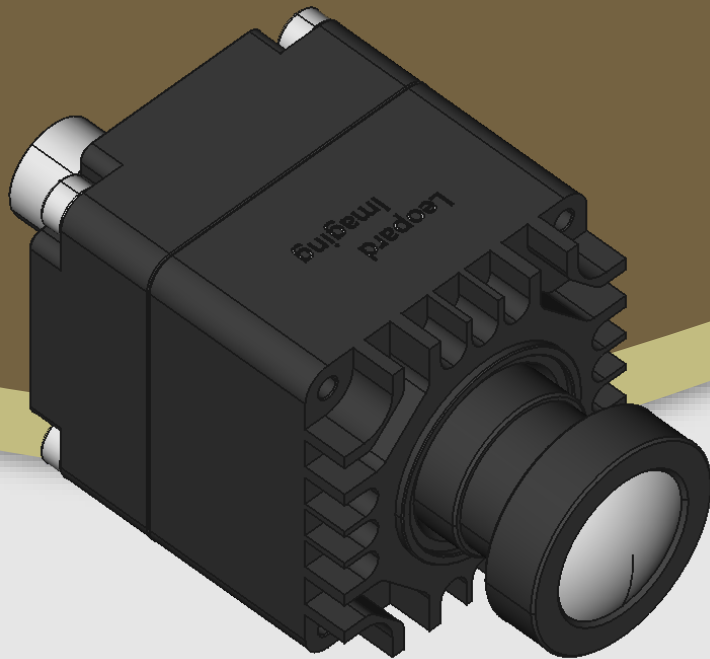




**LEOPARD**  
IMAGING

LI-VENUS-OX03F10-OAX40-GM2A-xxxH



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## INTRODUCTION

The LI-VENUS-OX03F10-OAX40-GM2A-xxxH is equipped with OmniVision CMOS high-definition high dynamic range CMOS sensor OX03F10, automotive ISP OAX4000 and Maxim GMSL2 serializer MAX9295A/B. This camera outputs YUV data.

## SPECIFICATIONS

|                              |  |
|------------------------------|--|
| Sensor                       | OmniVision high-definition high dynamic range sensor OX03F10 |
| Optical Format               | 1/2.44"  |
| Resolution                   | 1920 (H) x 1536 (V) (Based on ISP binary)                    |
| Pixel Size                   | 3.0 x 3.0 $\mu\text{m}$                                      |
| Output Format                | YUV422   |
| Color / Mono                 | Color sensor   |
| Frame Rate                   | 60 fps @ 1920 x 1536   |
| HDR (High Dynamic Range)     | Supported  |
| LFM (LED Flicker Mitigation) | Supported  |
| Lens                         | FOV H 30° / 60° / 120° / 195° / 200°                         |
| IP Rating                    | TBD  |
| Serializer                   | Maxim MAX9295A/B   |
| ISP                          | OMNIVISION automotive ISP OAX4000                            |
| Power Supply Range           | 8 ~ 17 VDC   |
| Connector                    | FAKRA Z TYPE   |
| Power Consumption            | 125 mA @ 12 VDC<br>(1920 x 1536 @ 60 fps)                    |
| Operating Temp               | TBD  |
| Storage Temp                 | TBD  |
| Weight                       | TBD  |

## APPLICATIONS

- Automotive
  - ◆ Surrounding View System
  - ◆ Rear View Camera
  - ◆ Autonomous Driving

## PART NUMBER

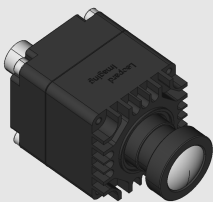
| Lens FOV (Horizontal) | Part Number                      |
|-----------------------|----------------------------------|
| 30°                   | LI-VENUS-OX03F10-OAX40-GM2A-030H |
| 60°                   | LI-VENUS-OX03F10-OAX40-GM2A-060H |
| 120°                  | LI-VENUS-OX03F10-OAX40-GM2A-120H |
| 195°                  | LI-VENUS-OX03F10-OAX40-GM2A-195H |
| 200°                  | LI-VENUS-OX03F10-OAX40-GM2A-200H |

