SilkyEvCam

Event Based Camera Specification

Product name : SilkyEvCam
Model name : EvC3A

Rev.1.0.2

CenturyArks Co., Ltd.

Approval	*Responsible person*
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Contents

Revision History

Revision	Content	Date
Rev.1.0.0	Create new	2020.9.1
Rev.1.0.1	Add Raw Formats. (1.1. Table 1 List of Specifications)	2020.12.18
Rev.1.0.2	Add Maximum readout throughput. (1.1. Table 1 List of Specifications)	2021.2.12

General description and application

SilkyEvCam USB consists of a PROPHESEE Event Based Vision Sensor (PPS3MVCD), a sensor board that outputs MIPI signals from FPGA, and an interface board that converts MIPI signal to USB3.1 signal.
The Sync IN/OUT signals for synchronizing multiple SilkyEvCam are also interfaced with the IX connector.
This document describes SilkyEvCam product specifications.
Please refer to the information site provided by PROPHESEE for the specifications of the sensor(PPS3MVCD) and related applications.
See the CenturyArks website for the latest information.

Functions and Features

- PPS3MVCD Gen3.1(VGA) PROPHESEE Event Based Vision Sensor
- Wide Dynamic Range (up to 120dB)
- 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
- Driver: Built-in SPI Flash
- 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)
- Place the thermal sensor on the back of the PPS3MVCD
- Camera housing with CS-mount
- Size 30mmx30mmx35mm (w/o Lens) compact and light, easy installation anywhere
- Consumption current (max.): About 400mA
- PROPHESEE support SDK named METAVISION and it allow customer to develop edge processing including AI
- Metavision Designer is available for Linux Ubuntu 16.04 and 18.04 64-bit and Windows 10 64-bits.

[Optional Turn Key Package.]

- Lens D-FOV 70°(ref. COMPUTAR-M0814-MP2 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	Revision	Published Date
1	PPS3MVCD Data sheet	1.1	Feb.2020
2	METAVISION™ Intelligence (PROPHESEE website) .	2.1	Oct.2020

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1 Summary of Specifications

1.1. Table 1 List of Specifications

***SilkyEv*Cam**	**Specifications**	
Event Based Vision sensor	Model	PPS3MVCD (PROPHESEE)
	Image size	Type 3/4 “ (Diagonal 12mm)
	Module effective pixels	VGA (640 (H) x 480 (V))
	Pixel size	15um x 15um
	Typical Latency	200us
	Maximum readout throughput	50Mevents/s
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	>120dB
	Operating temperature	T operation 0 ～ + 50 ℃
	Storage temperature	T storage - 30 ～ + 80 ℃
	Current consumption	500mA(max) , 200～300mA(Ave.)
	Dimensions / Weight (w/o Lens)	30mm (W) x 30mm (H) x 36mm (D) / 40g
	Accessories	USB3.0 Type-C™ Cable 1.2m (w/ rock screw)
	PID/VID (Hex)	Vendor ID : 31F7 Product ID : 0002
	Raw Formats	EVT3
Standard Lens	Model	M0814-MP2 (computar)
	Focal length	8mm
	F value	F1.4 － F16C
	Angle of view	70deg
	Focus range	100mm to infinity
	Size / Weight	Φ33.5mm x 28.2mm / 62.6g
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

