

XS-5P-U3-UC-TC
Multifunctional USB Hub

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

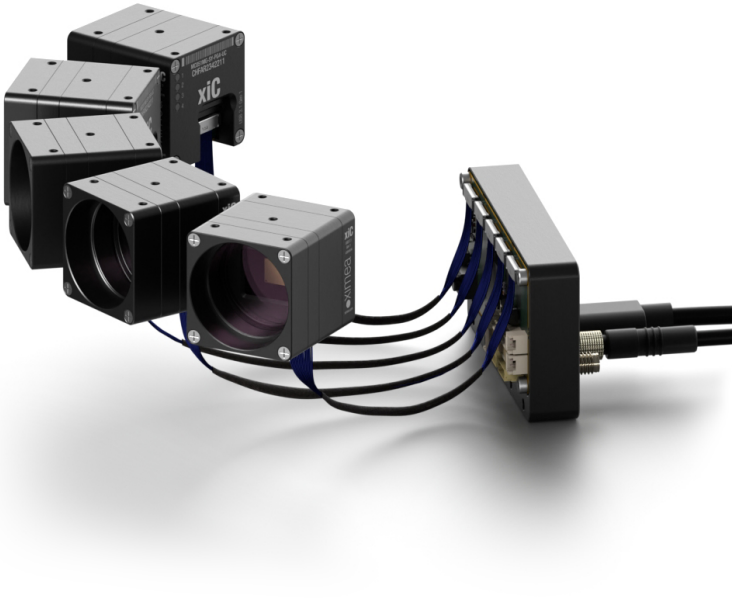


Figure 1: Connected XS-5P-U3-UC-TC

Multi-functional USB switch hub featuring five downstream USB 3 Micro Coax ports, I-PEX Cabline SS and 14-pin data interfaces, along with an upstream USB 3.2 Gen 1 (5 Gbps) Type-C port. A dedicated power and I/O connector is also provided for synchronization.

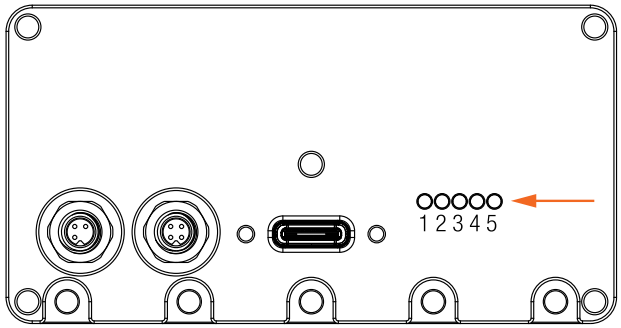


Figure 2: LEDs location

LED	Color	Default	Note
1	Green	ON	USB HUB powered
2	Green	ON	USB HUB powered
3	Red	ON	ON when both AUX and USB are connected
4	Blue	OFF	-
5	Green	ON	status of GPO-EXT (output signal status)