## CABLE CONNECTOR

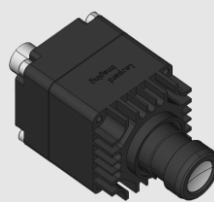
- Housing Connector  
FAKRA Z Type
- Cable Length: 3 meters
- Cable Part#: FAK-SMZSMZ-3M



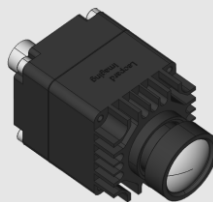
030H



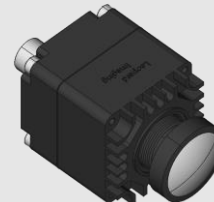
060H



120H

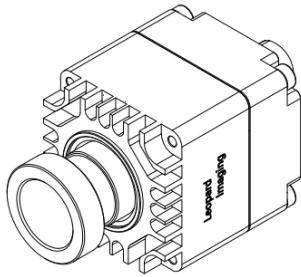
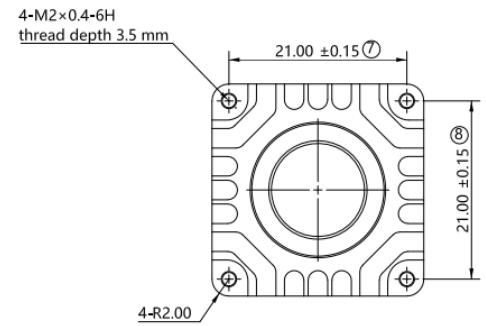
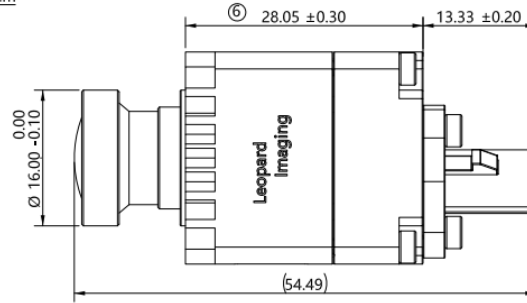
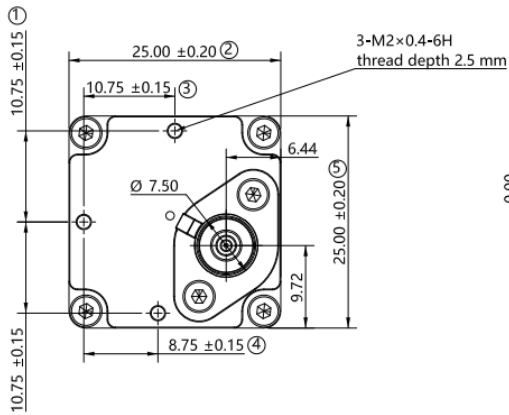