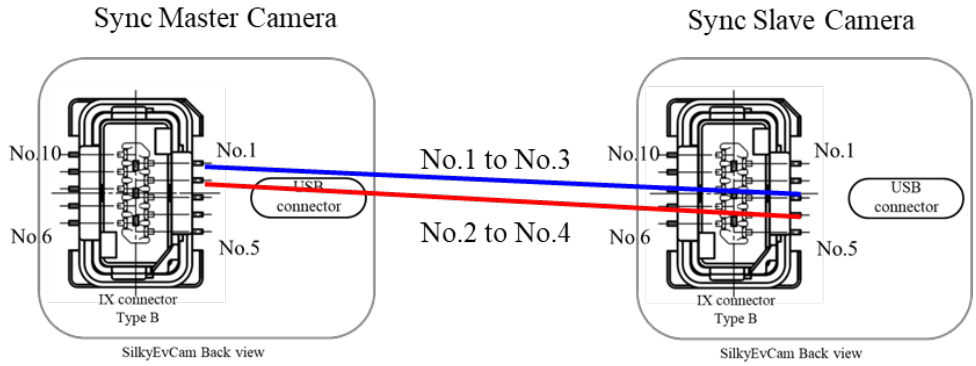
Pin No.	Signal	Pin No.	Signal
1	TRIGGER_OUT/SYNC_OUT_P +3.3V	6	TRIG_IN_N -opto-coupled
2	SYNC_OUT_N	7	No use
3	SYNC_IN_P -opto-coupled	8	No use
4	SYNC_IN_N -opto-coupled	9	No use
5	TRIG_IN_P -opto-coupled	10	No use

When SilkyEvCam USB 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

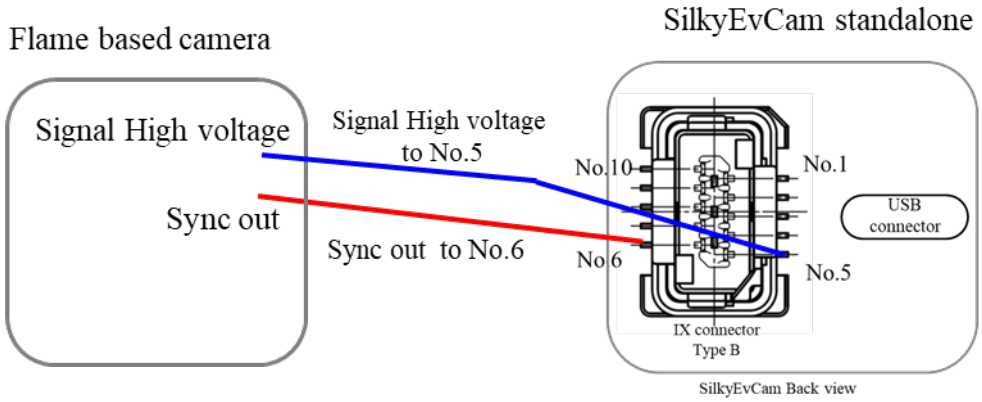
When camera is slave it can receives
A 1MHz clock: EXT_SYNC_CLK_IN on pins 3 & 4
Or a trigger: MAIN_TRIGGER_IN on pins 5 & 6

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 on a computer.
Software requirements:
・Please refer to the latest software manual.

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

Physical Interfaces
SilkyEvCam 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

