



**LEOPARD**  
IMAGING

# LI-VENUS-ISX021-GMSL2-xxxH



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## INTRODUCTION

The LI-VENUS-ISX021-GMSL2-xxxH is equipped with Sony diagonal 6.99 mm (Type 1/2.57) CMOS image sensor ISX021 and Maxim GMSL2 serializer MAX9295A/B. This camera outputs YUV 8-bit data.

## SPECIFICATIONS

Sensor	Sony Diagonal 6.99 mm CMOS Sensor ISX021
Optical Format	1/2.57"
Resolution	1937 (H) x 1297 (V) (active pixels)
Pixel Size	3.0 x 3.0 $\mu\text{m}$
Output Format	YUV422 8-bit
Color / Mono	Color sensor
Frame Rate	30 fps @ 1920 x 1280 (based on ISP)
HDR (High Dynamic Range)	Supported
LFM (LED Flicker Mitigation)	Supported
Serializer	Maxim MAX9295A/B
Lens	FOV H 60° / 118° / 195°
IP Rating	IP69K
Power Supply Range	8 ~ 17 VDC
Connector	FAKRA Z TYPE
Power Consumption	90 mA @ 12 VDC (1920 x 1280 @ 30 fps)
Operating Temp	-40°C ~ +85°C
Storage Temp	-40°C ~ +85°C
Weight	~ 34 g
Part#	LI-VENUS-ISX021-GMSL2-xxxH



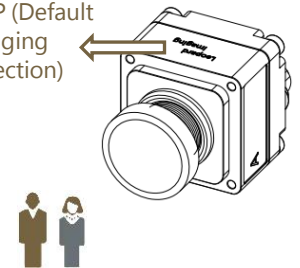
## APPLICATIONS

- Automotive
  - ◆ Autonomous Driving
  - ◆ Assisted Driving
  - ◆ Digital Video Recording
  - ◆ Machine Vision

## DEFAULT IMAGING DIRECTION

- The logo "Leopard Imaging" is on the TOP.

TOP (Default Imaging Direction)

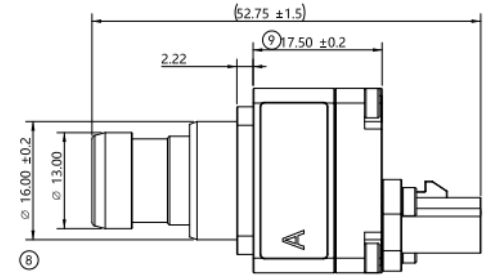
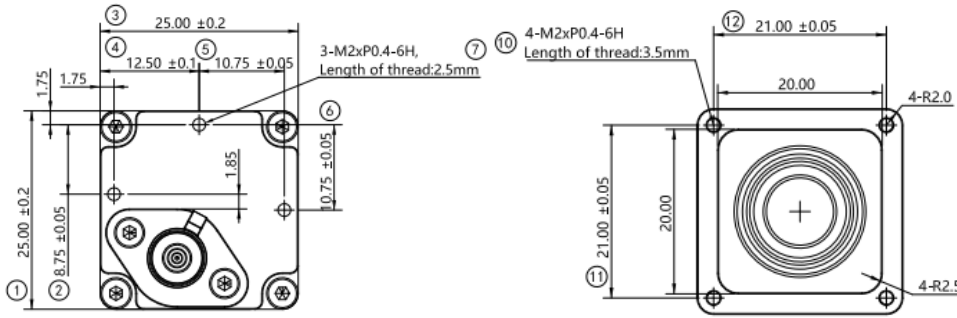


## CABLE CONNECTOR

- Housing Connector  
FAKRA Z Type
- Cable Length: 3 meters
- Cable Part#: FAK-SMZSMZ-3M