Table 1: LEDs output description

2 Dimensional drawings

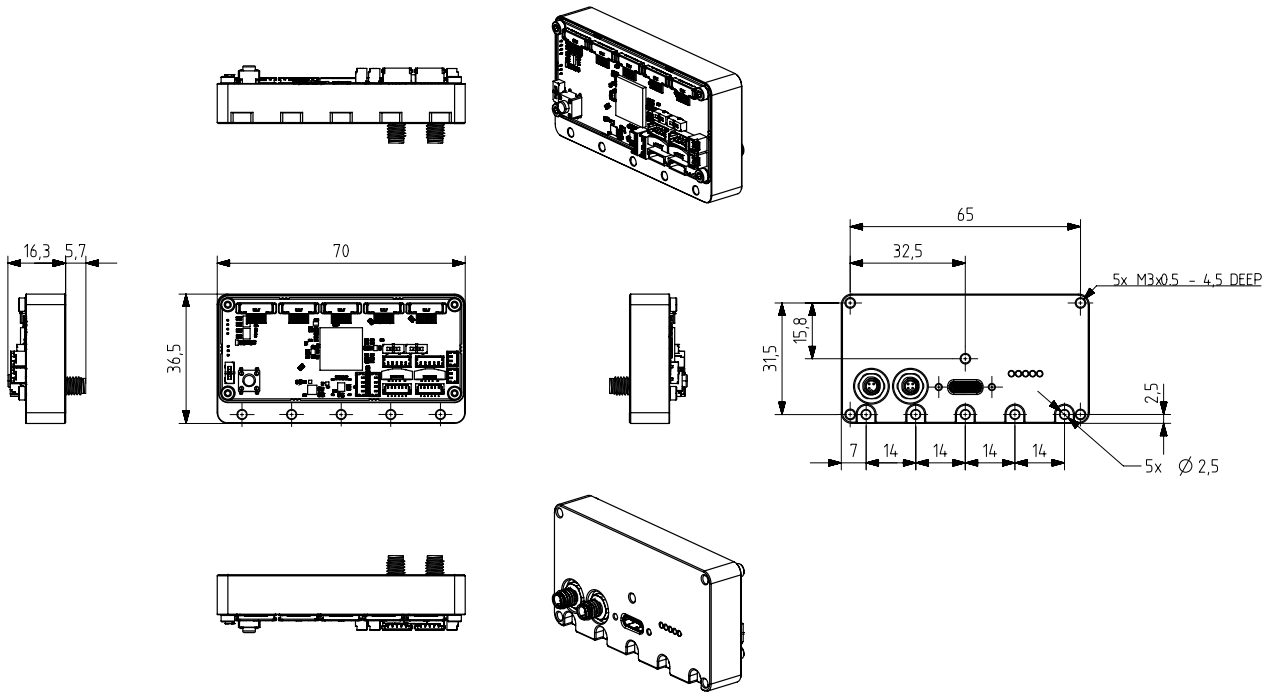


Figure 3: Dimensional drawing of XS-5P-U3-UC-TC

Width [W]	Height [H]	Depth [D]	Mass [M]
70 mm	36.5 mm	22 mm	63 g

Table 2: Parameters and mass

3 Configuration

DIP switch

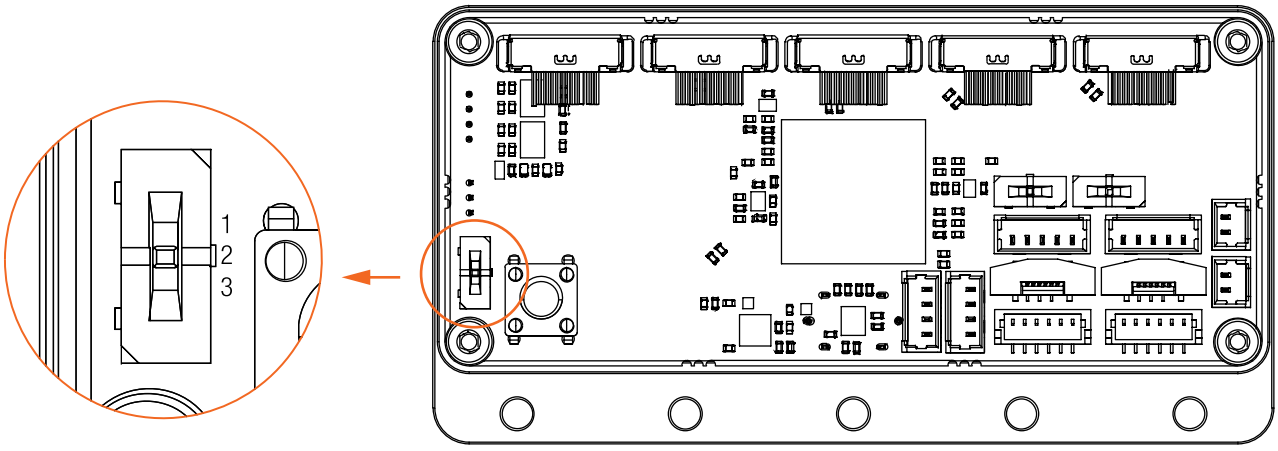


Figure 4: DIP switch location

DIP switch position	Mode name	Mode description
1	External trigger mode	Trigger signal generated from the IO connector GPI_EXT signal
2	-	Not connected
3	Master-Slave mode	Trigger signal generated from the DFP camera connector GPO1 signal (port 1)[1]

[1]see figure 7: I-PEX Cabline SS 14pos ports in section Location of connectors

Table 3: DIP switch position

In both cases, the trigger signal is distributed across all 5 DFP camera connectors to GPIO1 singal, see image below.