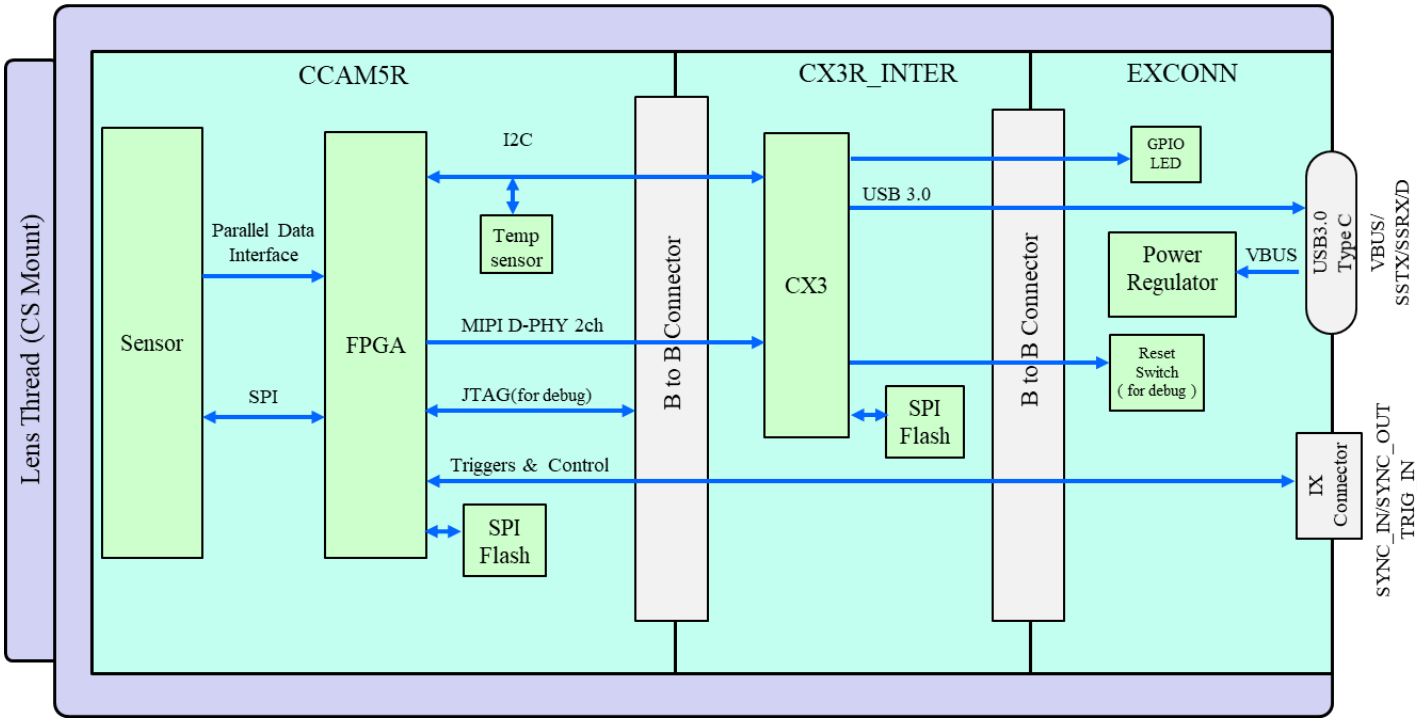
Table 3 Temperature Specifications

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

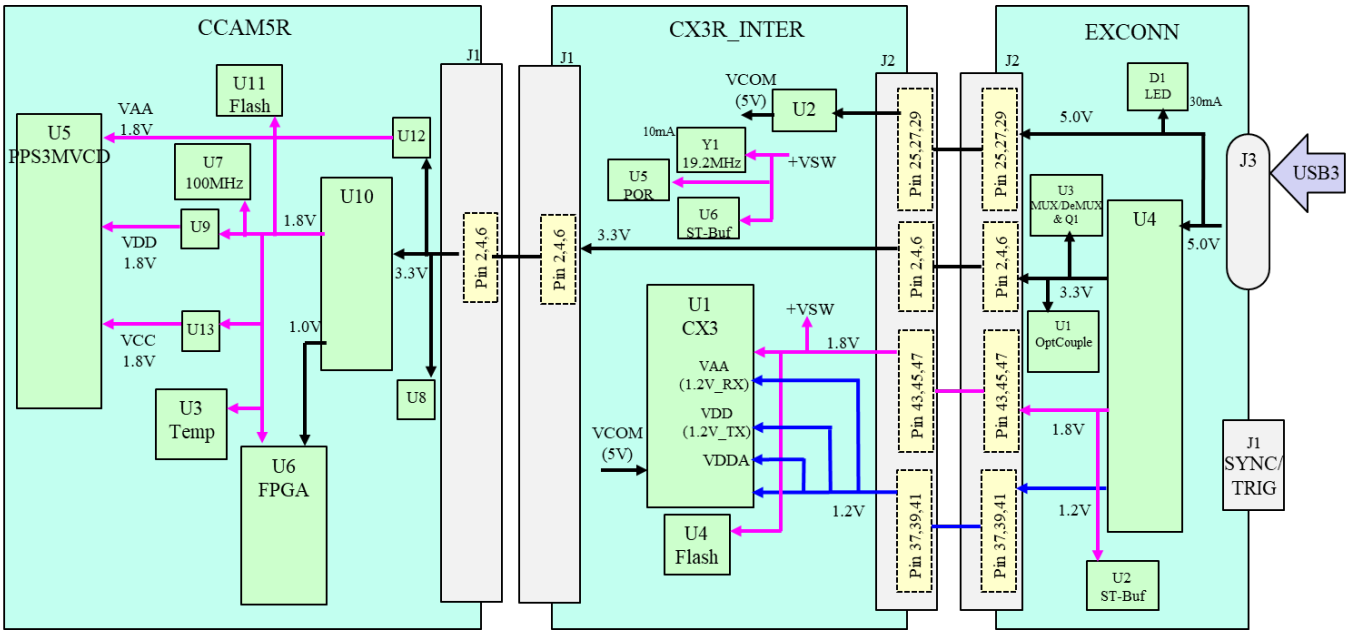