195H



200H

## DIMENSIONS: LI-VENUS-OX03F10-OAX40-GM2A-030H



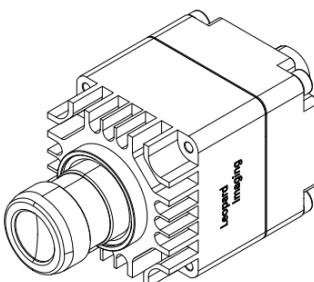
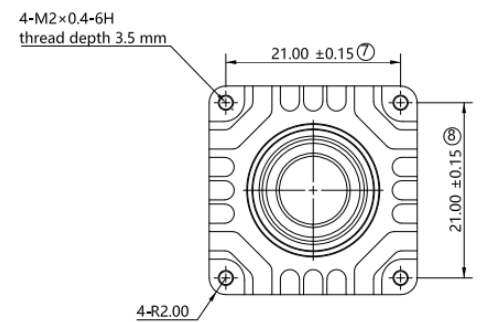
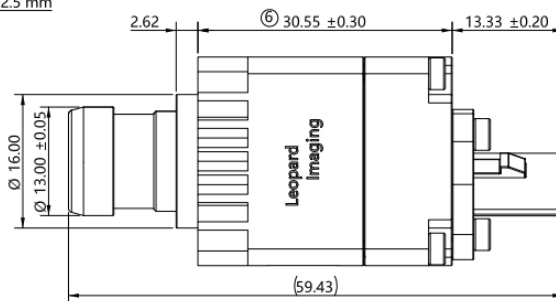
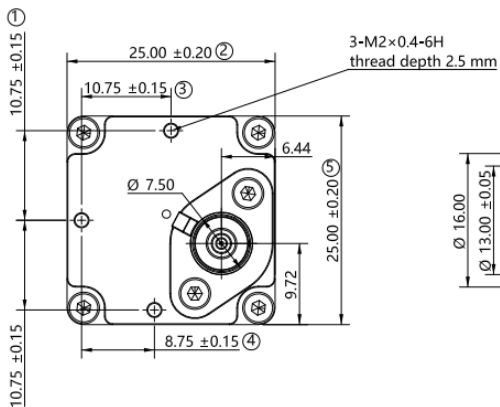
| TOLERANCE TABLE  |           |                   |           |                 |           |
|------------------|-----------|-------------------|-----------|-----------------|-----------|
| LENGTH TOLERANCE |           | CHAMFER TOLERANCE |           | ANGLE TOLERANCE |           |
| Size X           | Tolerance | Size X            | Tolerance | Size X          | Tolerance |
| 0.5 < X ≤ 3      | ±0.1      | 0.5 < X ≤ 3       | ±0.2      | X ≤ 10          | ±1°       |
| 3 < X ≤ 6        | ±0.1      | 3 < X ≤ 6         | ±0.5      | 10 < X ≤ 50     | ±30'      |
| 6 < X ≤ 30       | ±0.2      | 6 < X ≤ 30        | ±1        | 50 < X ≤ 120    | ±20'      |
| 30 < X ≤ 120     | ±0.3      | X > 30            | ±2        | 120 < X ≤ 400   | ±10'      |
| 120 < X ≤ 400    | ±0.5      |                   |           | X > 400         | ±5'       |
| 400 < X ≤ 1000   | ±0.8      |                   |           |                 |           |
| X > 1000         | ±1.2      |                   |           |                 |           |

### NOTE:

- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- Tolerances for others unmarked refer to the Tolerance table.

Unit: mm

## DIMENSIONS: LI-VENUS-OX03F10-OAX40-GM2A-060H



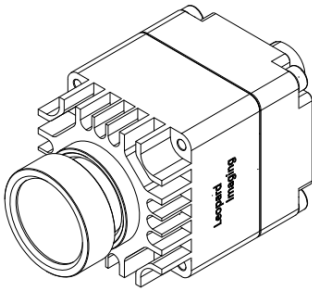
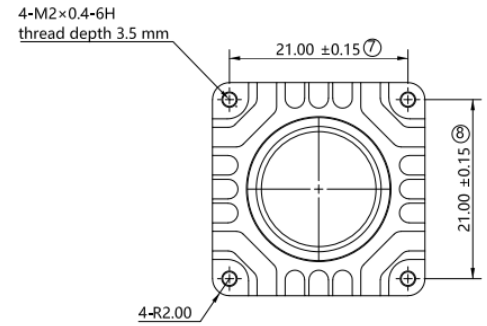
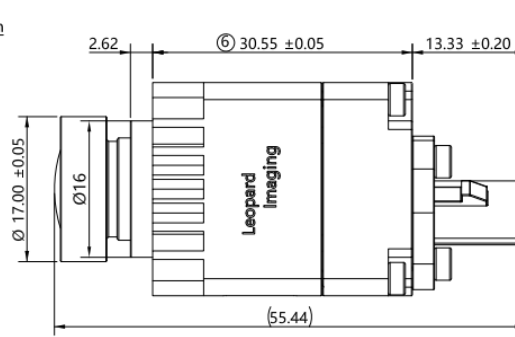
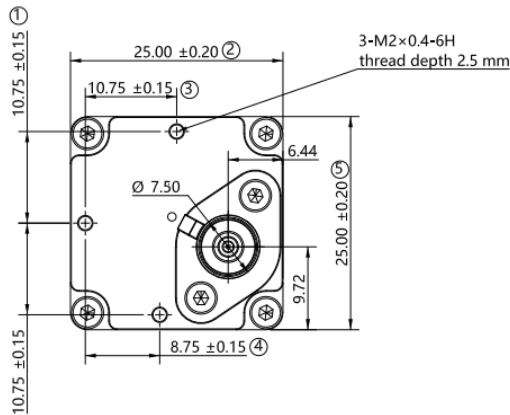
| TOLERANCE TABLE  |           |                   |           |                 |           |
|------------------|-----------|-------------------|-----------|-----------------|-----------|
| LENGTH TOLERANCE |           | CHAMFER TOLERANCE |           | ANGLE TOLERANCE |           |
| Size X           | Tolerance | Size X            | Tolerance | Size X          | Tolerance |
| 0.5 < X ≤ 3      | ±0.1      | 0.5 < X ≤ 3       | ±0.2      | X ≤ 10          | ±1°       |
| 3 < X ≤ 6        | ±0.1      | 3 < X ≤ 6         | ±0.5      | 10 < X ≤ 50     | ±30'      |
| 6 < X ≤ 30       | ±0.2      | 6 < X ≤ 30        | ±1        | 50 < X ≤ 120    | ±20'      |
| 30 < X ≤ 120     | ±0.3      | X > 30            | ±2        | 120 < X ≤ 400   | ±10'      |
| 120 < X ≤ 400    | ±0.5      |                   |           | X > 400         | ±5'       |
| 400 < X ≤ 1000   | ±0.8      |                   |           |                 |           |
| X > 1000         | ±1.2      |                   |           |                 |           |

