LEOPARD IMAGING

LI-VENUS-OX03F10-96717-xxxH

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INTRODUCTION

The LI-VENUS-OX03F10-96717-xxxH is equipped with OmniVision CMOS high-definition high dynamic range CMOS sensor OX03F10 and Maxim serializer MAX96717. This camera outputs 12-bit / 14-bit / 16-bit / 20-bit RAW data.

SPECIFICATIONS

Sensor	OmniVision high-definition high dynamic range sensor OX03F10
Optical Format	1/2.44"
Resolution	1920 (H) x 1536 (V) (active pixels)
Pixel Size	3.0 x 3.0 µm
Output Format	12-bit / 14-bit / 16-bit / 20-bit RAW
Color / Mono	Color sensor
Maximum Frame Rate	60 fps @ 1920 x 1536
HDR (High Dynamic Range)	Supported
LFM (LED Flicker Mitigation)	Supported
Lens	FOV H 28˚ / 60˚ / 120˚ / 195˚
IP Rating	FOV H 60˚ / 195˚: IP69K FOV H 120˚: TBD FOV H 28˚: IP5K2
Serializer	Maxim MAX96717
Power Supply Range	8 ~ 17 VDC
Connector	FAKRA Z TYPE
Power Consumption	78 mA @ 12 VDC (1920 x 1542 @ 38 fps)
Operating Temp	-40℃ ~ +85℃
Storage Temp	-40℃ ~ +85℃
Weight	~ 35 g
Part#	LI-VENUS-OX03F10-96717-xxxH

