



LEOPARD
IMAGING

LI-ASTRO-VB1940-VCL-DTOF-ST80-10GigE-120H



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INTRODUCTION

The LI-ASTRO-VB1940-VCL-DTOF-ST80-10GigE-120H is an advanced active stereo vision camera from Leopard Imaging Astro Series. Featuring integrated direct Time-of-Flight (dToF) and RGB-IR stereo depth sensing, it is fully compatible with NVIDIA® Jetson AGX Orin™, IGX Orin™ and Thor platforms, delivering reliable high-precision 3D perception for a wide range of advanced AI applications.

TECHNICAL FEATURES

- Compatible with NVIDIA® Jetson AGX Orin™, IGX Orin™, Thor Developer Kit
- dTOF camera up to 60 Hz frame rate capability
- Dual VB1940 camera maximum frame rate:
60 fps @ full size
- Lattice® CertusPro-NX FPGA
- AQrate® 10GB Ethernet PHY Transceiver
- IMU (Inertial Measurement Unit) Included
- Baseline: 80 mm
- Focused Distance: 75 cm
- 2 × STMicroelectronics 5.1MP Global Shutter
RGB-IR sensor VB1940
- STMicroelectronics® 3D dToF all-in-one LiDAR module
- Single IR illuminator and single IR dot projector
- Power Supply: 12 VDC external power supply
- Interface: RJ45 10GigE
- Power Consumption: TBD
- Weight: ~188 g
- Allows customization

WORKING MODE

- RGB + Depth
- IR + Depth
- RGB IR + Depth

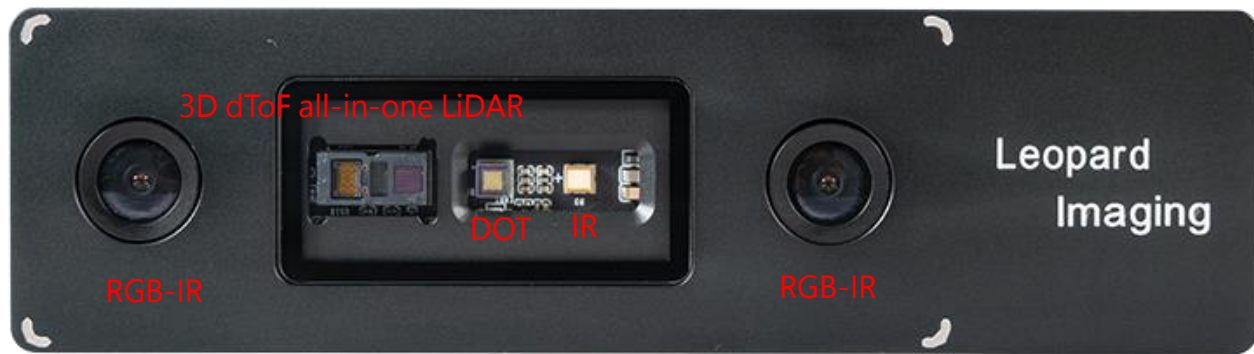
Applications

- In Cabin Automotive
 - ◆ Gesture Recognition
 - ◆ Iris Scanning
 - ◆ Head Roll
 - ◆ Eye Tracking
 - ◆ Machine Vision

ENVIRONMENTAL

- Operating temperature: TBD
- Storage temperature: TBD
- Ingression Protection: N/A

STEREO DEPTH FUSION MODULE PROPERTIES



• Dual RGB-IR Cameras

Sensor	5.1MP Global Shutter RGB-IR Sensor VB1940
QTY of Sensor	2
Optical Format	1/2.5"
Pixel Size	2.25 μm \times 2.25 μm
Resolution	2560 (H) \times 1984 (V)
Output Format	RAW RGB-IR, 12-bit / 10-bit / 8-bit
Baseline	80 mm
Focused Distance	75 cm
Color / Mono	RGB-IR
Maximum Frame Rate	60 fps @ full resolution
Shutter	Global shutter
Working mode	Dual RGB 30fps, Global shutter 5M
	Dual IR 30fps, Global shutter 5M
	Dual RGB 15fps, Dual IR 15fps
	Single RGB 5M 30fps+ Dual IR 30fps 1.275M, Global shutter
	Single RGB 5M 25fps HDR + Dual IR 25fps 1.275M, Global shutter
F Number	2.0 \pm 5%
Focal Length	2.94 \pm 5% mm
Focus	Fixed
Field of View (FOV)	120° horizontal
IR Filter	Visible + 940 nm band pass filter