### NOTE:

- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- Tolerances for others unmarked are ± 0.3 mm.

Unit: mm

## DIMENSIONS: LI-VENUS-OX03F10-OAX40-GM2A-120H



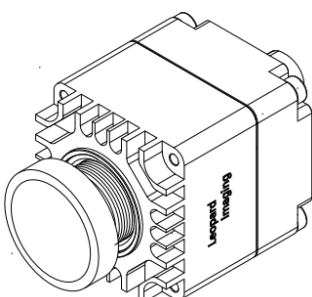
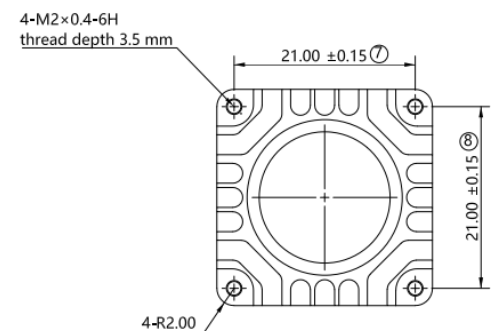
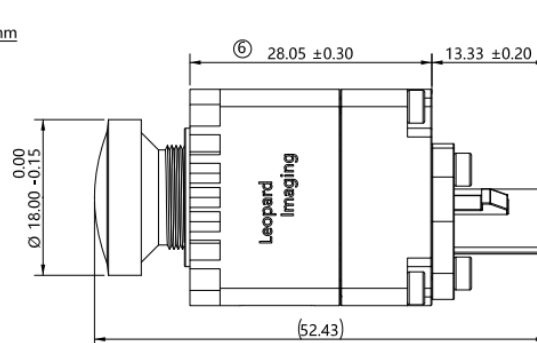
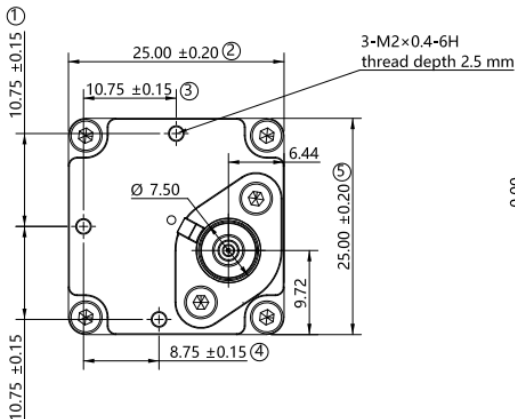
| TOLERANCE TABLE  |           |                   |           |                 |           |
|------------------|-----------|-------------------|-----------|-----------------|-----------|
| LENGTH TOLERANCE |           | CHAMFER TOLERANCE |           | ANGLE TOLERANCE |           |
| Size X           | Tolerance | Size X            | Tolerance | Size X          | Tolerance |
| 0.5 < X ≤ 3      | ±0.1      | 0.5 < X ≤ 3       | ±0.2      | X ≤ 10          | ±1°       |
| 3 < X ≤ 6        | ±0.1      | 3 < X ≤ 6         | ±0.5      | 10 < X ≤ 50     | ±30'      |
| 6 < X ≤ 30       | ±0.2      | 6 < X ≤ 30        | ±1        | 50 < X ≤ 120    | ±20'      |
| 30 < X ≤ 120     | ±0.3      |                   |           | 120 < X ≤ 400   | ±10'      |
| 120 < X ≤ 400    | ±0.5      |                   |           |                 |           |
| 400 < X ≤ 1000   | ±0.8      | X > 30            | ±2        | X > 400         | ±5'       |
| X > 1000         | ±1.2      |                   |           |                 |           |

### NOTE:

- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- Tolerances for others unmarked are ± 0.3 mm.