APPLICATIONS

- Automotive
  - SVS
  - Rear View Camera
  - Autonomous Driving

IMAGE ORIENTATION

CABLE CONNECTOR

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

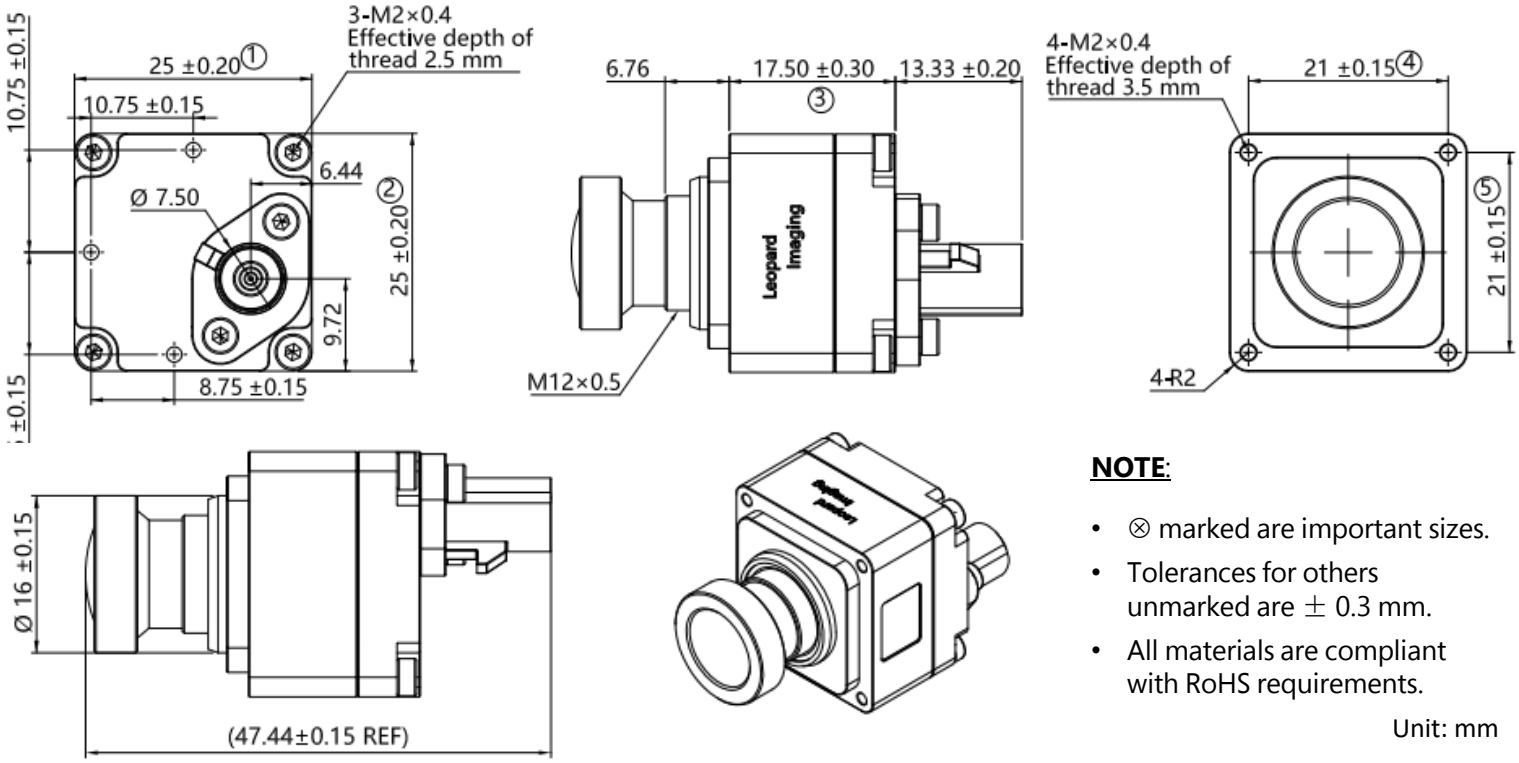
LI-VENUS-OX03F10-96717-028H

LI-VENUS-OX03F10-96717-060

LI-VENUS-OX03F10-96717-120H

