SilkyEvCam HD
Event Based Camera Specification

Product name　:　**SilkyEvCam HD**
Model name　　:　EvC4A

Rev.1.0.0

CenturyArks Co., Ltd.

Approval	Responsible person
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Contents

Revision History

Revision	Content	Date
Rev.1.0.0	Official Release	2022.8.1

General description and application

SilkyEvCam HD USB consists of a SONY Event Based Vision Sensor (IMX636), a sensor board that outputs MIPI signals, and an interface board that converts MIPI signal to USB3.1 signal.
The Sync IN/OUT signals for synchronizing multiple SilkyEvCam HD are also interfaced with the IX connector.
This document describes SilkyEvCam HD product specifications.
Please refer to the information site provided by SONY for the specifications of the sensor(IMX636) and related applications.
See the CenturyArks website for the latest information.

Functions and Features

◆ IMX636(HD) SONY Event Based Vision Sensor
◆ Wide Dynamic Range (86dB or more)
◆ Contrast Detection (CD) events only
◆ Power supply and data exchange with standard USB 3.0 interface
◆ Event time-stamping with microsecond (µs) precision
◆ Cypress CX3 is used for conversion from MIPI to USB signal
◆ Boot function: SPI Flash
◆ I/O interface: USB 3.0 (Type-C connector)
◆ External pins to connect an external trigger source : IX Connector (need cross wire cable)
◆ Input power: 5V (From USB connector)
◆ Thermometer and illuminance meter
◆ Event Signal Processing: anti-flicker(AFK)/event filter/event rate control(ERC)
◆ Camera housing with CS-mount
◆ Size 30mmx30mmx35mm (w/o Lens) compact and light, easy installation anywhere
◆ Consumption current: 300mA(max), 100mA(Ave.)
◆ PROPHESEE support SDK named METAVISION and it allow customer to develop edge processing including AI
◆ Metavision Intelligence is available for Linux Ubuntu 18.04 and 20.04 64-bit and Windows 10 64-bits.

  [Optional Turn Key Package.]
◆ Lens D-FOV 47.7°(ref. SOYO SFA0820-5M w/ C-CS connection ring)
◆ USB 3.0 Type-C cable with lock screw (1.2m)
◆ Mini tripod
◆ Mobile case

Referenced Documents

No.	Document Title
1	METAVISION™ Intelligence Docs (PROPHESEE website)

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1 Summary of Specifications

1.1.　　Table 1 List of Specifications

*SilkyEv*Cam *HD*　　Specifications		
Event Based Vision sensor	Model	IMX636 (SONY)
	Image size	Type　1/2.5" (Diagonal 7.14mm)
	Module effective pixels	HD (1280 (H) x 720 (V))
	Pixel size	4.86um x 4.86um
	Latency	100 μsec or under @1klux
	Maximum readout throughput	20Mevents/s　*default (setting changeable)
Output	Interface (event data & control)	USB 3.0 (USB Type-C™ connector)
	Interface (Sync/Trigger)	IX Series Connector (IX80G-B-10P : HIROSE) (Plug: IX30G-B-10S-CV(7.0) | IX31G-B-10S-CV(7.0))
Camera	Power supply	USB Power (VBUS)　　　　5.0 V
	Lens Mount type	C/CS Mount
	Wide Dynamic Range	>86dB
	Operating temperature	T operation　　　　　0 ～ + 50 ℃
	Storage temperature	T storage　　　　　- 30 ～ + 80 ℃
	Current consumption	300mA(max) , 100mA(Ave.)
	Maximum system bandwidth	1.6Gbps
	Dimensions / Weight (w/o Lens)	30mm (W) x 30mm (H) x 36mm (D)　/ 40±2g
	Accessories	USB3.0 Type-C™ Cable 1.2m (w/ rock screw)
	PID/VID (Hex)	Vendor ID: 31F7　　Product ID: 0003
	Raw Formats	EVT3
Standard Lens	Model	SFA0820-5M (SOYO)
	Focal length	8mm
	F value	F2.0 − C
	Angle of view	47.7deg(D)
	Focus range	100mm to infinity
	Size / Weight	Φ27mm x 33mm / 32.5g
	(C-CS connection ring)	Φ31mm x 9mm / 4g
Others	Turn Key Pack	Standard Lens / Mini tripod / Hardcase
	SDK support by PROPHESEE	METAVISION™ Intelligence

