



**LEOPARD**  
IMAGING

LI-AR0234CS-ST100-GM2C-120H



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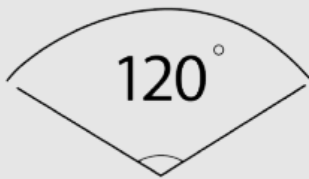
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## INTRODUCTION

The LI-AR0234CS-ST100-GM2C-120H is the professional 3D depth camera where cutting-edge technology meets effortless usability. Equipped with ON Semiconductor 2.3MP CMOS digital image sensor AR0234CS, our camera provides unparalleled depth sensing capabilities, allowing ease while teams or enthusiasts work at the edge of ADAS, autonomous driving, robotics and immersive enjoyments. Dive into a world of limitless possibilities with this camera, where every detail is captured with precision and every interaction is taken to new heights.

## FEATURES & HIGHLIGHTS



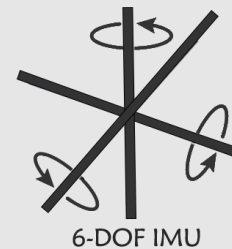
With 121.5° horizontal and 147.5° diagonal field of view, it helps to perceive the world in 3D with greater depth and dimension of field, sharper image quality and more details.



2 x Global shutters capture the entire frame at the same time, freeze the motion at a specific point in time, offering an accurate representation of moving subjects without distortion.



It is easy to deploy the camera in different systems and environments thanks to its flat bottom and flexible mounting options.



Built-in 6-axis IMU for enhanced spatial and positional awareness.

## APPLICATIONS

- Bar Code Scanner
- 3D Scanning
- Positional Tracking
- Iris Scanning
- Machine Vision
- Augmented Reality
- Virtual Reality
- Biometrics
- Gesture Recognition
- Depth Sensing


## TECHNICAL SPECIFICATIONS

<b>General</b>	
Use environment	Indoor / Outdoor
Baseline	100 mm
IP Rating	IP67
Video Output	1200P @ 60 fps with output resolution side-by-side 2 × (1920 × 1200) 1200P @ 30 fps with output resolution side-by-side 2 × (1920 × 1200)
Power Supply Range	9 ~ 19 VDC
Power Consumption (NVIDIA® AGX Xavier™)	118 mA @ 12 VDC (2 * 1920 × 1200 @ 60 fps)
IMU (Inertial Measurement Unit)	BMI088
Serializer	Maxim GMSL2
Part#	LI-AR0234CS-ST100-GM2C-120H
<b>Depth</b>	
Depth Range	0.4 ~ 8 m
Depth Technology	Neural Stereo Depth Sensing
<b>Object Detection</b>	
Object Types	Vehicles, persons, custom objects
Object Tracking	Supported
Detection Outputs	Location, unique ID, bounding boxes 2D, segmentation masks
<b>Image Sensor</b>	
Sensor	ON Semiconductor 2.3MP CMOS Image Sensor AR0234CS (QTY: 2)
Optical Format	1/2.6"
Resolution	1920 (H) × 1200 (V) (active pixels)
Pixel Size	3.0 × 3.0 μm
Output Format	10-bit RAW
Color / Mono	Color
Shutter	Global shutter

