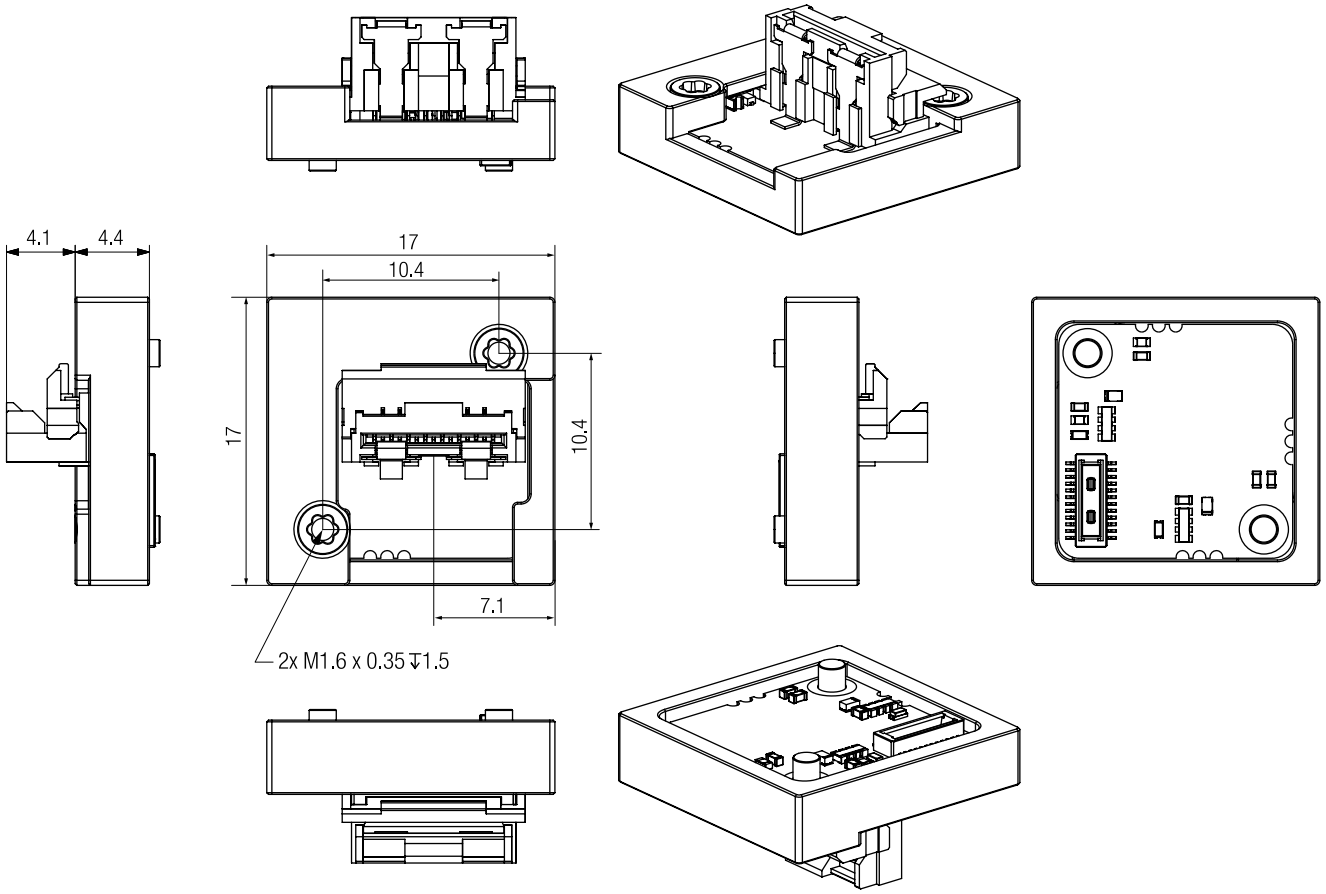


Figure 3: Dimensional drawing of ADPT-MU-17X17-CX3-FV

Width [W]	Height [H]	Depth [D]	Mass [M]	Material
17 mm	17 mm	4.4 / 8.5 mm	2.5 g	Machined Aluminum alloy[1]

