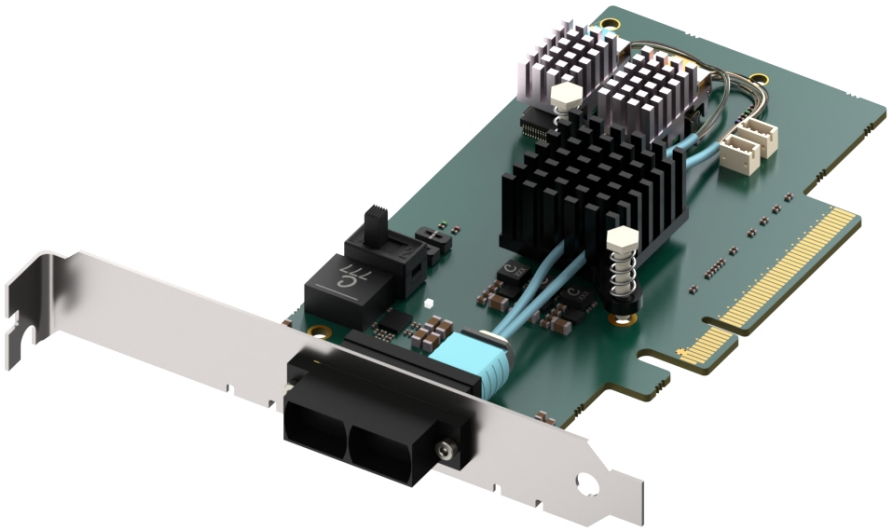
ximea



# HA-1P-X8G3-MTP-X8G3
## Host 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.

## Contact XIMEA

XIMEA is a worldwide operating company


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# 1 General description

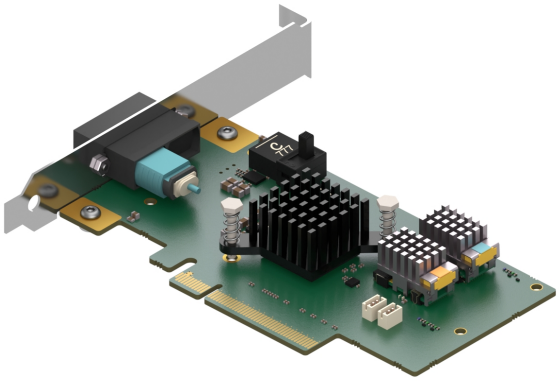


Figure 1: Isometric view of host adapter

The HA-1P-X8G3-MTP-X8G3 is a high-performance host adapter featuring a single port for PCI Express (PCIe®) Gen 3 x8 MTP cabling. The host adapter features an integrated Samtec PCUO cable. This low-profile I/O card is designed for use in high-bandwidth applications requiring reliable data transmission and compatibility with advanced PCIe standards.

- Compatible with MTP cabling (Active Optical or Copper).
- Supports PCIe Gen 1, Gen 2, and Gen 3 signaling rates, including:
  - Gen 1: 2.5 GT/s
  - Gen 2: 5.0 GT/s
  - Gen 3: 8.0 GT/s
- Input bandwidth per camera: 64 Gbps
- Low-profile PCIe card suitable for compact and space-constrained systems.
- For use with xiB-64 camera series
- Requires one PCIe Gen 3 x8 slot

## LED description

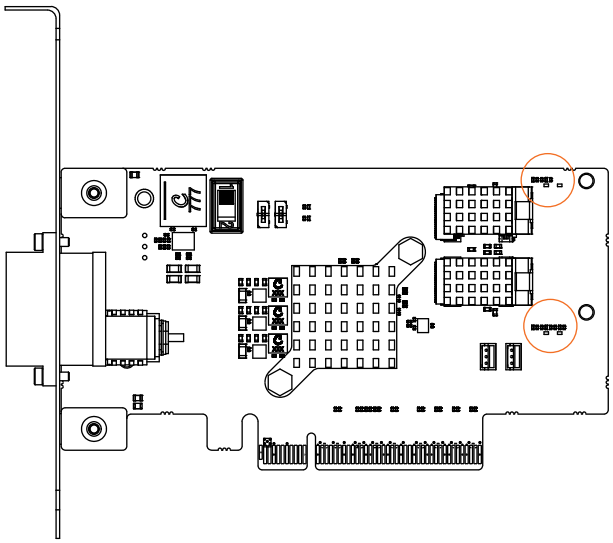


Figure 2: LED location

| LED | Description |
|---|---|
| PERST | ON when not active |
| PORT_GOOD0 | Upstream port trained speed |
| PORT_GOOD1 | Downstream port 1 trained speed |
| PORT_GOOD2 | Downstream port 2 trained speed |
| PORT_GOOD3 | Downstream port 3 trained speed |
| PORT_GOOD4 | Downstream port 4 trained speed |