• 3D dToF all-in-one LiDAR Camera

Frame Rate	Up to 60 Hz
Output	Multizone ranging (up to 54 x 42 zones), 2D IR image, depth map with confidence level
Distance Range	Ranging from <5 cm up to 10 m
On-chip Processing	Histogram processing, algorithmic compensation for cover glass crosstalk and veiling glare
Illumination	Dual vertical-cavity surface-emitting lasers (VCSEL) flood illumination, 940 nm
Field of View (FoV)	71° diagonal (using metasurface optical elements on both transmitter and receiver)

● IR DOT PROJECTOR SPECIFICATIONS

Wavelength	940 nm
Field of Illumination (FOI)	110° (H) x 77° (V)
Dot in FOV	10935

● IR ILLUMINATOR SPECIFICATIONS

Wavelength	940 nm
Field of Illumination (FOI)	110° (H) x 85° (V)

NOTE:

- Avoid hitting VCSEL when camera assembly and operating.
- Keep wide clear upon VCSEL when camera operating.

● Laser Projector Safety and Certificates

Safety	TBD
Certificates	TBD

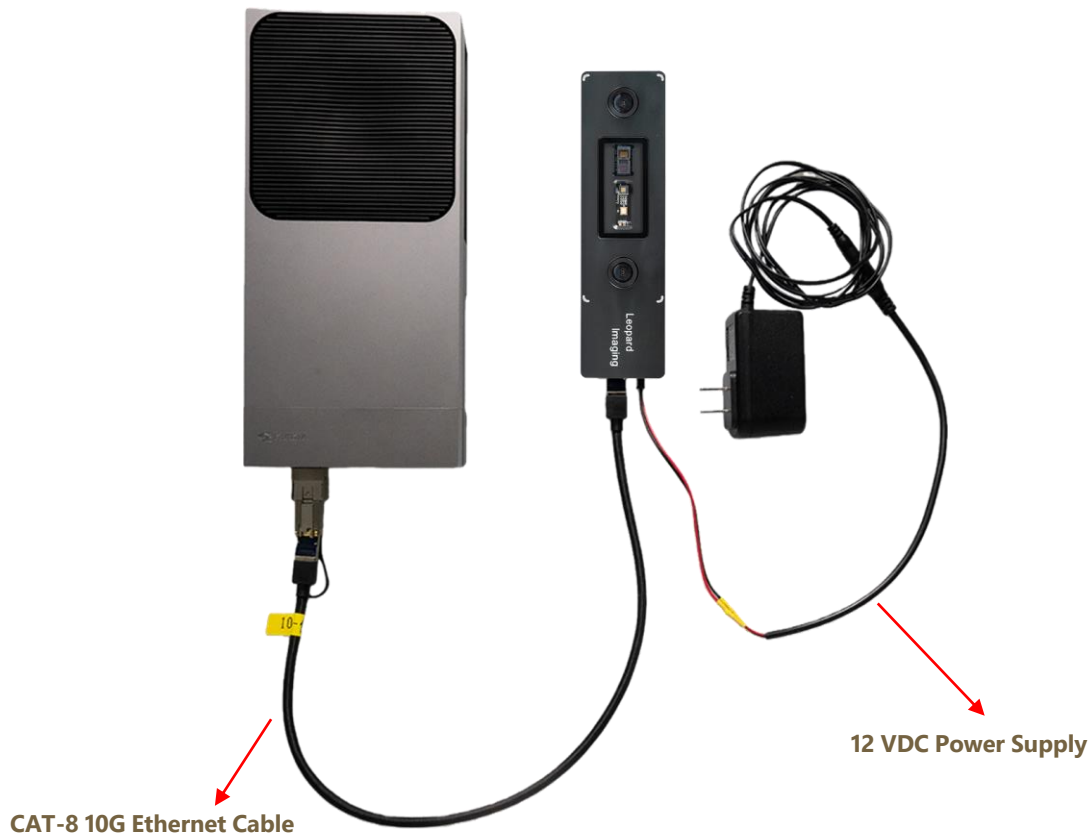
● Laser Projector Maintenance

- Make maintenance after a period of use, such as cleaning dust.
- Return to factory for repair when meeting VCSEL work abnormally.