[1] Anodized to black color

Table 2: Parameters of ADPT-MU-17X17-CX3-FV

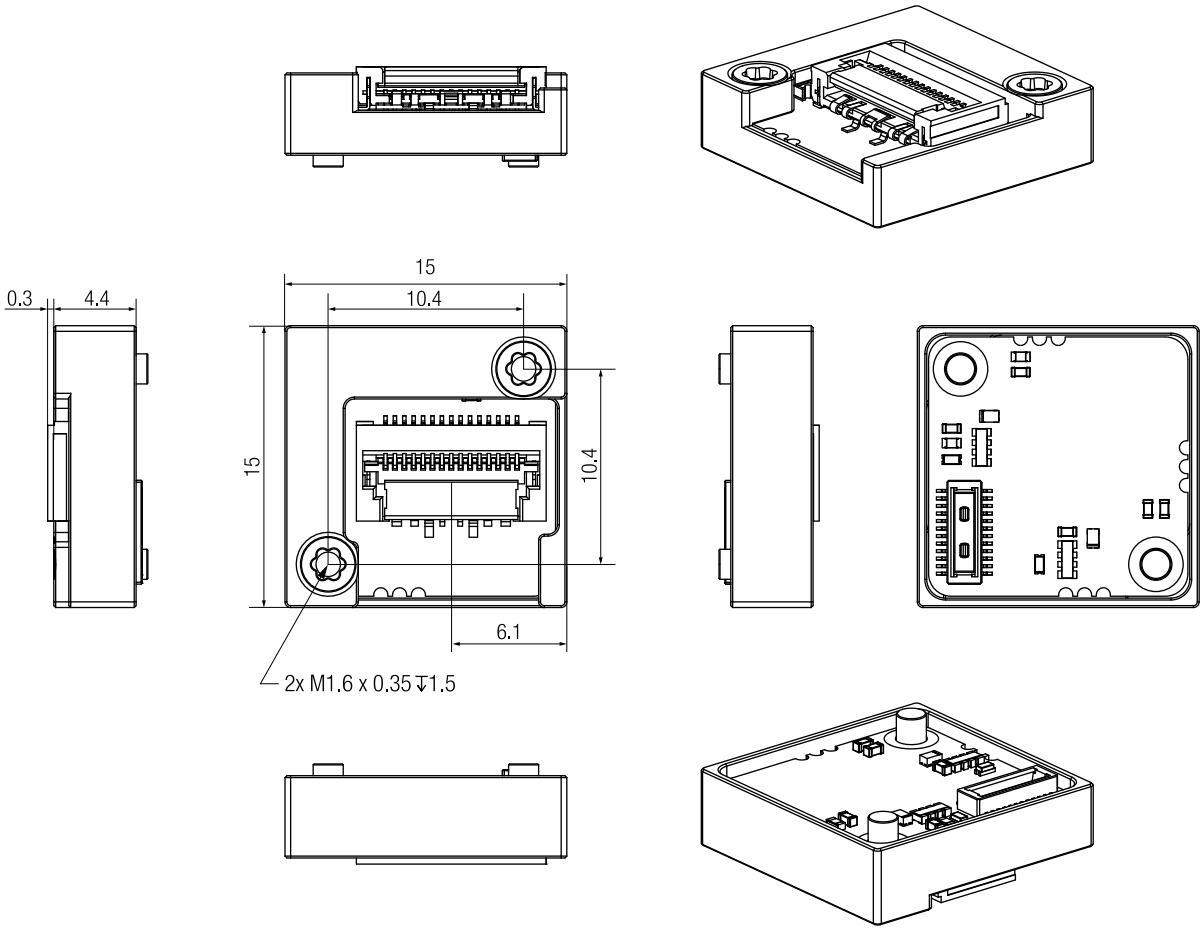


Figure 4: Dimensional drawing of ADPT-MU-CX3-FL

Width [W]	Height [H]	Depth [D]	Mass [M]	Material
15 mm	15 mm	4.4 / 4.7 mm	1.7 g	Machined Aluminum alloy[1]