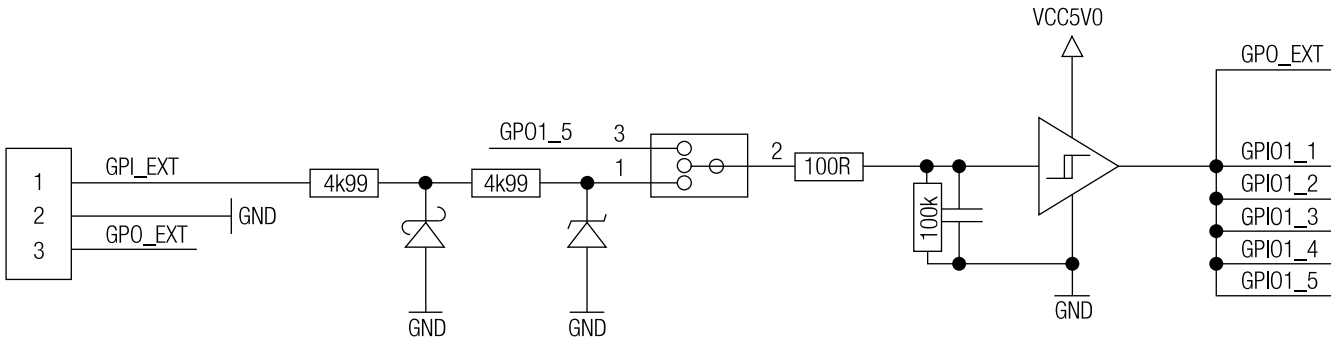


Figure 5: I-PEX Cabline SS, 14pos connectors GPIO1 signal scheme

4 Connectors

4.1 Location of connectors

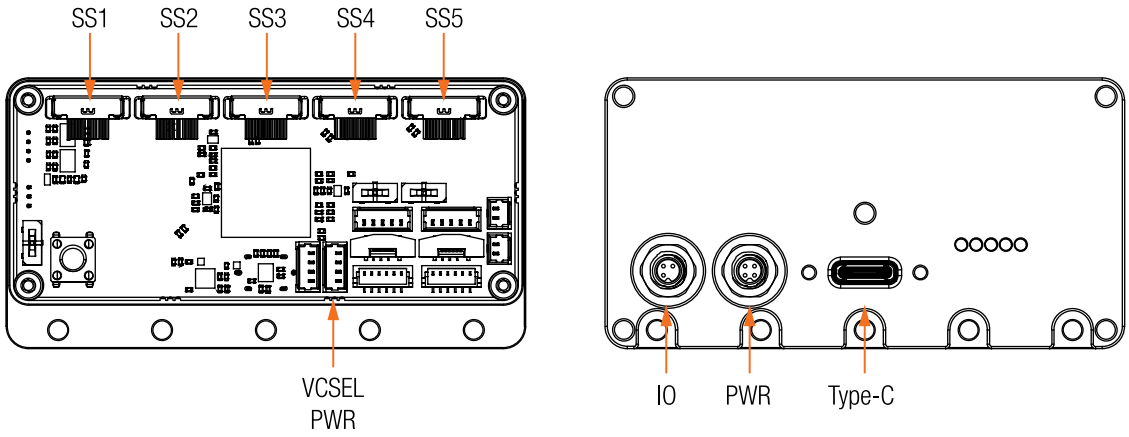


Figure 6: XS-5P-U3-UC-TC connecotrs location

Num	Connector
SS1-5	5 x USB3.2 Gen1, I-PEX Cabline SS 14pos
VCSEL	Connector for powering the VCSEL illumination board
IO	IO connector
PWR	Power connector
Type-C	USB3.2 Gen1, Type-C

Table 4: Connectors description

4.2 Data interfaces

4.2.1 Micro-Coaxial Cabline SS

Item	Value
Connector	CONN I-PEX Cabline SS Micro Coax Cable Receptacle, 14-position (CONN-20374-R14E-31)
Signals	USB 3.1 Gen1 (SuperSpeed), USB 2.0, Power, I/O
Mating Connector	Cable-side I-PEX Cabline SS 14-position plug
Mating Cable	XIMEA PN: CBL-U3-PSD-UC-0M10, CBL-U3-PSD-UC-0M25, CBL-U3-PSD-UC-0M50, CBL-U3-PSD-UC-1M0