1.2.　　Table 3 List of USB pin description

Pin No.	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Signal A	GND	TX1+	TX1-	VBUS	CC1	D+	D-	SBU1	VBUS	RX2-	RX2+	GND
Signal B	GND	RX1+	RX1-	VBUS	SBU2	D1	D+	CC2	VBUS	TX2-	TX2+	GND
Pin No	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1

1.3. **Table 4 List of IX Connector pin (Synchronization signals) description**

Pin No.	Signal	Pin No.	Signal
1	TRIGGER_OUT/SYNC_OUT_P +3.3V	6	TRIG_IN_N -opto-coupled
2	SYNC_OUT_N	7	No use
3	SYNC_IN_P -opto-coupled	8	No use
4	SYNC_IN_N -opto-coupled	9	No use
5	TRIG_IN_P -opto-coupled	10	No use

When SilkyEvCam HD is used as master, synchronization signal is provided: pins 1 & 2. This signal can be either:
TRIGGER_OUT: periodic signal with programmable period & duty cycle
EXT_SYNC_CLK_OUT: 1MHz Sync clock

 When camera is slave it can receives
A 1MHz clock: EXT_SYNC_CLK_IN on pins 3 & 4
Or a trigger: MAIN_TRIGGER_IN on pins 5 & 6
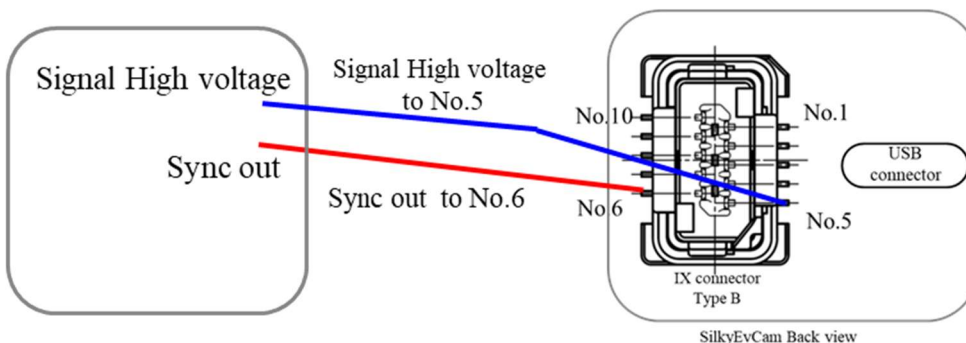
Detailed Information on PROPHESEE website : Trigger IN/Out
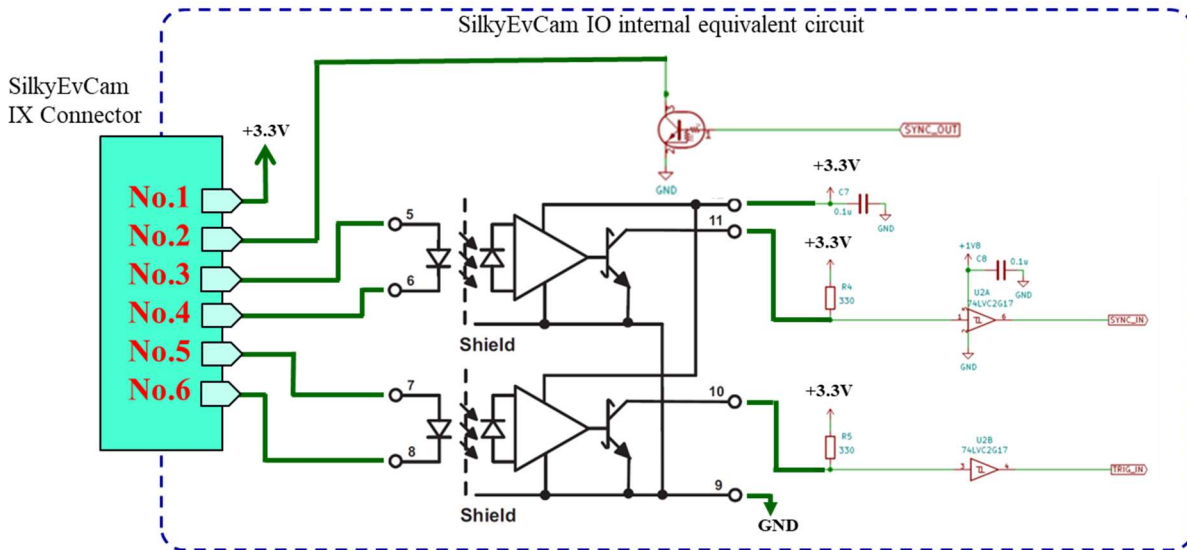
Two Cameras connected on the same PC
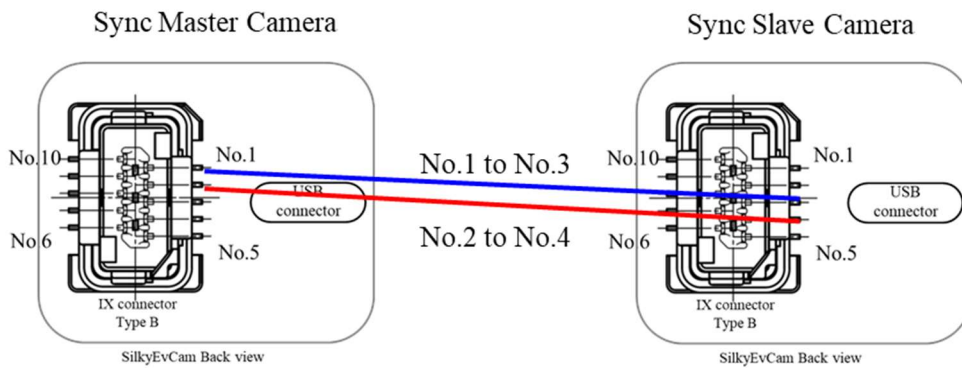
FB Master Camera / EB Slave Camera

