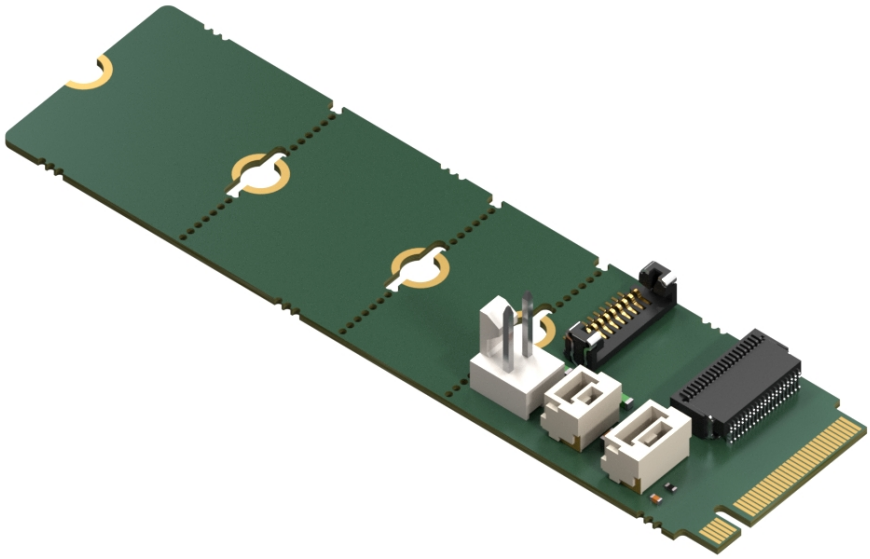
ximea



ADPT-MX-X4G3-FF-M2
Adapter board

XIMEA Accessories
Technical Manual
Version v261022

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 3.2 Gen 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

Headquarters, Sales worldwide	Sales America	R&D, Production
XIMEA GmbH Am Mittelhafen 16 48155 Münster Germany	XIMEA Corp. 12600 W Colfax Ave., Suite A-130 Lakewood, CO 80215 USA	XIMEA s.r.o. Lesná 52 900 33 Marianka Slovakia
Tel: +49 (251) 202 408-0 Fax: +49 (251) 202 408-99	Tel: +1 (303) 389-9838 Fax: +1 (303) 202-6350	Tel: +421 (2) 205 104 26 Fax: +421 (2) 205 104 27

Web	www.ximea.com
General inquiries	info@ximea.com
Sales	sales@ximea.com
Support	XIMEA Support

Contents

About this manual 2
About XIMEA 2
Contact XIMEA 2

1 General description 4

2 Dimensional drawings 5

3 Connectors 6
3.1 Location of connectors 6
3.1.1 FireFly connector 7
3.2 HEADER 1x2 Polarized / Power 8
3.3 BM02B / Power 9
3.4 BM03B / GPIO 9

4 Additional information 10
4.1 Cables 10
4.1.1 CBL-ECUE-X4G3-1M0/2M0/3M0 10

5 Quickstart guide 11
5.1 Hardware setup 11
5.1.1 Essential components 11
5.1.2 Connecting the components 11

List of figures 12

List of tables 13

1 General description

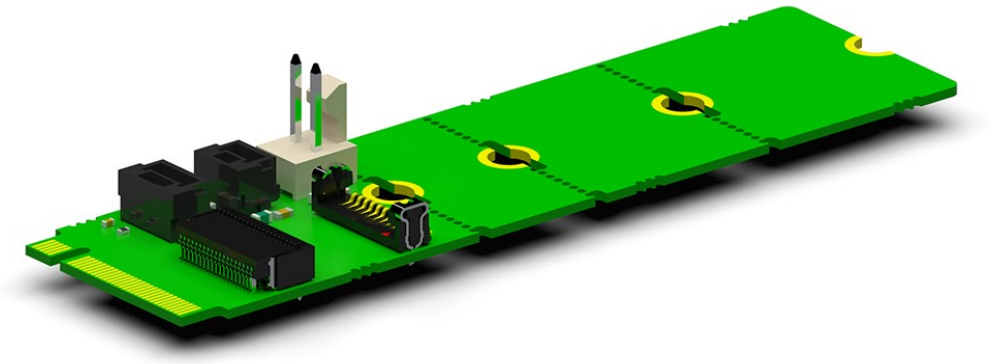


Figure 1: Isometric view of the adapter

The adapter connects xiX X4 camera (X4G2 or X4G3 targets) with a FireFly connector to a host system through an M.2 slot, using a PCIe Gen3 x4 link.