LI-VENUS-OX03F10-96717-195H

DIMENSIONS: LI-VENUS-OX03F10-96717-028H

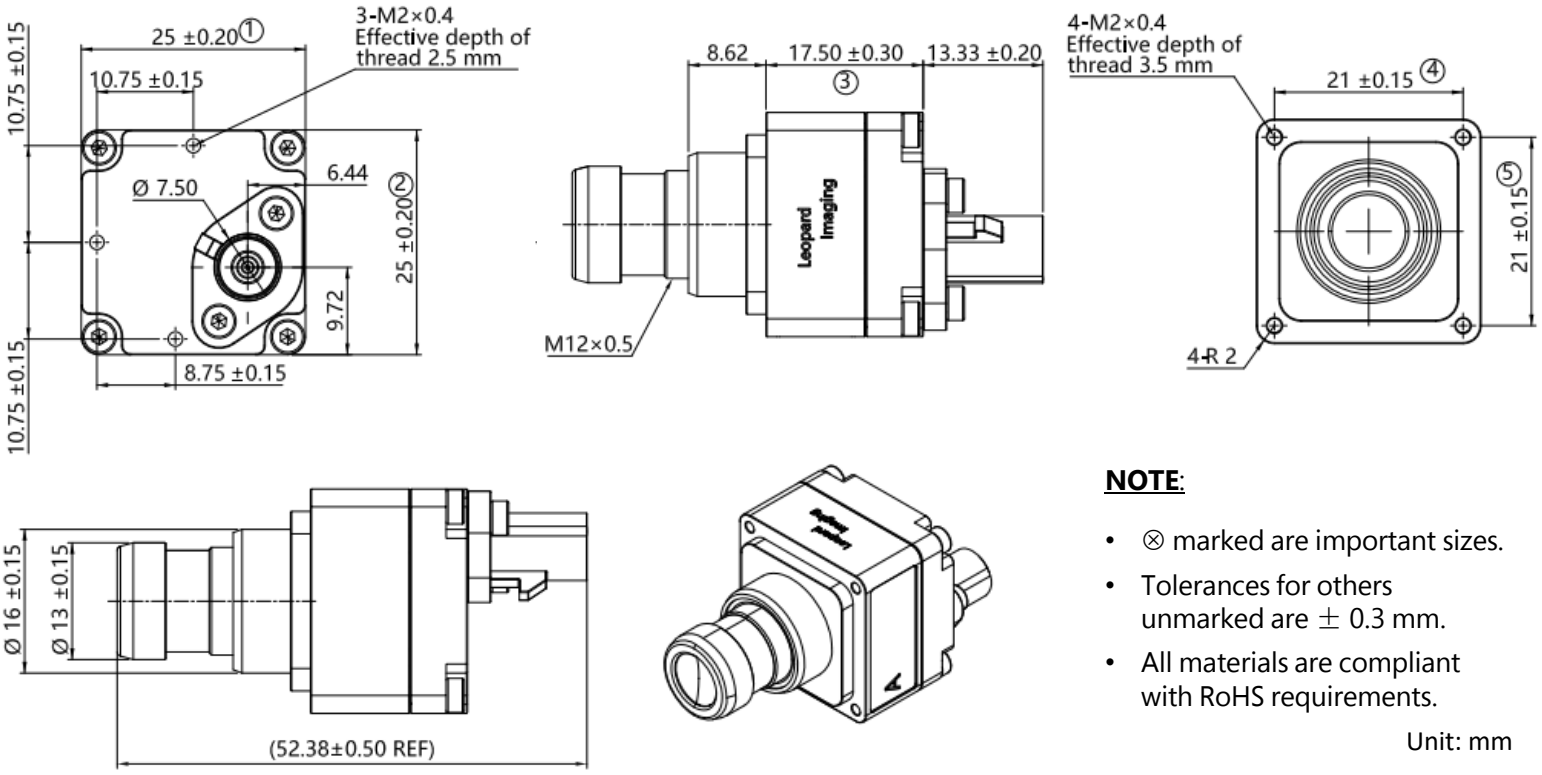


NOTE:

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

Unit: mm

DIMENSIONS: LI-VENUS-OX03F10-96717-060H

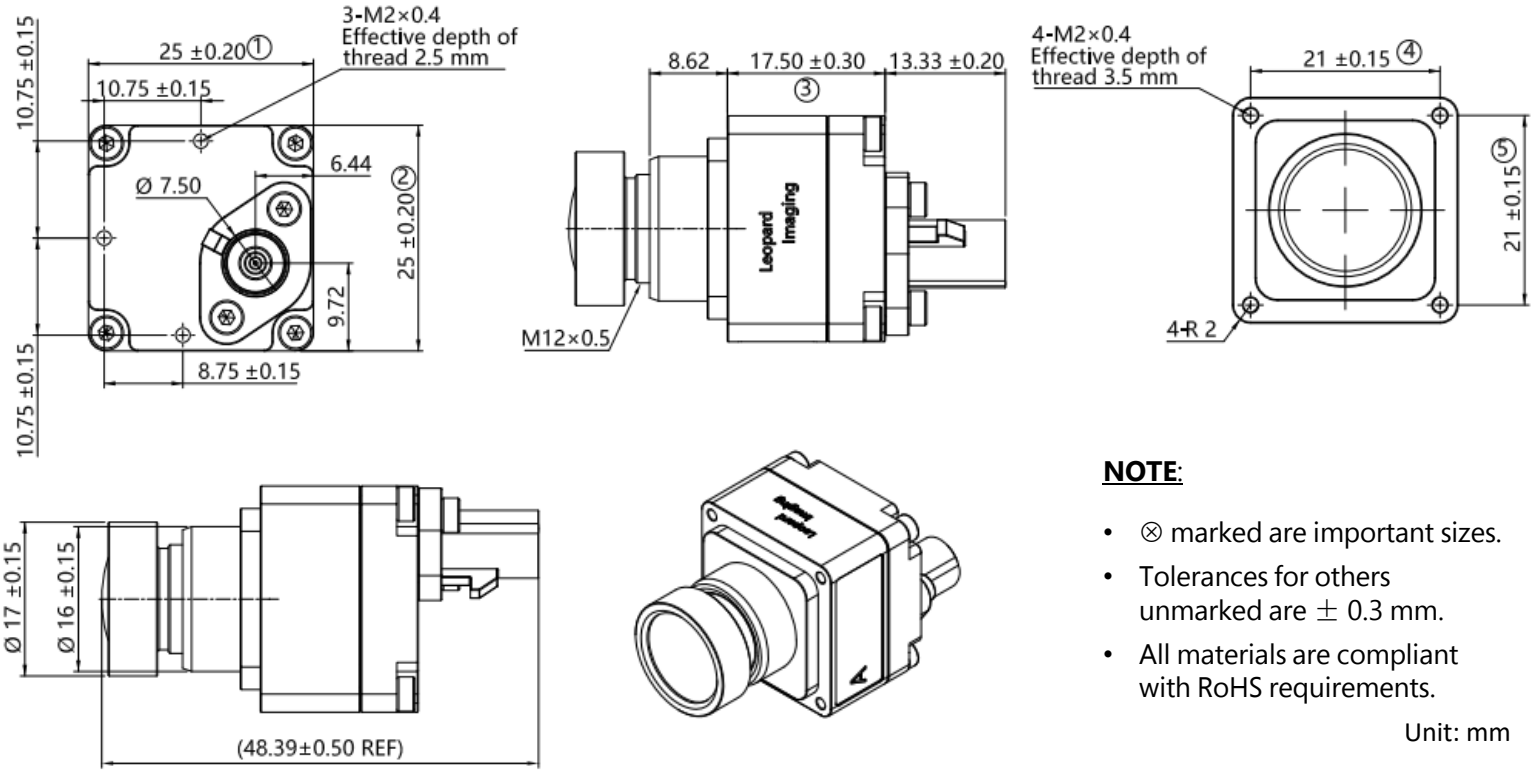


NOTE:

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

Unit: mm

DIMENSIONS: LI-VENUS-OX03F10-96717-120H

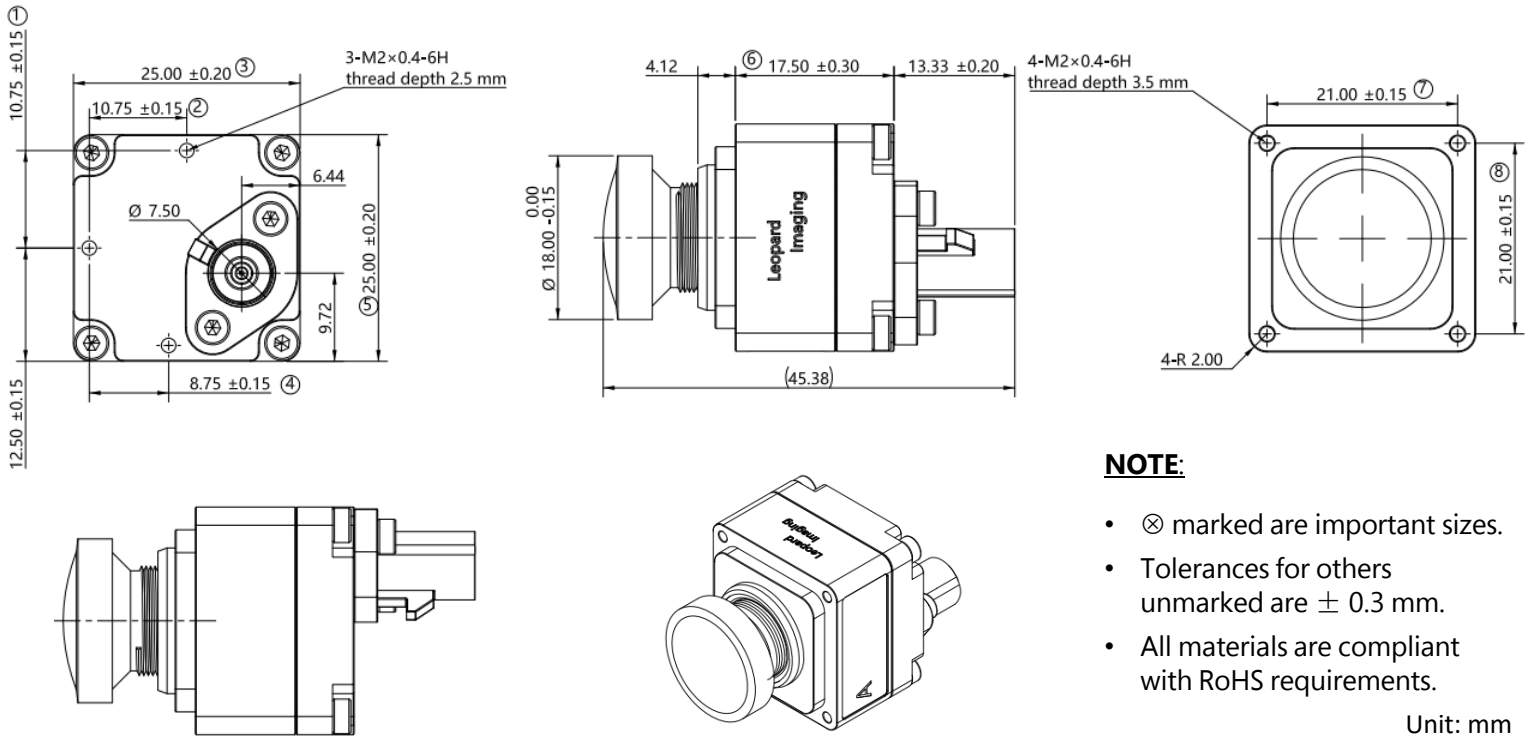


NOTE:

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

Unit: mm

DIMENSIONS: LI-VENUS-OX03F10-96717-195H

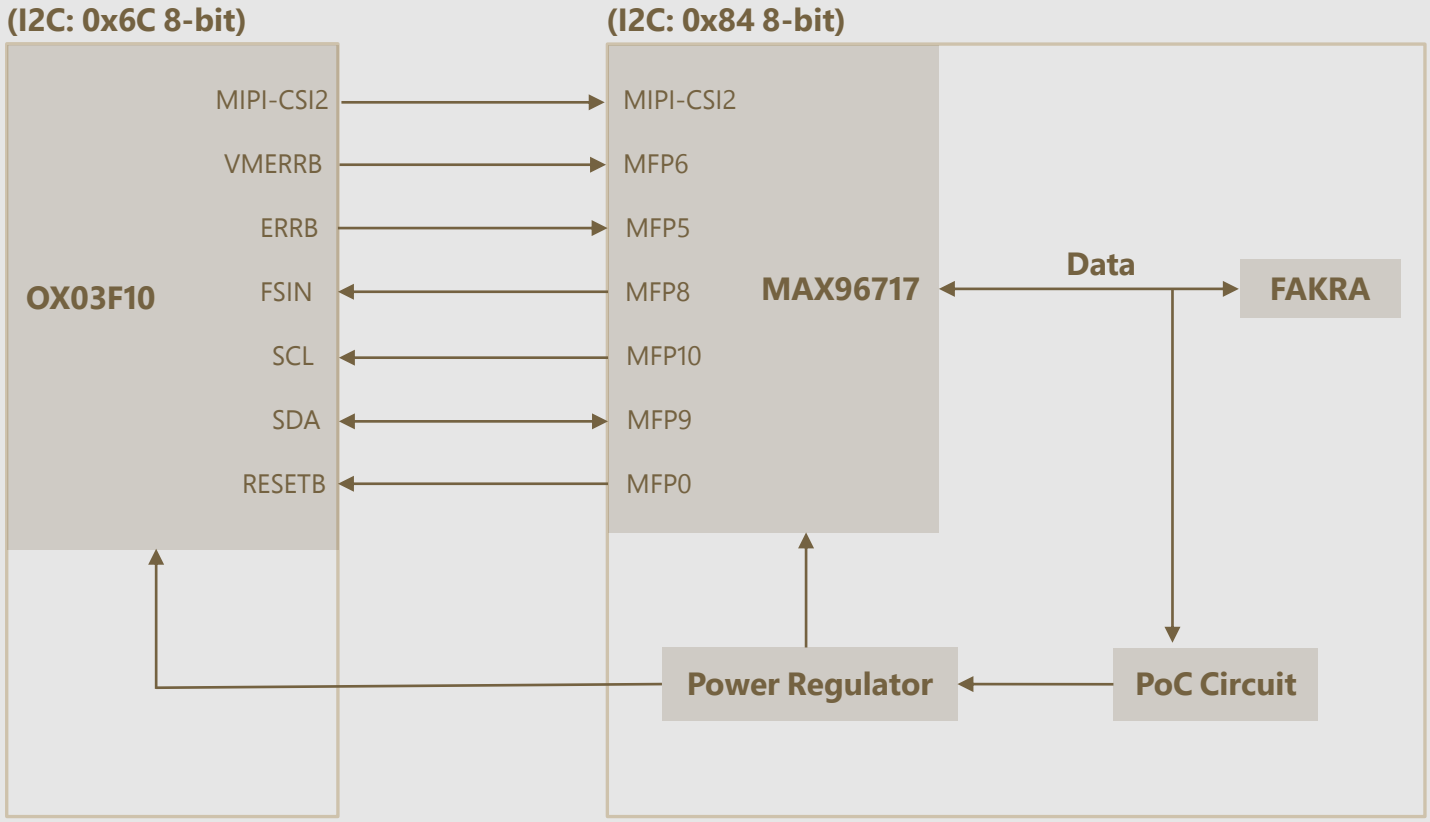


NOTE:

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

Unit: mm

PINOUT CONNECTIONS



ORDERING INFORMATION

NOTE:

xxxH refers to 028H (FOV H 28˚), 060H (FOV H 60˚), 120H (FOV H 120˚) or 195H (FOV H 195˚)