Table 1: LED descriptiopn

| LED status | Description |
|---|---|
| OFF | Link is down |
| Blinking 1 Hz (512 ms ON / 512 ms OFF) | Link is up, 2.5 GT/s, any negotiated link width |
| Blinking 2 Hz (256 ms ON / 256 ms OFF) | Link is up, 5.0 GT/s, any negotiated link width |
| ON | Link is up, 8.0 GT/s, any negotiated Link Width |

Table 2: LED status description

# 2 Dimensional drawings

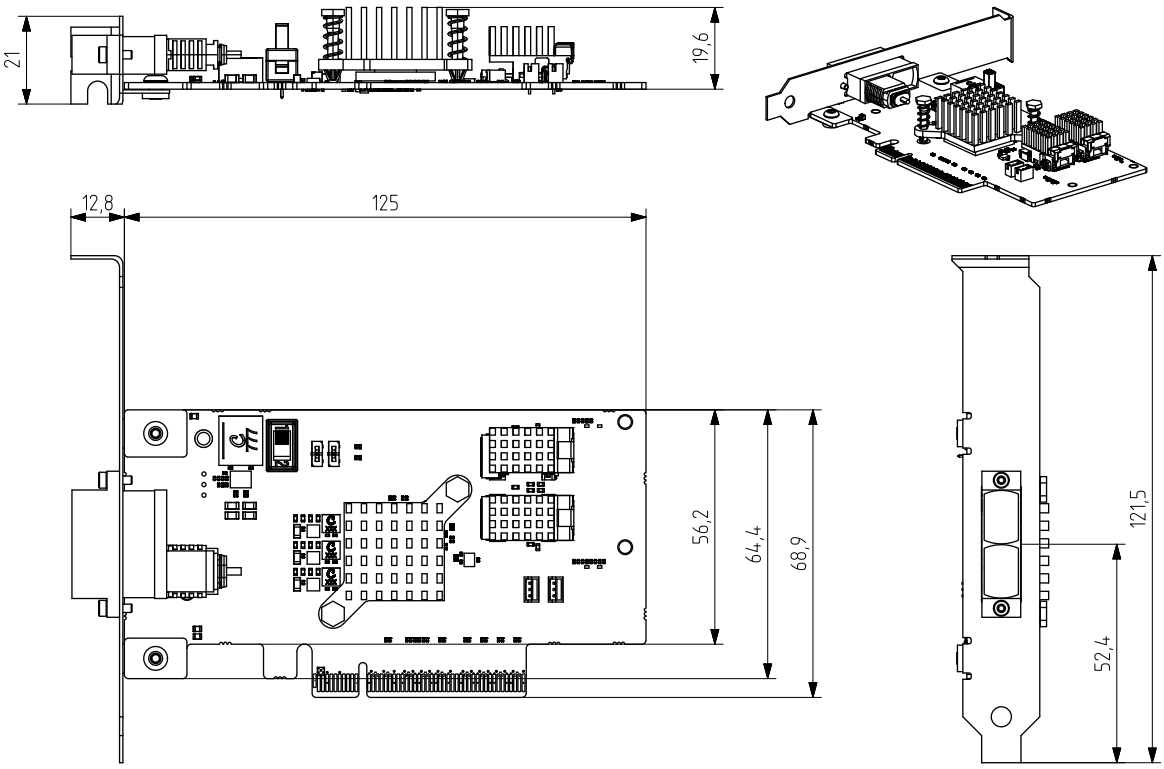



Figure 3: Dimensional drawing of HA-1P-X8G3-MTP-X8G3 host adapter

| Width [ W ] | Height [ H ] | Depth [ D ] | Mass [ M ] |
|---|---|---|---|
| 109 mm | 121.5 mm | 21 mm | TBD |