Unit: mm

## DIMENSIONS: LI-VENUS-OX03F10-OAX40-GM2A-195H



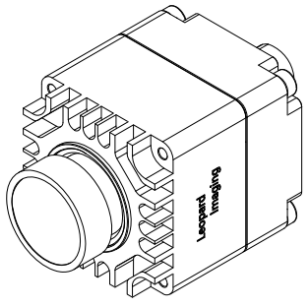
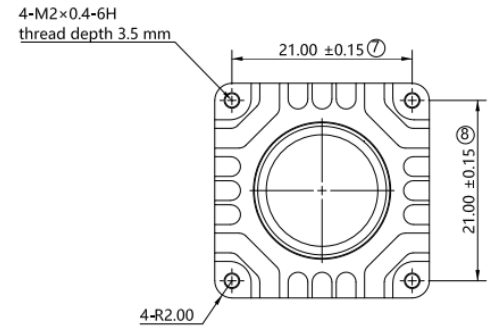
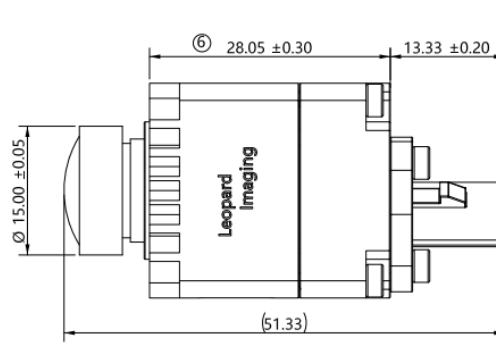
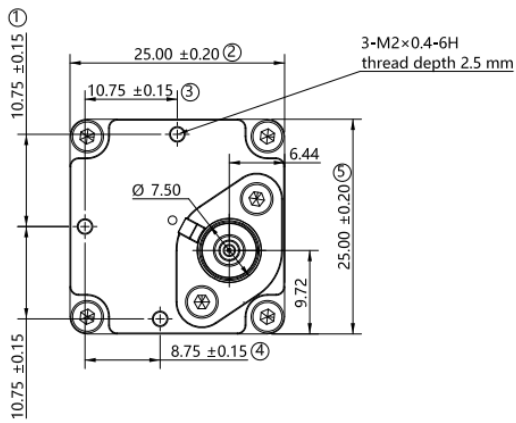
| TOLERANCE TABLE  |           |                   |           |                 |           |
|------------------|-----------|-------------------|-----------|-----------------|-----------|
| LENGTH TOLERANCE |           | CHAMFER TOLERANCE |           | ANGLE TOLERANCE |           |
| Size X           | Tolerance | Size X            | Tolerance | Size X          | Tolerance |
| 0.5 < X ≤ 3      | ±0.1      | 0.5 < X ≤ 3       | ±0.2      | X ≤ 10          | ±1°       |
| 3 < X ≤ 6        | ±0.1      | 3 < X ≤ 6         | ±0.5      | 10 < X ≤ 50     | ±30'      |
| 6 < X ≤ 30       | ±0.2      | 6 < X ≤ 30        | ±1        | 50 < X ≤ 120    | ±20'      |
| 30 < X ≤ 120     | ±0.3      |                   |           | 120 < X ≤ 400   | ±10'      |
| 120 < X ≤ 400    | ±0.5      |                   |           |                 |           |
| 400 < X ≤ 1000   | ±0.8      | X > 30            | ±2        | X > 400         | ±5'       |
| X > 1000         | ±1.2      |                   |           |                 |           |

### NOTE:

- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- Tolerances for others unmarked are ± 0.3 mm.