Table 5: Micro-Coaxial Cabline SS connector general description

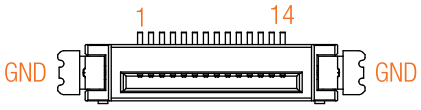


Figure 7: Micro-coax connector pinout

Pin	Signal	GPI/GPO index API	Description
1	VBUS	None	+5 V Power input
2	VBUS	None	+5 V Power input
3	INOUT2	4/4	Non-isolated Input/Output 2 (<0.3 Low; > 1.3 High)
4	OUT2	-/3	Non-isoalted Output 2
5	SSRX+	None	SuperSpeed receiver differential pair
6	SSRX-	None	SuperSpeed receiver differential pair
7	D+	None	2.0 differential pair
8	D-	None	2.0 differential pair
9	SStX+	None	SuperSpeed transmitter differential pair
10	SStX-	None	SuperSpeed transmitter differential pair (<0.3 Low; > 1.3 High)
11	INOUT1	2/2	Non-isolated Input/Output 1
12	OUT1	-/1	Non-isoalted Output 1
13	VBUS	None	+5 V Power input
14	VBUS	None	+5 V Power input

Table 6: ADPT-MU-CX3-UC connector pin assignment

4.2.2 USB 3.2 Gen1 Type-C

Item	Value
Connector	USB3.2 Gen1 (5 Gbps)
Signals	Standard USB 3.2 Gen1 Type-C Connector
Mating Connectors	Standard USB 3.1 Type C Connector with thumbscrewsScrew thread M2

Table 7: Power connector description

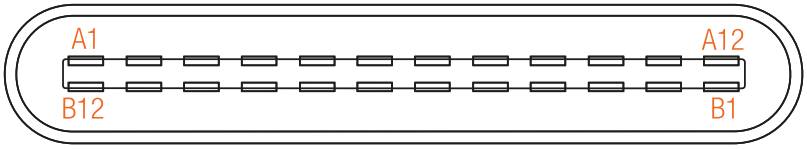


Figure 8: Pinout of Type-C connector

4.2.3 Power connector

This USB Hub requires an external power supply for proper operation. Supply voltage: 12 to 20 V nominal.

Recommended power suply brick: GSM60B15-P1J
Output rating: 60W, 15V, 4A

Power consumption depends on the amount and type of cameras connected to the USB Hub.

Item	Value
Connector	Binder PN: 09 3111 81 04
Signals	Power input
Mating Connectors	Binder 79 3108 52 04

Table 8: Power connector description

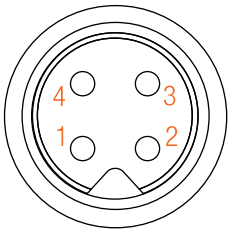


Figure 9: Power connector pinout

Pin	Name	Type
1	GND	Power ground
2	AUX PWR	Power supply input
3	AUX PWR	Power supply input
4	GND	Power ground

Table 9: Power connector pin assignment

4.2.4 IO connector

Cameras connected to DFP ports can be synchronized by external trigger, or in master-slave mode. This functionality is configured by a hardware DIP switch located on the bottom left corner of the the board, see DIP switch.

Item	Value
Connector	I/O & Binder 09 3105 81 03
Signals	Digital Input and Output
Mating cable	CBL-S-M5-3P-PT-5M0-S

Table 10: IO connector description

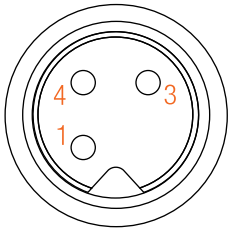


Figure 10: IO connector pinout

Pin	Name	Type
1	GPIO_GND	Common ground for Input and Output
3	IN	Digital Input (IN)
4	OUT	Digital Output (OUT)

Table 11: IO connector pin assignment

4.2.5 VCSEL Power connector

XS-5P-U3-UC-TC USB HUB can be used toghether with VCSEL-SLIM-W as part of a modular vision systems that may be expanded with additional components such as optical cameras, lenses, and mechanical accessories (mounts, coolers, plates, etc.). In this case VCSEL can be powered via USB HUB with CBL-0151340401 power cable.

Item	Value
Connector	Molex, PicoBlade 53047,
Signals	Power input
Mating Cable:	XIMEA PN: CBL-PB4-PWR-0M15; CBL-0151340401

Table 12: VCSEL power connector description

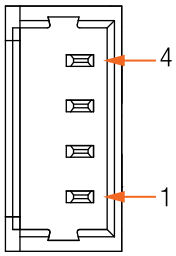


Figure 11: VCSEL Power connector pinout

Pin	Name	Type
1	GND	Ground
2	VCC VCSEL	Power supply input
3	VCC VCSEL	Power supply input
4	GND	Ground

Table 13: VCSEL power connector pin assignment

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.