- Interface: PCIe Gen3 x4
- Camera connector: FireFly
- Supported cables: Copper FireFly cables
- Host connector: M.2 socket
- Mechanical customization: The PCB has designated sections that can be removed to shorten the board for space-constrained applications.
- Power: External power supply required
- Host requirement: Spread Spectrum Clocking (SSC) must be disabled on the host.

Power Supply

The device or camera connected to the adapter is not powered through the M.2 slot, so it requires a separate power supply.

When the adapter is used with XIMEA xiX camera with a FireFly connector, the camera can be powered directly through the dedicated power connector on its housing.

2 Dimensional drawings

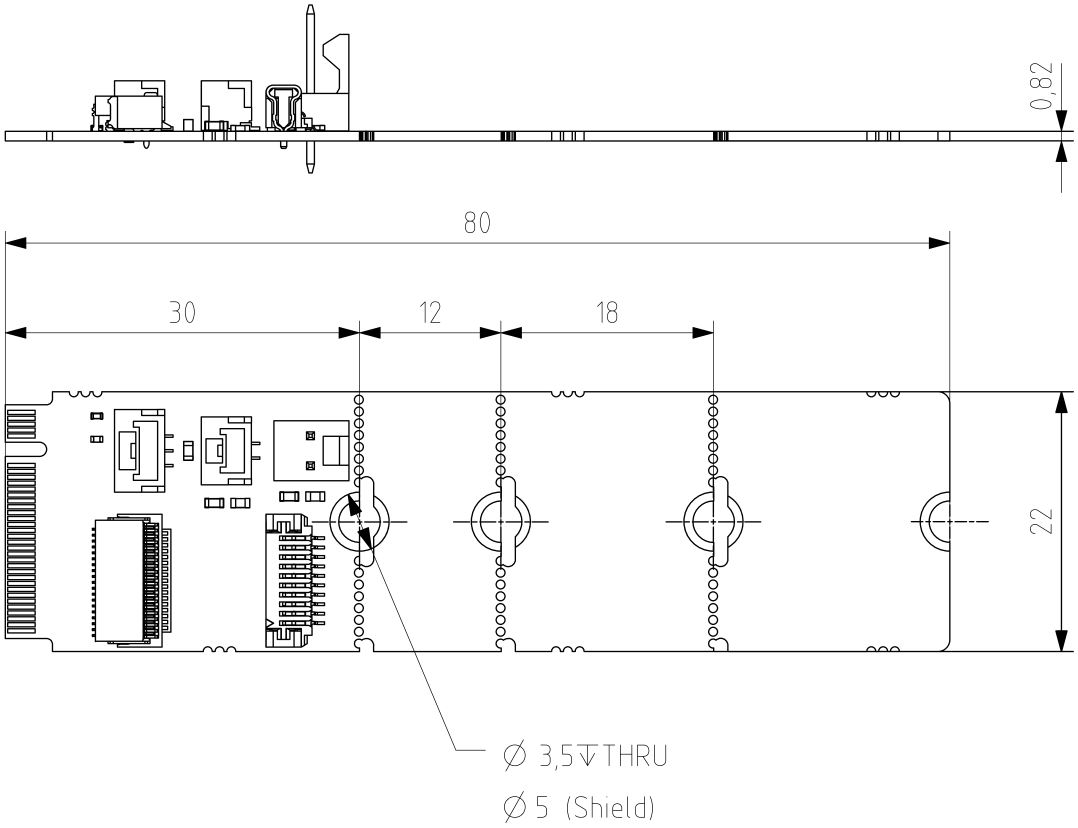


Figure 2: Dimensional drawing of ADPT-MX-X4G3-FF-M2

Width [W]	Height [H]	Depth [D]	Mass [M]
22 mm	0.82 mm	30 to 80 mm	14 g

Table 1: Parameters and mass

3 Connectors

3.1 Location of connectors

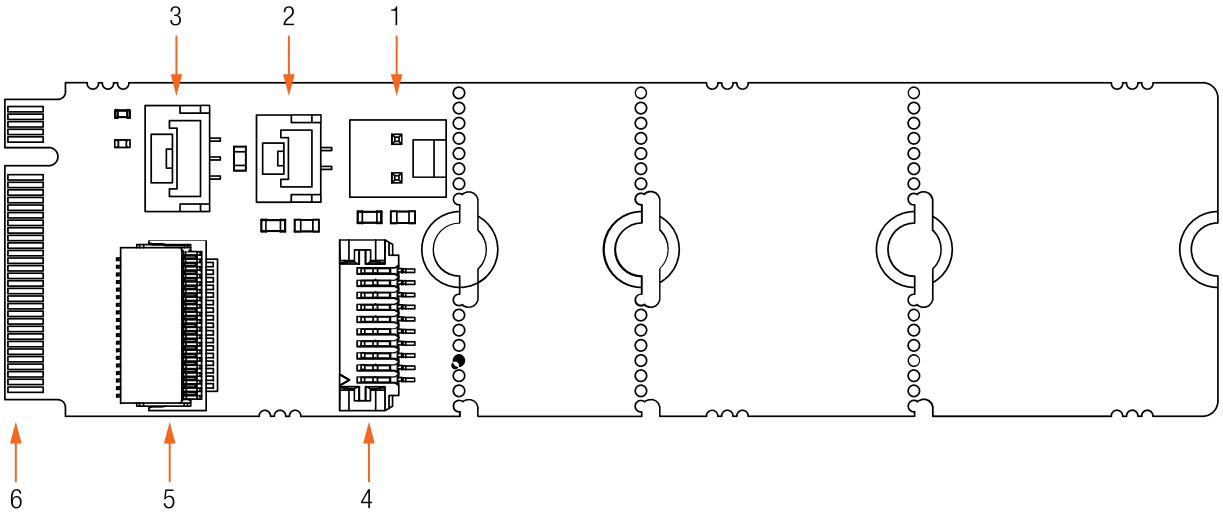


Figure 3: ADPT-MX-X4G3-FF-M2 location of connectors

num.	connector
1	Power - HEADER 1x2 Polarized