[1]Anodized to black color

Table 3: Parameters of ADPT-MU-CX3-FL

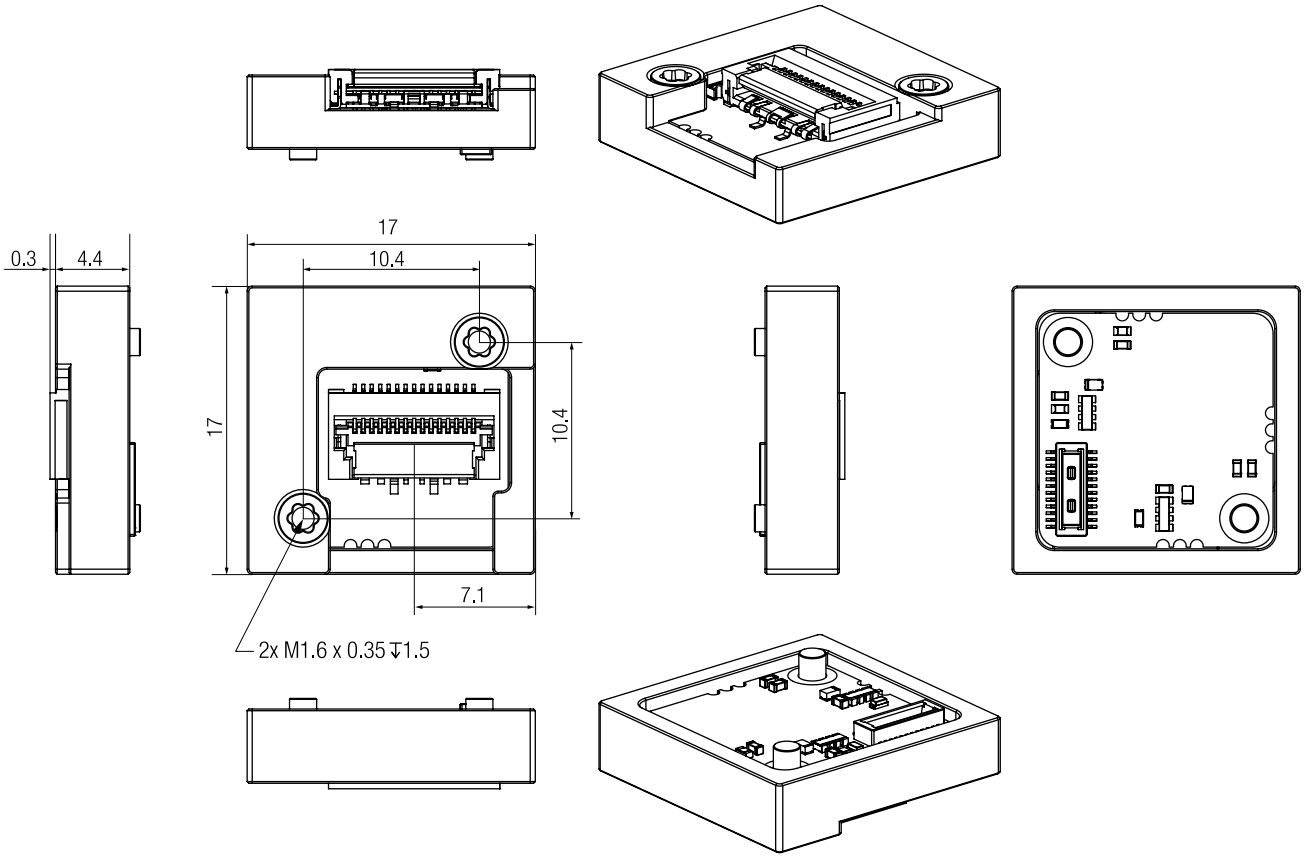


Figure 5: Dimensional drawing of ADPT-MU-17X17-CX3-FL

Width [W]	Height [H]	Depth [D]	Mass [M]	Material
17 mm	17 mm	4.4 / 4.7mm	2.4 g	Machined Aluminum alloy[1]