- Ximea camera with microCoax connector
- CBL-U3-PSD-UC-0M10 microCoax cable
- USB type-C cable (CBL-U3-P-TC-xM)
- power cable (CBL-MJ-PWR-2M0)
- IO cable (Binder 77 3550 0000 40003-0x000)

5.1.2 Connecting the components

Step 1. Make sure the DIP switch is in the right position

Step 2. Connect CBL-U3-PSD-UC-0M10 microCoax cable to the XS-5P-U3-UC-TC

Step 3. Connect CBL-U3-PSD-UC-0M10 microCoax cable to camera

Step 4. Connect USB type-C cable (CBL-U3-P-TC-xM) to the XS-5P-U3-UC-TC

Step 5. Connect USB type-C cable (CBL-U3-P-TC-xM) to host (pc)

Step 6. Connect IO cable to the XS-5P-U3-UC-TC

Step 7. Connect power cable (CBL-MJ-PWR-2M0)

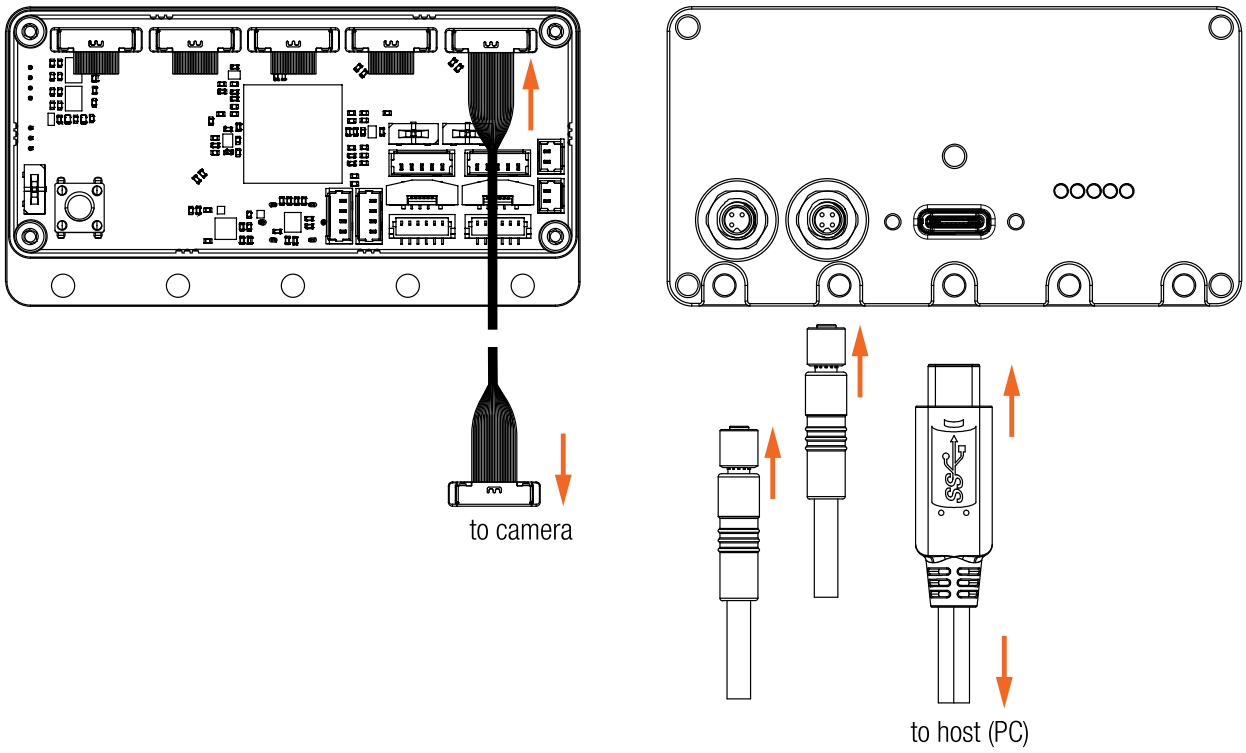


Figure 12: XS-5P-U3-UC-TC - cable connecting

For more information about XS-5P-U3-UC-TC please contact: sales@ximea.com.

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