1.4. Requirements

The following requirements have to be met to use SilkyEvCam HD on a computer.
Software requirements:
・Please refer to the latest software(METAVISION™ Intelligence) manual.

Installation requirements:
・Administrator rights (sudo account)
・Internet access (to install dependencies)

Physical Interfaces
SilkyEvCam HD USB has two interfaces:
・USB 3.0 connector: for data and power supply
・External pins to connect an external trigger source. See Evaluation Kit Trigger Interface manual.

1.5. Table 4 List of LED Function

Power ON	Lights ON to OFF after 3seconds
Operating (Streaming)	Lights OFF
Transfer Error	Flashing

The LED Light signal cannot be confirmed in normal use.
It exists for debugging.

1.6. Reset SW Function

RESET SW is connected to the CX3 RESET # pin.
The RESET SW cannot be operated in normal use.
It exists for debugging.

1.7. Notes on writing to firmware

Please change the firmware according to the guidelines provided by us. Writing the firmware the wrong way may not work.
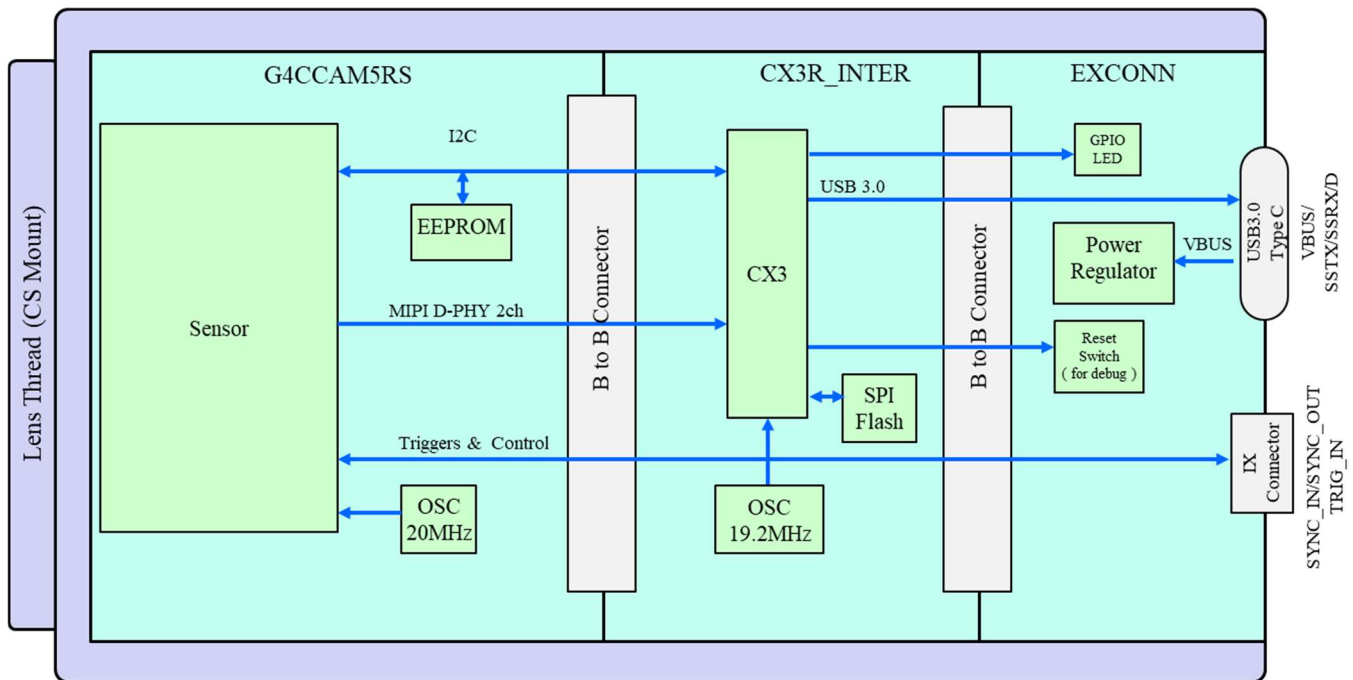
2 Operating Temperature