Table 3: Parameters and mass of host adapter

# 3 Configuration

## 3.0.1 DIP switches

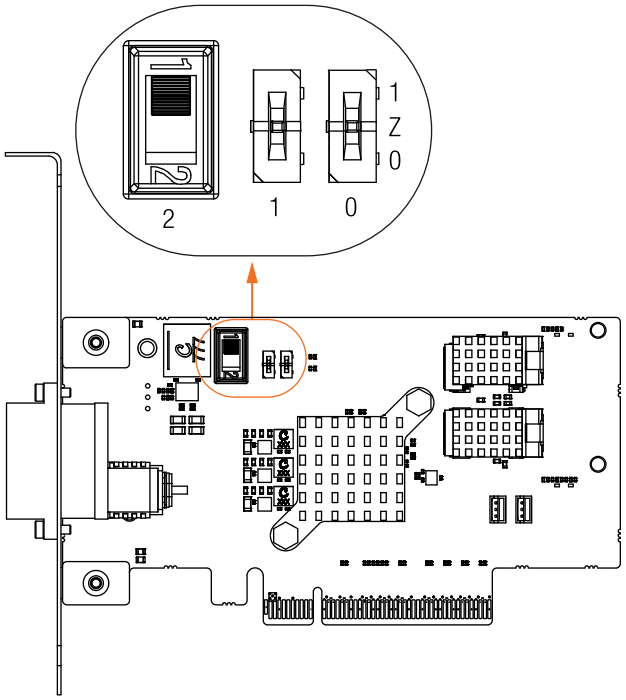



Figure 4: DIP switches

| DIP switch [1] position | DIP switch [0] position | PCIe blade lines | MTP PORT A lines | MTP PORT B lines | PCIe PORT configuration |
|---|---|---|---|---|---|
| 0 | 1 | x8 | (A+B)=x8 | (A+B)=x8 | Port A / B - Port 1[1] |
| Z | 0 | x8 | x4 | x4 | Port A - Port 1<br>Port B - Port 2 |
| Z | 1 | x8 | x2, x2 | x2, x2 | Port A - Port 1 / Port 2<br>Port B - Port 3 / Port 4 |

[1]MTP/FF ports A and B together work as a single X8G3 PCIe port

Table 4: DIP switch configuration

| DIP switch 2 position | Function |
|---|---|
| 24 V | Intended for use with longer FF cables, where power is also distributed through the FF cable[1] |
| Off | Power delivery through the FF cable is disabled, the power supply must be provided on the device end[2] |
| 12 V | Intended for shorter FF cables[1] |

[1]Applicable only with FF host adapter
[2]This option is recommended when the connected device requires more than 25 W

Table 5: DIP switch 2 (CAM PWR)

# 4 Connectors

## 4.1 Location of connectors

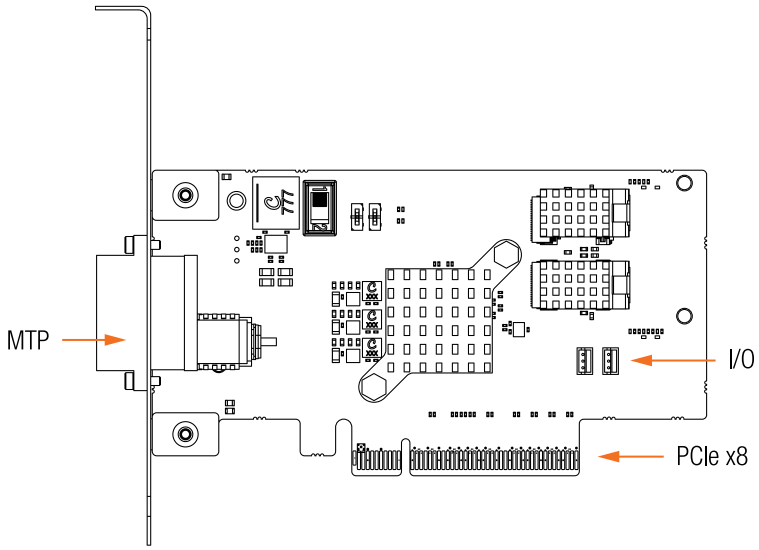



Figure 5: HA-1P-X8G3-MTP-X8G3 connectors location

| Name | Description |
|---|---|
| MTP | MTP optical connector (X4G3) |
| IO | 2x IO, 3 Positions Header, Shrouded Connector (1.50 mm) Through Hole Tin-Lead |
| PCIe x8 | PCIe x8 PCB Edge connector |