[1] Anodized to black color

Table 4: Parameters of ADPT-MU-17X17-CX3-FL

3 Connectors

3.1 Location of connectors

Item	Value
Connector	Molex 502244-15300 (-FL), Molex 502231-1500 (-FV)
Signals	USB 3.1 Gen1, power, IO
Mating cables	CBL-MQ-FL-0M1, CBL-MQ-FL-0M25, CBL-USB3FLEX-0M10, CBL-USB3FLEX-0M25, CBL-USB3FLEX-0M50

Table 5: ADPT-MU-CX3-FL / ADPT-MU-CX3-FV connectors description

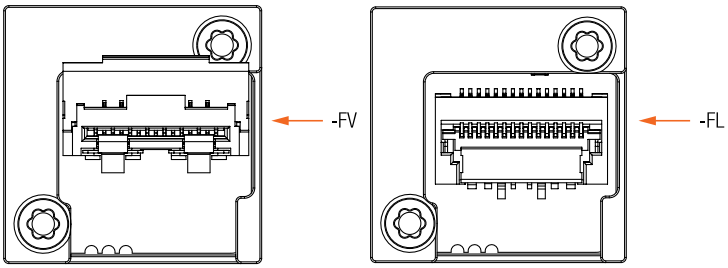


Figure 6: Flex connectors location ADPT-MU-CX3-FL / ADPT-MU-CX3-FV

3.2 Data interfaces

3.2.1 Flex cable interface

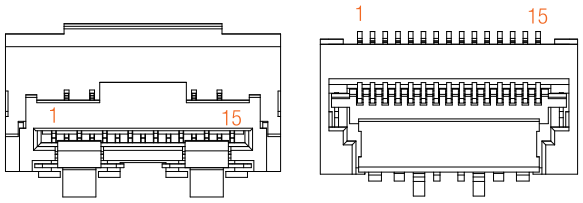


Figure 7: ADPT-MU-CX3-FL / ADPT-MU-CX3-FV connectors pinout

Pin	Signal	GPI/GPO index API	Description
1	GND	None	Ground for power return and for SuperSpeed signal return
2	SSRX-	None	SuperSpeed receiver differential pair; Accepted SSRX+
3	SSRX+	None	SuperSpeed receiver differential pair; Accepted SSRX-
4	GND	None	Ground for power return and for SuperSpeed signal return
5	SSTX+	None	SuperSpeed transmitter differential pair; Accepted SSTX-
6	SSTX-	None	SuperSpeed transmitter differential pair; Accepted SSTX+
7	GND	None	Ground for power return and for SuperSpeed signal return
8	D+	None	USB 2.0 differential pair
9	D-	None	USB 2.0 differential pair
10	GND	None	Ground for power return and for SuperSpeed signal return
11	VBUS	None	5 V Power input
12	VBUS	None	5 V Power input
13	OUT1	-/1	Non isolated TTL Output
14	IN/OUT GND	None	Common pole (IO Ground)
15	INOUT1	2/2	Non isolated Input/Ouput (<0.3 Low; > 1.3 High)
Ground pins	SGND	None	Shield of FPC cable connected to shield of host controller

Table 6: ADPT-MU-CX3-FL / ADPT-MU-CX3-FV connectors pin assignment

3.2.2 GPIO

Digital Input/Output (INOUT)

Item	Parameter / Note
Maximal input voltage	24 V DC
Common pole	YES
Effect of incorrect input terminal connection	Reverse voltage polarity protected
Effects when withdrawing/inserting input module under power	no damage, no lost data
Protection	Reverse voltage
Input Impedance- minimum	15 kΩ
Input Level for logical 0	< 0.3 V
Input Level for logical 1	> 1.3 V
Input debounce filter	NO
Input delay - rising edge	<300 ns / VINPUT=2 V
Input delay - falling edge	<450 ns / VINPUT=2 V
Output Impedance- minimum	15 kΩ
Output Level for logical 0	< 0.3 V, Rload = 100 kΩ
Output Level for logical 1	> 1.6 V, Rload = 100 kΩ
Output delay - rising edge	<100 µs, Rload = 100 kΩ, TAMBIENT=25 °C
Output delay - falling edge	<100 µs, Rload = 100 kΩ, TAMBIENT=25 °C