3 Operating Condition

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

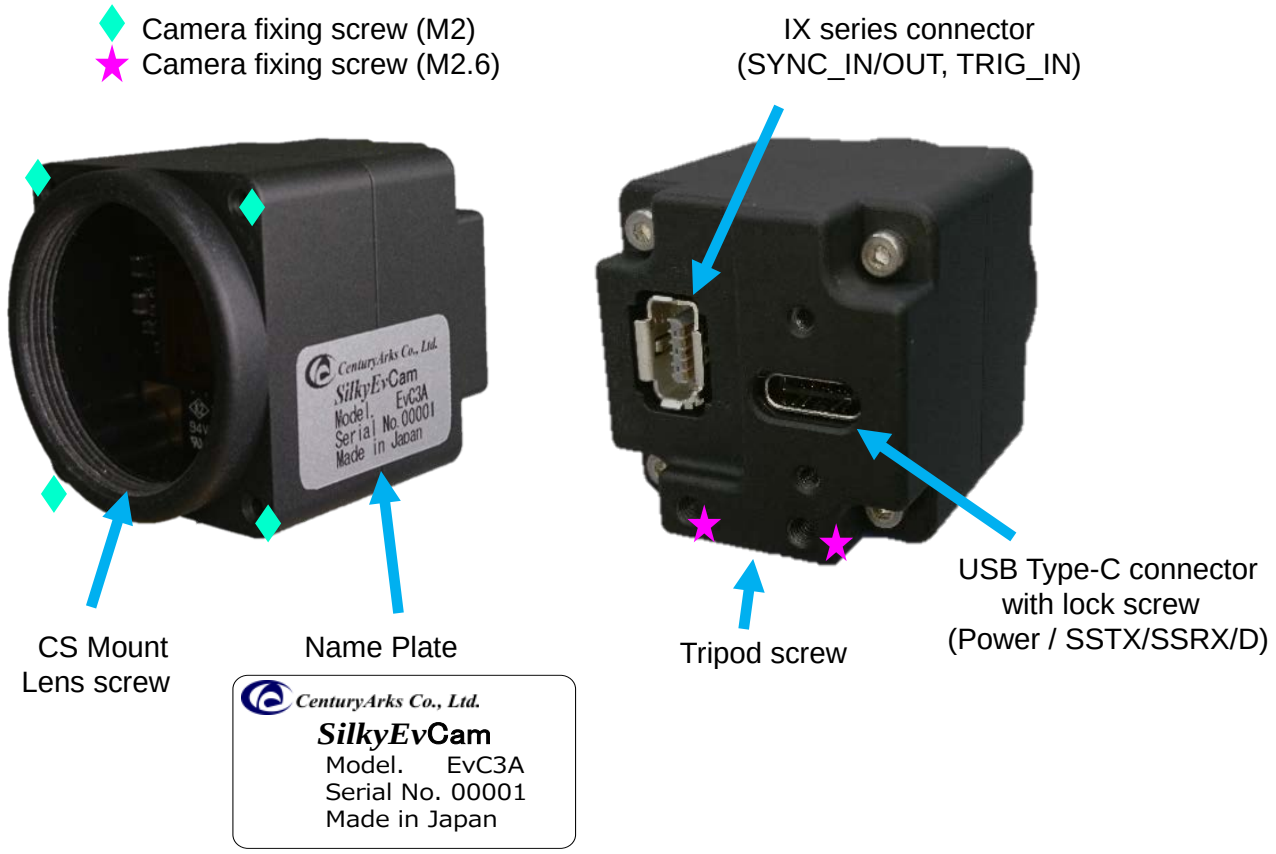
4 Block Diagram