## DIMENSIONS: LI-VENUS-ISX021-GMSL2-060H



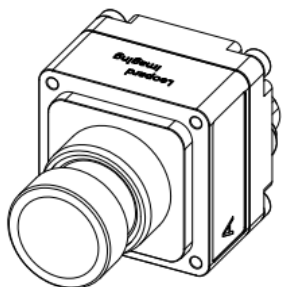
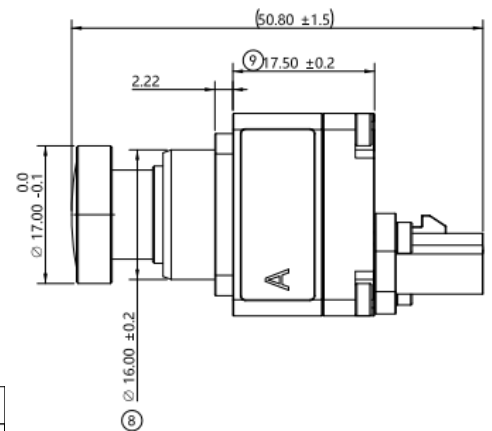
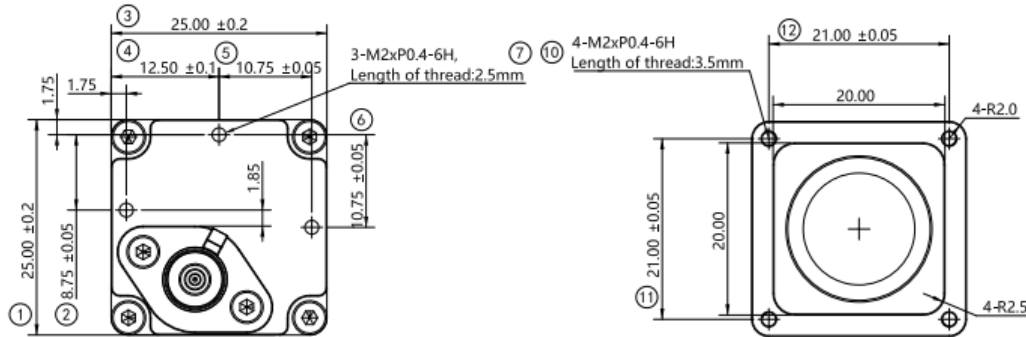
TOLERANCE TABLE		
Size X (mm)	Tolerance (mm)	Angle Tolerance (°)
0.5 < X ≤ 3	±0.1mm	±0.05°
3 < X ≤ 6	±0.1mm	±0.05°
6 < X ≤ 30	±0.2mm	±0.05°
30 < X ≤ 120	±0.3mm	±0.05°
120 < X ≤ 400	±0.5mm	±0.1°
400 < X ≤ 1000	±0.8mm	±0.1°
X > 1000	±1.2mm	±0.1°

### NOTE:

- ⊗ marked are important sizes.
- Tolerances for others unmarked – refer to the Tolerance Table.

Unit: mm

## DIMENSIONS: LI-VENUS-ISX021-GMSL2-118H



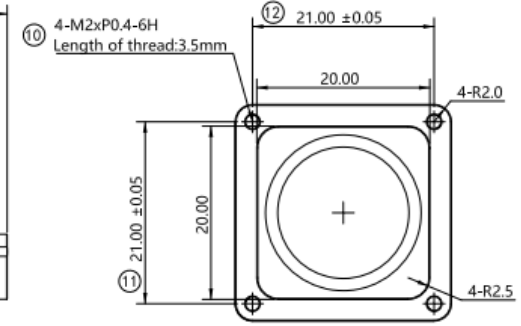
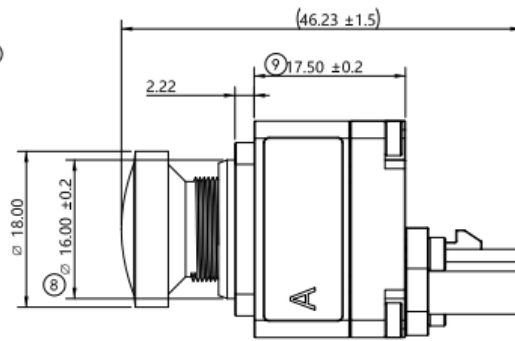
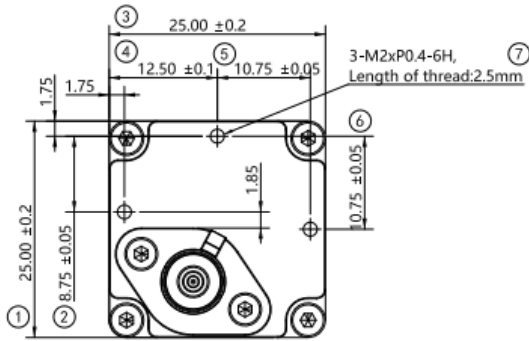
TOLERANCE TABLE		
Size X (mm)	Tolerance (mm)	Angle Tolerance (°)
0.5 < X ≤ 3	±0.1mm	±0.05°
3 < X ≤ 6	±0.1mm	±0.05°
6 < X ≤ 30	±0.2mm	±0.05°
30 < X ≤ 120	±0.3mm	±0.05°
120 < X ≤ 400	±0.5mm	±0.1°
400 < X ≤ 1000	±0.8mm	±0.1°
X > 1000	±1.2mm	±0.1°

### NOTE:

- ⊗ marked are important sizes.
- Tolerances for others unmarked – refer to the Tolerance Table.