Unit: mm

# DIMENSIONS: LI-VENUS-OX03F10-OAX40-GM2A-200H



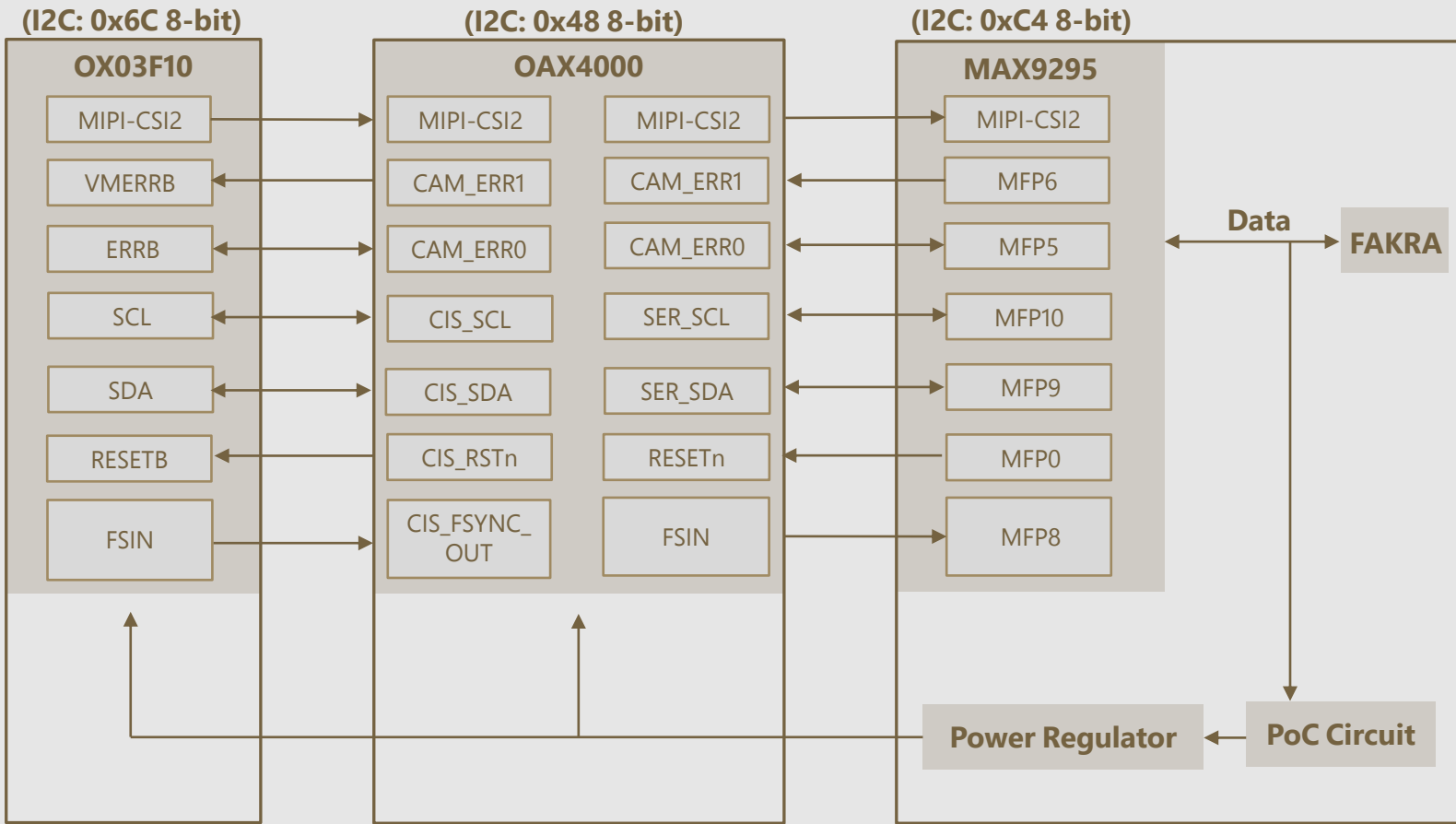
| TOLERANCE TABLE  |           |                   |           |                 |           |
|------------------|-----------|-------------------|-----------|-----------------|-----------|
| LENGTH TOLERANCE |           | CHAMFER TOLERANCE |           | ANGLE TOLERANCE |           |
| Size X           | Tolerance | Size X            | Tolerance | Size X          | Tolerance |
| 0.5 < X ≤ 3      | ±0.1      | 0.5 < X ≤ 3       | ±0.2      | X ≤ 10          | ±1°       |
| 3 < X ≤ 6        | ±0.1      | 3 < X ≤ 6         | ±0.5      | 10 < X ≤ 50     | ±30'      |
| 6 < X ≤ 30       | ±0.2      | 6 < X ≤ 30        | ±1        | 50 < X ≤ 120    | ±20'      |
| 30 < X ≤ 120     | ±0.3      |                   |           | 120 < X ≤ 400   | ±10'      |
| 120 < X ≤ 400    | ±0.5      |                   |           |                 |           |
| 400 < X ≤ 1000   | ±0.8      | X > 30            | ±2        | X > 400         | ±5°       |
| X > 1000         | ±1.2      |                   |           |                 |           |