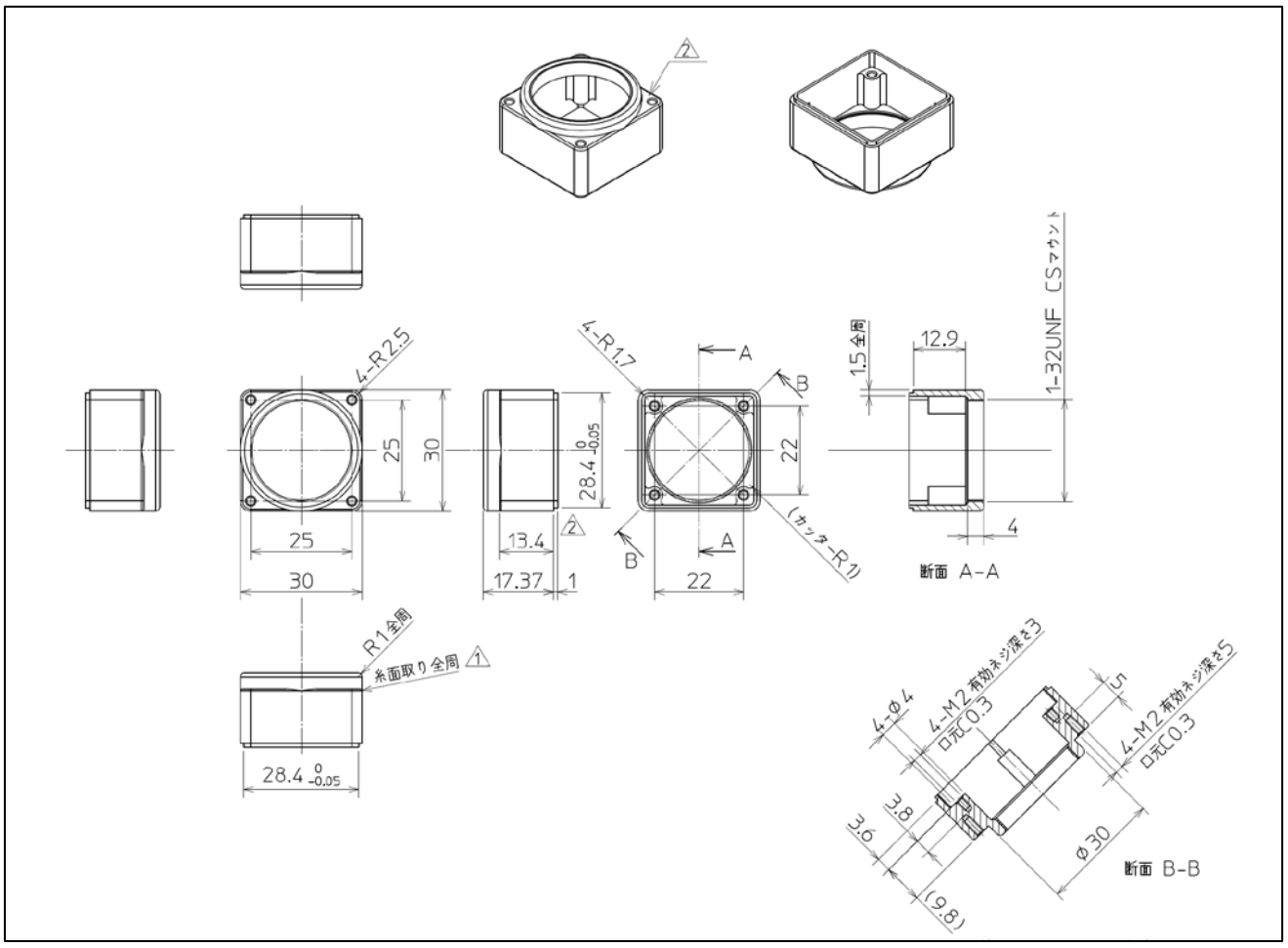
5 Power Structure



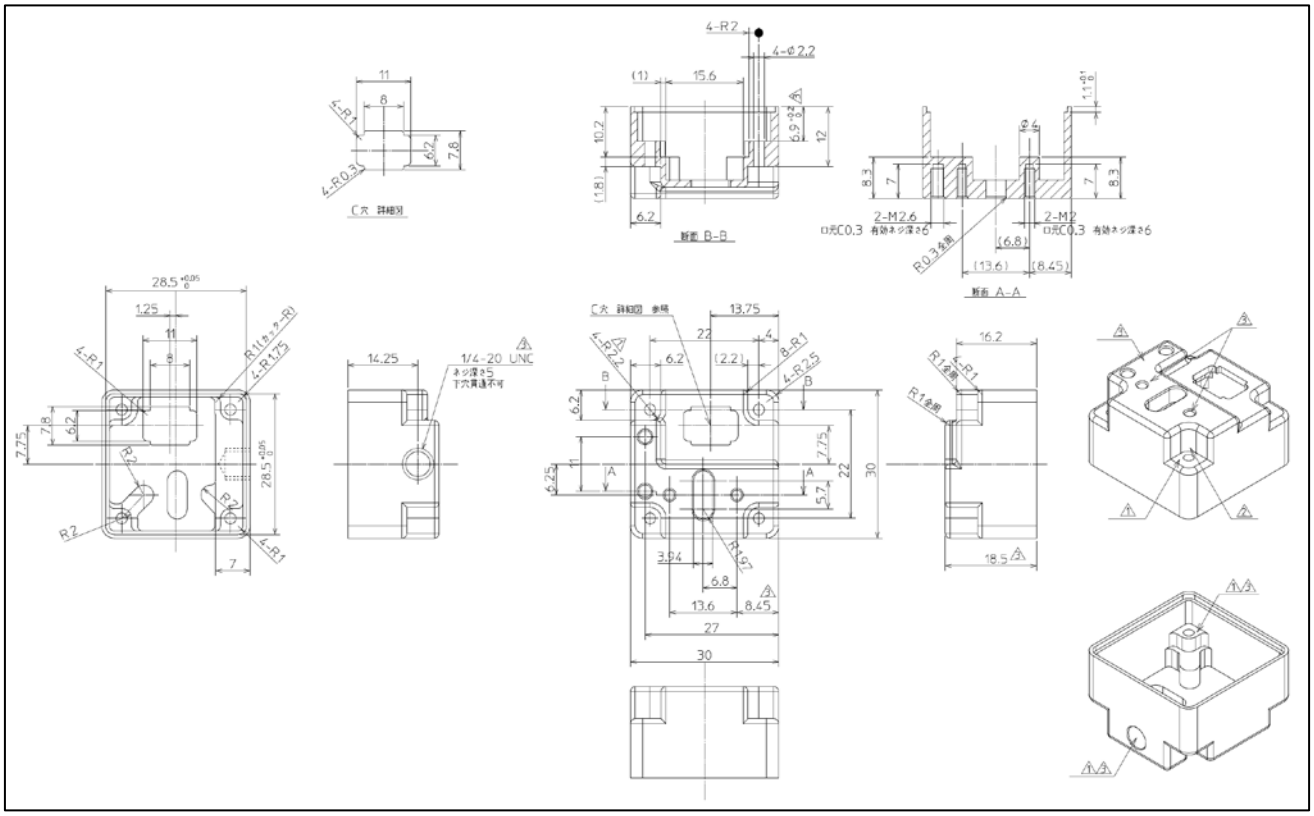
6 Dimension



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(EvC3A)]
- SilkyEvCam (1)
- USB3 Cable (Type-C to Type-A , 1.2m) (1)

[SilkyEvCam Turn Key Pack(EvC3A-TK1)]
- SilkyEvCam (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