2	Power - BM02B
3	IO - BM03B
4	Samtec UCC8-010-1-H-S-1-A
5	Samtec UEC5-019-1-H-D-RA-1-A
6	M.2 slot

Table 2: ADPT-MX-X4G3-FF-M2 connectors description

3.1.1 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 3: FireFly connector description

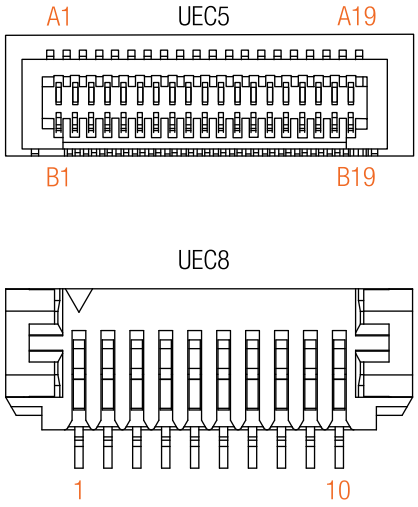


Figure 4: Firefly connector pinout

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 4: 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 5: FireFly connector UEC5 pin assignment

3.2 HEADER 1x2 Polarized / Power

Item	Value
Connector	TE Connectivity 640456-2, 2 Positions Header
Signals	Power, GND
Mating connector	TE Connectivity AMP, 2 Position Rectangular Receptacle Connector, MTA-100 series

Table 6: HEADER 1x2 Polarized connector description

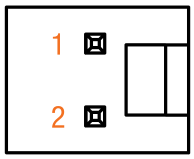


Figure 5: HEADER 1x2 Polarized pinout

Pin	Signal	Description
1	VCC_IN	Power
2	GND	Ground return

Table 7: HEADER 1x2 polarized pin assigment

3.3 BM02B / Power

Item	Value
Connector	JST GH Connector Header Surface Mount, 2 position
Signals	Power, GND
Mating connectors	2-pin GHR-02V-S