LI-VENUS-OX03F10-96717-028H	LI-VENUS-OX03F10-96717-060H
	
Lens EFL: 11.655 mm ± 5%	Lens EFL: 5.83 mm ± 2%
Aperture, F/#: 2.5 ± 5%	Aperture, F/#: 1.8 ± 5%
Field of View (FOV): 28.02˚ ± 2˚ horizontal	Field of View (FOV): 60˚ horizontal (2Y' = 5.784 mm)
Optical Distortion: -1.38% ± 5% (F-tan θ)	Optical Distortion: < -20.07% (2Y' = 6.826 mm)
Relative Illumination: ≥ 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-OX03F10-96717-120H	LI-VENUS-OX03F10-96717-195H
	
Lens EFL: 2.9 mm	Lens EFL: 1.51 mm ± 5%
Aperture, F/#: 1.8	Aperture, F/#: 2.0 ± 5%
Field of View (FOV): 120˚ horizontal	Field of View (FOV): 195.9˚ ± 3˚ horizontal (y = 2.880 mm)
Distortion: -42% @ HFOV	F-θ 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

Calibration Config: LI-VENUS-OX03F10-96717-195H

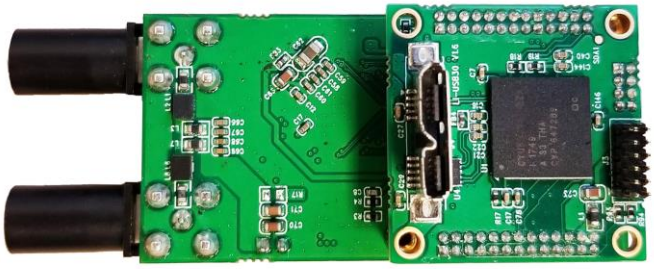
Parameter	Format	Address	Length	Value
Magic	unit32	0x00	4 bytes	0x223C3AD9
Format Version	unit32	0x04	4 bytes	0xFF000001
Reserved	unit32	0x08	4 bytes	0x00000000
Header checksum	unit32	0x0C	4 bytes	CRC32 checksum calculated over address from 0x00 to 0x0B (including). 0xA803D50B
Model	unit32	0x10	4 bytes	ModelID = 1001
Center X	float32	0x14	4 bytes	Horizontal offset between the coordinates of the modelled center of distortion and the origin of the read-out area. Origin [0,0] is the center of the image.
Center Y	float32	0x18	4 bytes	Horizontal offset between the coordinates of the modelled center of distortion and the origin of the read-out area. Origin [0,0] is the center of the image.
Polynom1	float32	0x1C	4 bytes	First order polynomial coefficient
Polynom2	float32	0x20	4 bytes	Second order polynomial coefficient
Polynom3	float32	0x24	4 bytes	Third order polynomial coefficient
Polynom4	float32	0x28	4 bytes	Fourth order polynomial coefficient
A Ratio	float32	0x2C	4 bytes	Pixel aspect ratio
Camera_identity	uint8 array	0x30	16 bytes	Serial number of camera unit, uniquely identifying a specific unit. An array of ASCII characters. Pad with 0x00 at the end.
Data checksum	uint32	0x40	4 bytes	CRC32 checksum calculated over address from 0x10 to 0x3F (including).

- EEPROM parameters shall be stored in Little Endian order.
- The CRC32 is calculated according to ISO-3309 by using the following configuration.
  - Polynom = 0x4C11DB7
  - Init Value = 0xFFFFFFFF
  - RefIn = True
  - RefOut= True
  - XorOut= 0xFFFFFFFF

USB3.0 CAMERA KIT

LI-GMSL2-USB

Top View



Bottom View

LI-VENUS-OX03F10-96717-xxxH can connect to LI-GMSL2-USB as a USB 3.0 camera.

Part#: **LI-USB30-VENUS-OX03F10-96717-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 1542 @ 38 fps
- Power consumption: 78 mA @ 12 VDC
- Compatible with Windows, Linux OS and other OS which have UVC drivers

BOM

#	Items	QTY
1	LI-VENUS-OX03F10-96717-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.	14 Apr 2023
1.1	Changed IP for 120H to TBD and deleted IP rating on the Ordering Information section.	15 Sep 2023
1.2	1. Added section "Calibration Config: LI-VENUS-OX03F10-96717-195H". 2. Updated "Pinout Connections".	23 Nov 2023
1.3	Updated image orientation.	01 Dec 2023

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