Table 3 Temperature Specifications

Item	Conditions	Specification	Unit
Operating temperature	Image should be output.	0〜+50℃	℃
Storage temperature		-30〜+80℃	℃
Operating humidity range		+80%RH or under	%RH

3 Operating Condition

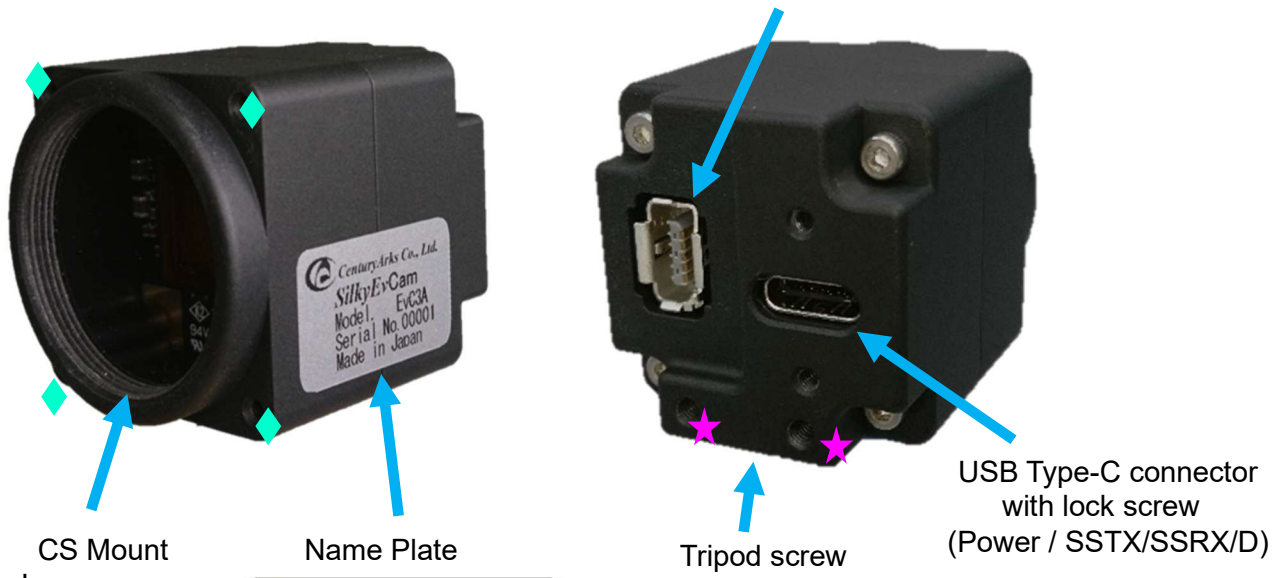| Input Voltage	5V±0.25V （From USB Connector）