Table 7: General info for digital input / output, ADPT-MU-CX3 adapter

Digital Output (OUT)

Item	Parameter / Note[1]
Common pole	YES
Effects when withdrawing/inserting input module under power	May damage camera electronics
Protection	ESD and short circuit[2]
Maximal output sink current	20 m A
Inductive loads	NO
Output Level logical 0	< 0.8 V, Load 100 kΩ
Output Level logical 1	> 4.5 V, Load 100 kΩ
Output delay - rising edge	<20 ns, Load 100 kΩ threshold 1.5 V
Output delay - falling edge	<20 ns, Load 100 kΩ threshold 0.5 V

[1]Note that the GPO signals are routed through unidirectional level translators, therefore High Impedance GPO mode setting is not supported

[2]ESD HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2 kV; CDM JESD22-C101E exceeds 1000 V

Table 8: General info for digital output, ADPT-MU-CX3 adapter

4 Quickstart guide

4.1 Hardware setup

4.1.1 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.

- camera with adapter ADPT-MU-CX3-TC-FV / Adapter ADPT-MU-CX3-FL (or 17 mm version)
- CBL-MQ-FL-0M1 or CBL-MQ-FL-0M25
- host adapter (e.g. BOB-MQ-FL)
- host PC

4.1.2 Connecting the components

Cables CBL-MQ-FL-xxx have marked ends. It is important to connect the end marked “CAM” to the camera and the end marked “BOB” to the host or adapter. Swapped orientation can cause damage to the camera.

Adapter connectors are equipped with a locking mechanism. When locked, pulling the cable may lead to damage to the connector or the camera. When manipulating the cable, the power supply for the camera must be turned off.

Step 1. Open the lock on the connector

Step 2. Insert flex cable (e.g. CBL-MQ-FL-0M1) to the camera

Step 3. Close the connector lock

Step 4. Connect cable to the host adapter BOB-MQ-FL

Step 5. Connect host adapter to pc via USB cable

Step 6. Turn on the computer

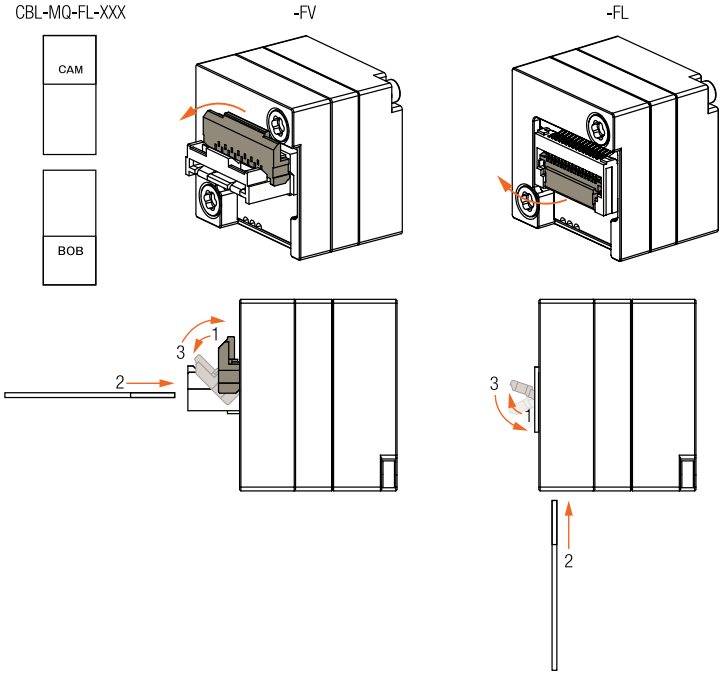


Figure 8: Connecting steps

For more information about ADPT-MU-CX3-Fx please contact: sales@ximea.com.

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