BOM

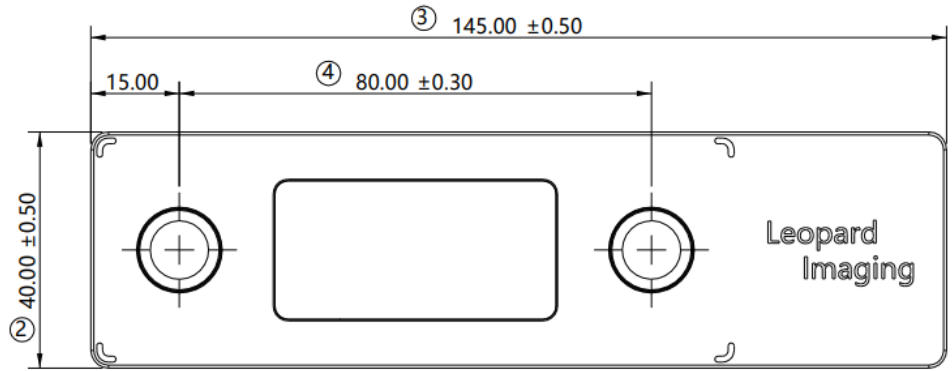
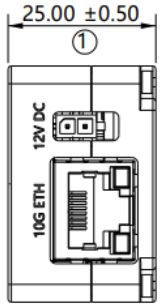
#	Items	QTY
1	LI-ASTRO-VB1940-VCL-DTOF-ST80-10GigE-120H	1
2	CAT-8 10G Ethernet Cable	1
3	12 VDC Power Supply + adapter cable (Only for test)	1

Typical Connection

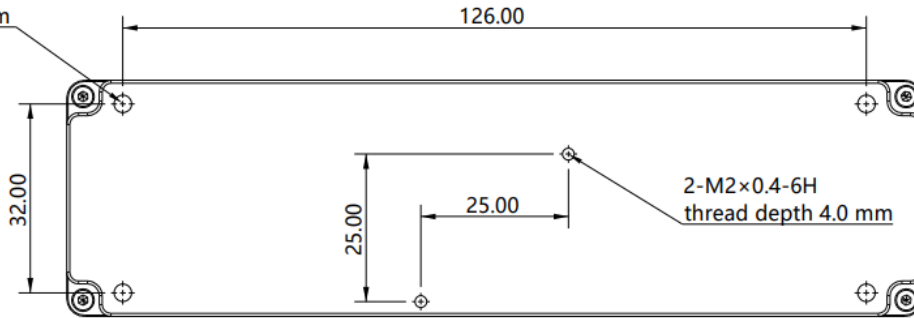


Nvidia® Jetson IGX Orin / AGX Orin™ Developer Kit is **NOT** included.

DIMENSIONS



4-M3×0.5-6H
thread depth 3.0 mm



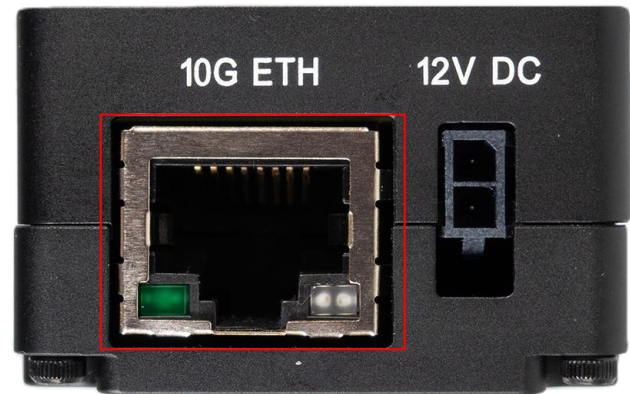
NOTE:

- Other unmarked tolerances refer to the tolerance table.
- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- Unit: mm

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				

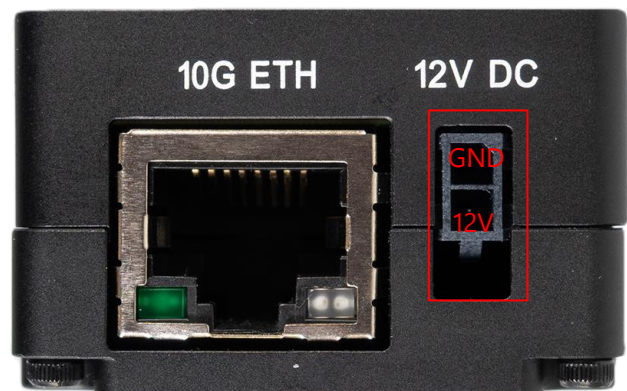
RJ45 10GigE

- Part#: 7499811420
- Connector Type: RJ45
- Orientation: 90° Angle (Right)
- LED Color: Yellow, Green – Green
- Number of Cores per Jack: 8



External 12 VDC Power Supply

- Part#: 0430450200
- Number of Positions: 2



● REVISION HISTORY

Revision	Description	Release Date
0.1	Initial draft.	08 Jun 2026

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