Table 8: BM02B connector description

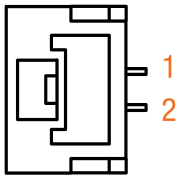


Figure 6: BM02B pinout

Pin	Signal	Description
1	VCC_IN	Power
2	GND	Ground return

Table 9: BM02B pin assignment

3.4 BM03B / GPIO

Item	Value
Connector	JST GH Connector Header Surface Mount, 3 position
Signals	IO, GND
Mating connectors	3-pin GHR-03V-S

Table 10: BM03B connector description

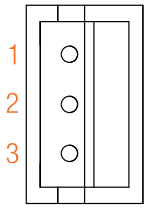


Figure 7: BM03B pinout

Pin	Signal	Description
1	ISO_GPI	Opto-isolated input 1
2	ISO_GND	(common) Isolated Ground for the IO subsystem
3	ISO_GPO	Opto-isolated output 1

Table 11: BM03B pin assignment

4 Additional information

4.1 Cables

4.1.1 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.

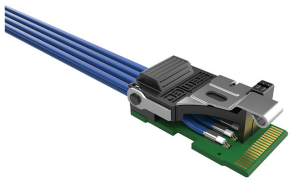


Figure 8: CBL-ECUE-X4G3-1M0

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.

- Host PC with M.2 PCIe slot (Spread Spectrum Clock operation needs to be disabled)
- Any ECUE FireFly cable (e.g. CBL-ECUE-X4G3-1M0)
- Any xiX camera equipped with FireFly connector

5.1.2 Connecting the components

Step 1. Deploy the host adapter to the turned-off PC and ensure the PC is also unplugged from the power source

Step 2. Connect an FF cable to the FF port on the adapter

Step 3. Connect an FF cable to the turned-off camera

Step 4. Power up the connected device

Step 5. Power up the PC

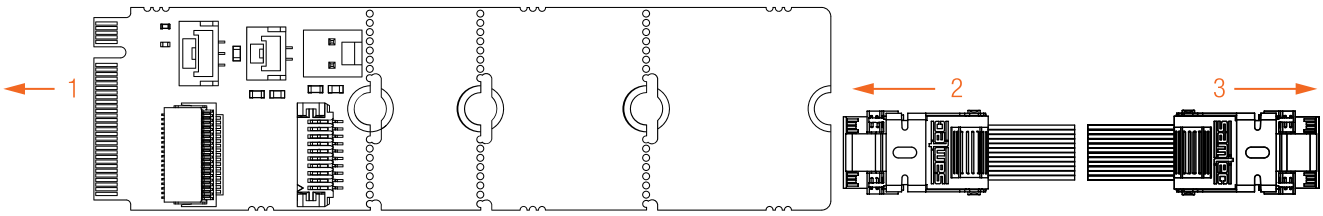


Figure 9: Connecting steps

For more information about ADPT-MX-X4G3-FF-M2 please contact: sales@ximea.com.

List of Figures

1 Isometric view of the adapter 4
2 Dimensional drawing of ADPT-MX-X4G3-FF-M2 5
3 ADPT-MX-X4G3-FF-M2 location of connectors 6
4 Firefly connector pinout 7
5 HEADER 1x2 Polarized pinout 8
6 BM02B pinout 9
7 BM03B pinout 9
8 CBL-ECUE-X4G3-1M0 10
9 Connecting steps 11

List of Tables

1 Parameters and mass 5
2 ADPT-MX-X4G3-FF-M2 connectors description 6
3 FireFly connector description 7
4 FireFly connector UCC8 pin assignment 7
5 FireFly connector UEC5 pin assignment 8
6 HEADER 1x2 Polarized connector description 8
7 HEADER 1x2 polarized pin assigment 8
8 BM02B connector description 9
9 BM02B pin assignment 9
10 BM03B connector description 9
11 BM03B pin assignment 9

XIMEA GmbH
Am Mittelhafen 16 • 48155 Münster • Germany • www.ximea.com
© Copyright, XIMEA GmbH, All rights reserved