4 Block Diagram

5 Power Structure
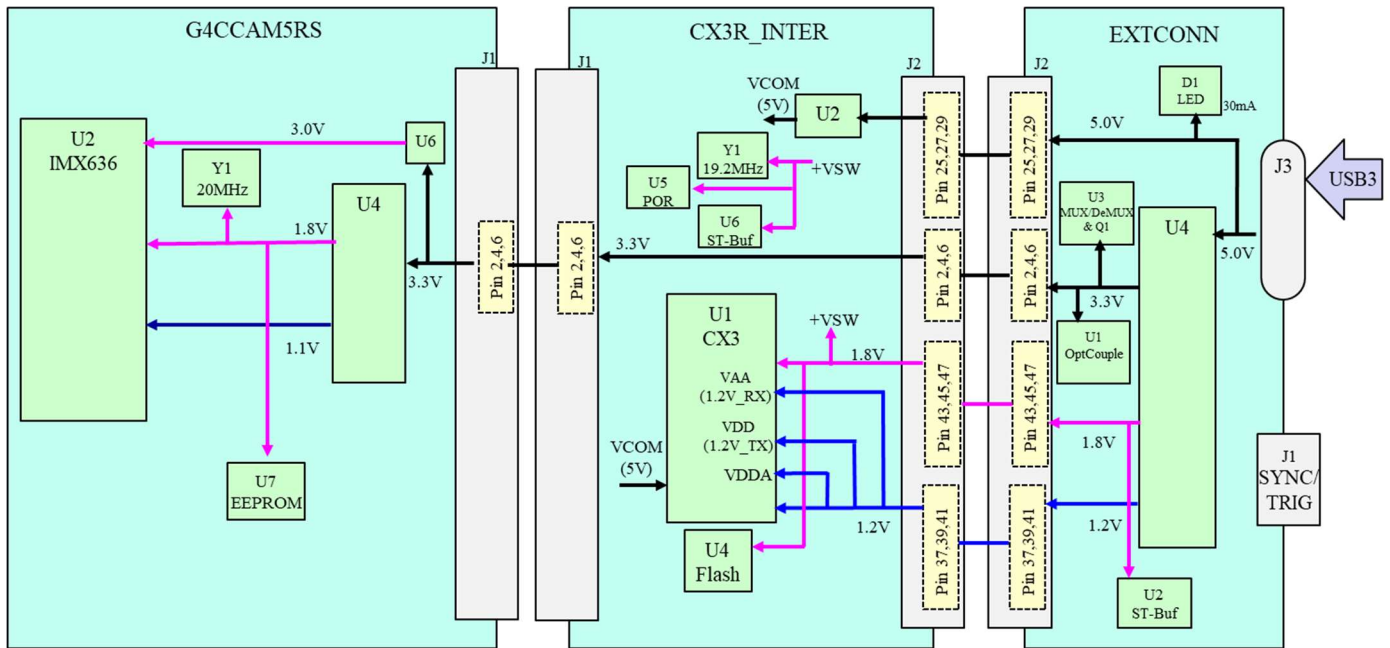
6 Dimension

◆ Camera fixing screen (M2)
★ Camera fixing screw (M2.6)

IX series connector
(SYNC_IN/OUT, TRIG_IN)

CS Mount
Lens screw

Name Plate

Tripod screw

USB Type-C connector
with lock screw
(Power / SSTX/SSRX/D)

CenturyArks Co., Ltd.
SilkyEvCam HD
Model.   EvC4A
Serial No. 00051
Made in Japan

Front case

Back case

7 Notes on Handling and Assembly

7.1.   Notes on Handling

When using this product, ensure safe design by heeding the following precautions.

1. Prevention of Electrostatic Discharge (ESD)
Event based sensors and other ICs can easily be damaged by static discharge. When handling these modules, take the following measures to prevent static discharge.
   (1) Either use non-chargeable gloves, clothes or material. Also use conductive shoes.
   (2) Use a wrist strap when handling directly.
   (3) Install grounded conductive mats on the floor and working table to prevent the generation of static electricity.
   (4) Ionized air is recommended for discharge when handling Event based sensors.
   (5) For the shipment of camera, use bag treated for the prevention of static charges.

2. Notes on storage and operating environments
Do not store or use the lens modules in harsh environments with high temperatures, high humidity levels, and high concentrations of dust or in environments where condensation may form from moisture or dampness.

8 Packing specification

[SilkyEvCam HD(EvC4A)]
- SilkyEvCam HD（1）
- USB3 Cable (Type-C to Type-A , 1.2m)（1）

[SilkyEvCam HD Turn Key Pack(EvC4A-TK2)]
- SilkyEvCam HD（1）
- USB3 Cable (Type-C to Type-A , 1.2m)（1）
- Standard Lens（1）
- Mini tri-pod（1）
- Mobile case（1）

Size :193(W)x139(D)x62(H)mm