Unit: mm

# DIMENSIONS: LI-VENUS-ISX021-GMSL2-195H



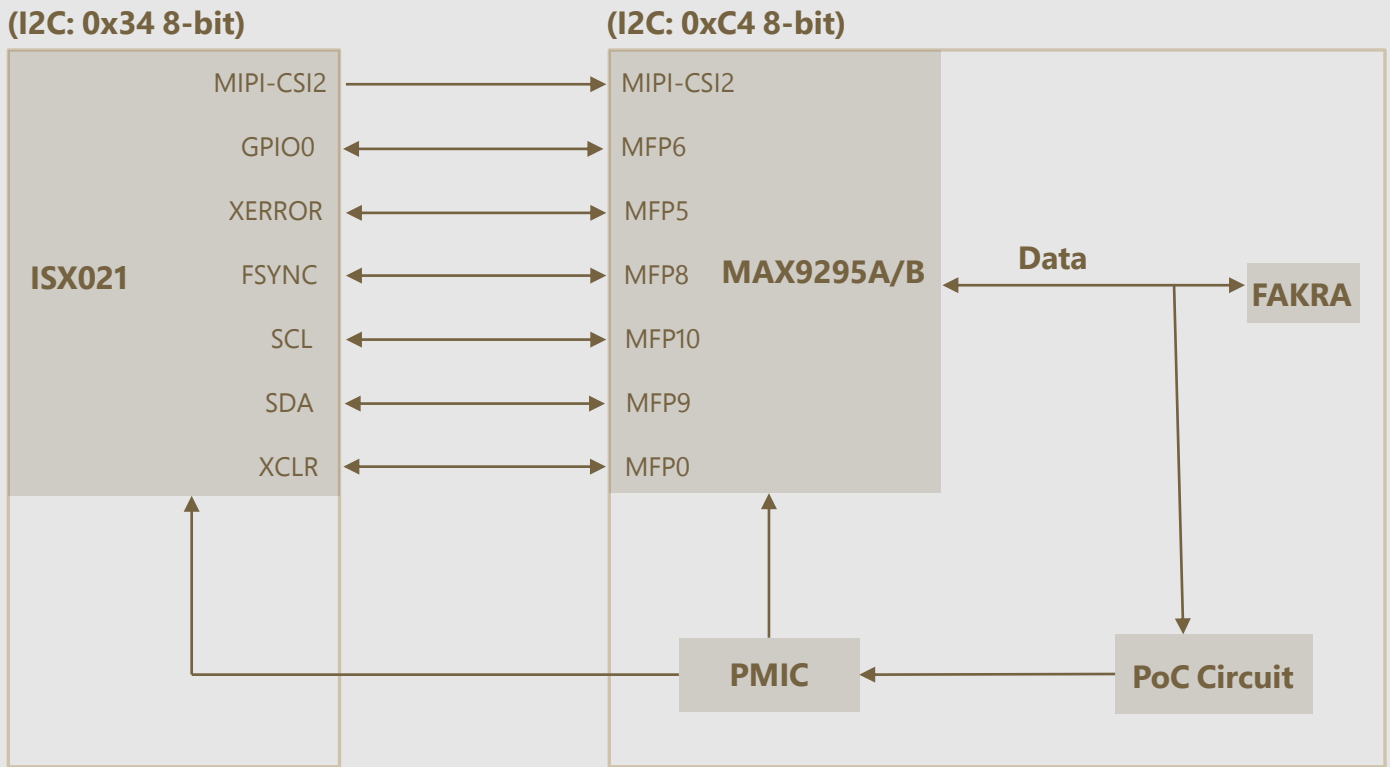
TOLERANCE TABLE		
Size X (mm)	Tolerance (mm)	Angle Tolerance (°)
0.5 < X ≤ 3	±0.1mm	±0.05°
3 < X ≤ 6	±0.1mm	±0.05°
6 < X ≤ 30	±0.2mm	±0.05°
30 < X ≤ 120	±0.3mm	±0.05°
120 < X ≤ 400	±0.5mm	±0.1°
400 < X ≤ 1000	±0.8mm	±0.1°
X > 1000	±1.2mm	±0.1°

## NOTE:

- ⊗ marked are important sizes.
- Tolerances for others unmarked – refer to the Tolerance Table.