Table 6: HA-1P-X8G3-MTP-X8G3 connectors

## 4.2 Data interfaces

### 4.2.1 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 7: MTP connector general description

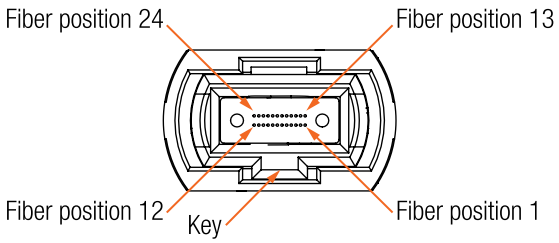



Figure 6: MTP connector pinout

| 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 8: MTP connector pin assignment

### 4.2.2 GPIO

| Item | Value |
|---|---|
| Connector | Connector Header Through Hole, 3 position B3B-ZR |
| Signals | Input, Output, Ground |
| Mating Connectors | JUMPER 03ZR-8M-P - 03ZR-8M-P |
| Mating Cables | XIMEA PN: CBL-ZR3-ZR3-0M25 |

Table 9: IO connector general description

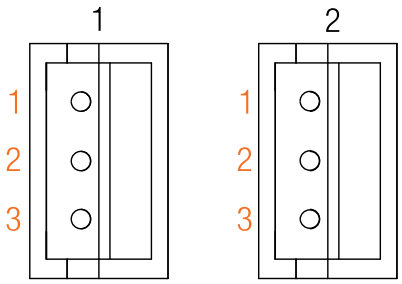



Figure 7: GPIO connector pinout

| Pin | Name | Description | Pin | Name | Description |
|---|---|---|---|---|---|
| | Connector 1 | | | Connector 2 | |
| 1 | ISO_GPI_2 | Isolated input | 1 | ISO_GPI_1 | Isolated input |
| 2 | ISO_GND | Isolated ground | 2 | ISO_GND | Isolated ground |
| 3 | ISO_GPO_2 | Isolated output | 3 | ISO_GPO_1 | Isolated output |

Table 10: GPIO connector pin assigment

# 5 Additional information

## 5.1 Cables

### 5.1.1 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 8: CBL-MTP-X8G3-FF-10M0 cable

### 5.1.2 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.

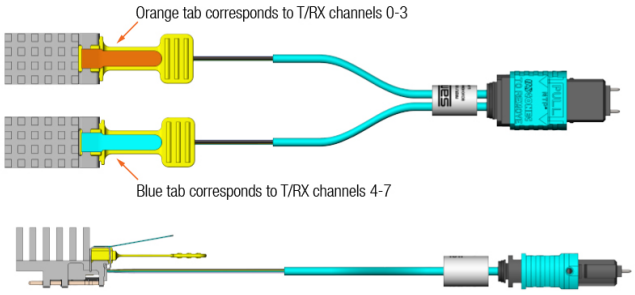



Figure 9: CBL-PCUO-X8G3-0M15 cable

### 5.1.3 CBL-ZR3-ZR3-0M25

0.25 m I/O and synchronization cable. Cable has rectangular socket-to-socket with a 3-pin JST ZR connector on both ends (JUMPER 03ZR-8M-P to 03ZR-8M-P).



Figure 10: CBL-ZR3-ZR3-0M25

# 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.

- host PC (all host adapters require at least x8 PCIe Gen.3 slot on the computer side)
- HA-1P-X8G3-MTP-X8G3 host adapter
- MTP fiber optic cables (e.g. CBL-MTP-X4G3-FF-10M0 or CBL-MTP-X8G3-FF-10M0)

### 6.1.2 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 the cable to the host adapter

Step 3. Connect the necessary cables to the connected device (e.g., the camera)

Step 4. Power up the connected device

Step 5. Power up the PC

For more information about HA-1P-X8G3-MTP-X8G3 please contact: sales@ximea.com.

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