## NOTE:

- ⊗ marked are important sizes.
- All materials are compliant with RoHS
- Tolerances for others unmarked are ± 0.3 mm.

Unit: mm


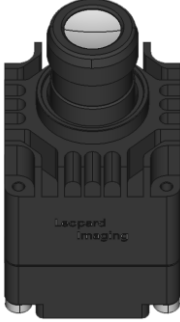
# SYSTEM BLOCK DIAGRAM





## ORDERING INFORMATION

### NOTE:

xxxH refers to 030H (FOV H 30°), 060H (FOV H 60°), 120H (FOV H 120°), 195H (FOV H 195°) or 200H (FOV H 200°)

| LI-VENUS-OX03F10-OAX40-GM2A-030H  | LI-VENUS-OX03F10-OAX40-GM2A-060H  |
|---|---|
|  |  |
| Lens EFL: 11.655 mm $\pm$ 5%  | Lens EFL: 5.83 mm $\pm$ 2%  |
| Aperture, F/#: 2.5 $\pm$ 5%   | Aperture, F/#: 1.8 $\pm$ 5%   |
| Field of View (FOV): 30° horizontal   | Field of View (FOV): 60° horizontal   |
| Optical Distortion: -1.38% $\pm$ 5% (F-tan $\theta$ )                             | Optical Distortion: < -20.07% (2Y' = 6.826 mm)                                      |
| Relative Illumination: $\geq$ 80.0%   | Relative Illumination: 90% (2Y' = 6.826 mm)   |
| IR Filter: 690 nm IR cut filter   | IR Filter: 650 nm IR cut filter   |
| Mount: M12 x P0.5   | Mount: M12 x P0.5   |

| LI-VENUS-OX03F10-OAX40-GM2A-120H  | LI-VENUS-OX03F10-OAX40-GM2A-195H  |
|---|---|
|  |  |
| Lens EFL: 2.9 mm  | Lens EFL: 1.51 mm $\pm$ 5%  |
| Aperture, F/#: 1.8  | Aperture, F/#: 2.0 $\pm$ 5%   |
| Field of View (FOV): 120° horizontal  | Field of View (FOV): 195° $\pm$ 3° horizontal   |
| Distortion [F- $\theta$ ]: -42% @ HFOV  | F- $\theta$ Distortion: -154.2% (y = 3.025 mm)  |
| Relative Illumination: 82% @ HFOV   | Relative Illumination: 37% (y = 3.025 mm)   |
| IR Filter: 700 nm IR cut filter   | IR Filter: 650 nm IR cut filter   |
| Mount: M12 x P0.5   | Mount: M12 x P0.5   |

## ORDERING INFORMATION

### LI-VENUS-OX03F10-OAX40-GM2A-200H



Lens EFL: 1.44 mm

Aperture, F/#: 2.0  $\pm$  5%

Field of View (FOV): 200° horizontal

Distortion ( $y=f\theta$ ): +10% @ IH 2.77

Relative Illumination: 40.0% @ IH 2.4

IR Filter: Visible + 940 nm band pass filter

Mount: M12 x P0.5



- REVISION HISTORY

| Revision | Description            | Release Date |
|----------|------------------------|--------------|
| 0.1      | Initial draft.         | 22 Sep 2023  |
| 0.2      | Updated Output Format. | 21 Mar 2024  |

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