Unit: mm

● SYSTEM BLOCK DIAGRAM



## LENS SPECIFICATIONS

**NOTE:**

xxxH refers to 060H (FOV H 60°), 118H (FOV H 118°) or 195H (FOV H 195°)

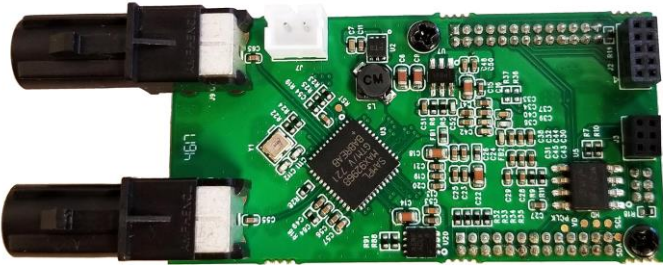
LI-VENUS-ISX021-GMSL2-060H

Lens EFL: 5.83 mm $\pm$ 2%
Aperture, F/#: 1.8 $\pm$ 5%
Field of View (FOV): 60° horizontal
Optical Distortion: < -20.7% (2Y' = 6.826 mm)
TV Distortion: < -10.19% (2Y' = 6.826 mm)
Relative Illumination: 90% (2Y' = 6.826 mm)
IR Filter: 650 nm IR cut filter
Mount: M12

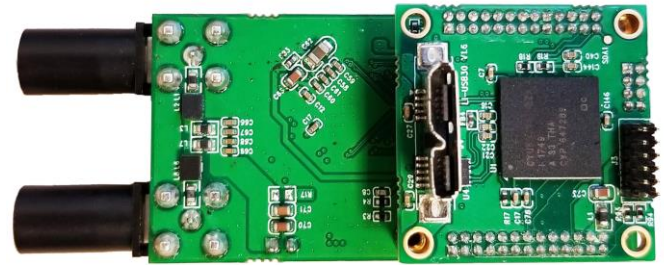
LI-VENUS-ISX021-GMSL2-118H	LI-VENUS-ISX021-GMSL2-195H
	
Lens EFL: 3.021 mm $\pm$ 5%	Lens EFL: 1.51 mm $\pm$ 5%
Aperture, F/#: 2.0 $\pm$ 5%	Aperture, F/#: 2.0 $\pm$ 5%
Field of View (FOV): 118° horizontal	Field of View (FOV): 195.9° $\pm$ 3° horizontal (y = 2.880 mm)
Optical Distortion: -62.41% $\pm$ 5% (f-tan $\theta$ )	F- $\theta$ Distortion: -154.2% (y = 3.025 mm)
Relative Illumination: > 45.0%	Relative Illumination: 37% (y = 3.025 mm)
IR Filter: 700 nm IR cut filter	IR Filter: 650 nm IR cut filter
Mount: M12	Mount: M12

## USB3.0 CAMERA KIT

LI-GMSL2-USB



Top View



Bottom View

LI-VENUS-ISX021-GMSL2-xxxH can connect to LI-GMSL2-USB as a USB 3.0 camera.

Part#: **LI-USB30-VENUS-ISX021-GMSL2-xxxH**

### SPECIFICATIONS

- USB 3.0 Super Speed support
- UVC compliant
- Allows customization
- 12 VDC power supply for camera
- Weight: ~ 190 g
- Single Coax Cable transmits up to 12 meters PoC (Power over Cable)
- Resolution: 1920 x 1280 @ 30 fps
- Power consumption: 90 mA @ 12 VDC
- Compatible with Windows, Linux OS and other OS which have UVC drivers



### BOM

#	Items	QTY
1	LI-VENUS-ISX021-GMSL2-xxxH	1
2	LI-GMSL2-USB	1
3	3-Meter Fakra Cable	1
4	12 VDC Power Supply	1
5	USB3.0 Cable	1

### SDK SUPPORTED

- Camera Tool Source Code in C#
- Capture & Display
- Register Access Function

## ● REVISION HISTORY

Revision	Description	Release Date
1.0	First Release.	03 Feb 2023
1.1	Updated Output Format and SYSTEM BLOCK DIAGRAM.	21 Mar 2024

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