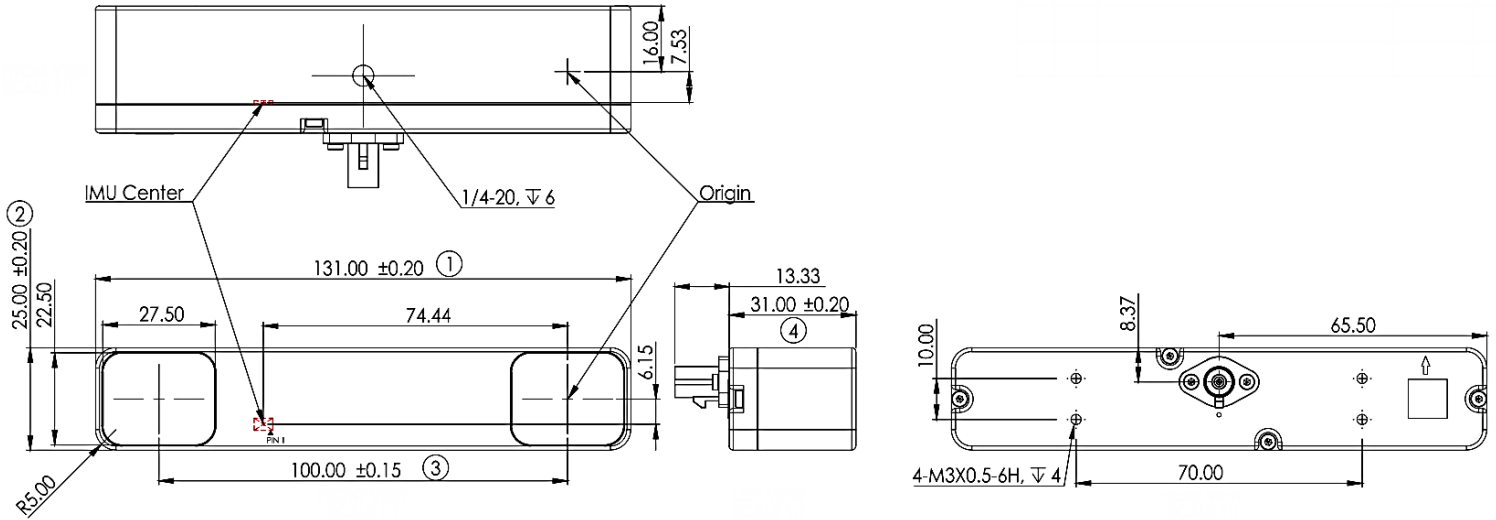
## LENS SPECIFICATIONS

Focal Length	2.8 mm
Aperture, F/#	2.0
Field of View (FOV)	147.5° (diagonal) / 121.5° (horizontal) / 73.5° vertical
Optical Distortion	< -65.3%
Relative Illumination	> 30%
Glass Cover	No
IR Filter	650 nm IR cut filter
Lens Mount	Active Alignment (AA)

## PHYSICAL, ENVIRONMENTAL, & CERTIFICATION

Physical Features	
Weight	~ 156 g
Size	131.0 (L) × 25.0 (W) × 44.33 (D) mm
Connector	Fakra Z type connector
Mounting Mechanism	<ul style="list-style-type: none"> <li>• One 1/4"-20 UNC-2B thread mounting point. Thread depth: 6 mm</li> <li>• Four M3 × P0.5-6H thread mounting points. Thread depth: 4 mm</li> <li>• Tripod</li> </ul>  <p style="text-align: right; color: red;">M3 × P0.5-6H thread mounting point</p>
Environmental Features	
Operating Temp	-20°C ~ +50°C
Storage Temp	-40°C ~ +70°C

## DIMENSIONS



### NOTE:

- Other unmarked tolerances refer to the tolerance table.
- ⊗ marked are important sizes.
- All materials are compliant with RoHS requirements.
- IMU location is shown in the drawing.
- 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				

## IMAGE ORIENTATION



# DEPTH PERFORMANCE

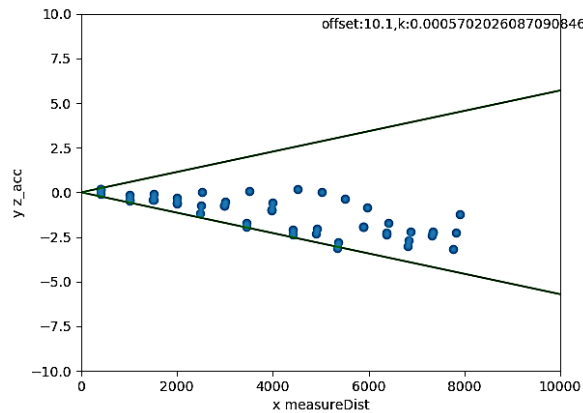
## DISTANCE & Z-ACCURACY

**NOTE:**

Z-STD, Z-DISTORTION, Z-Fill-Rate has little difference for the distance from 0.4 m to 8.0 m.

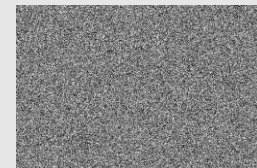
Distance	Theoretical - Z-Accuracy	Testing - Z-Accuracy
0.4 meter	< 0.095%	0.10%
1 meter	< 0.57%	-0.33%
2 meter	< 1.14%	-0.52%
3 meter	< 1.71%	-0.66%
4 meter	< 2.28%	-0.83%
5 meter	< 2.85%	-1.45%
6 meter	< 3.42%	-1.57%
7 meter	< 3.99%	2.32%
8 meter	< 4.56%	-2.52%

## MEASURED DATA GRAPH



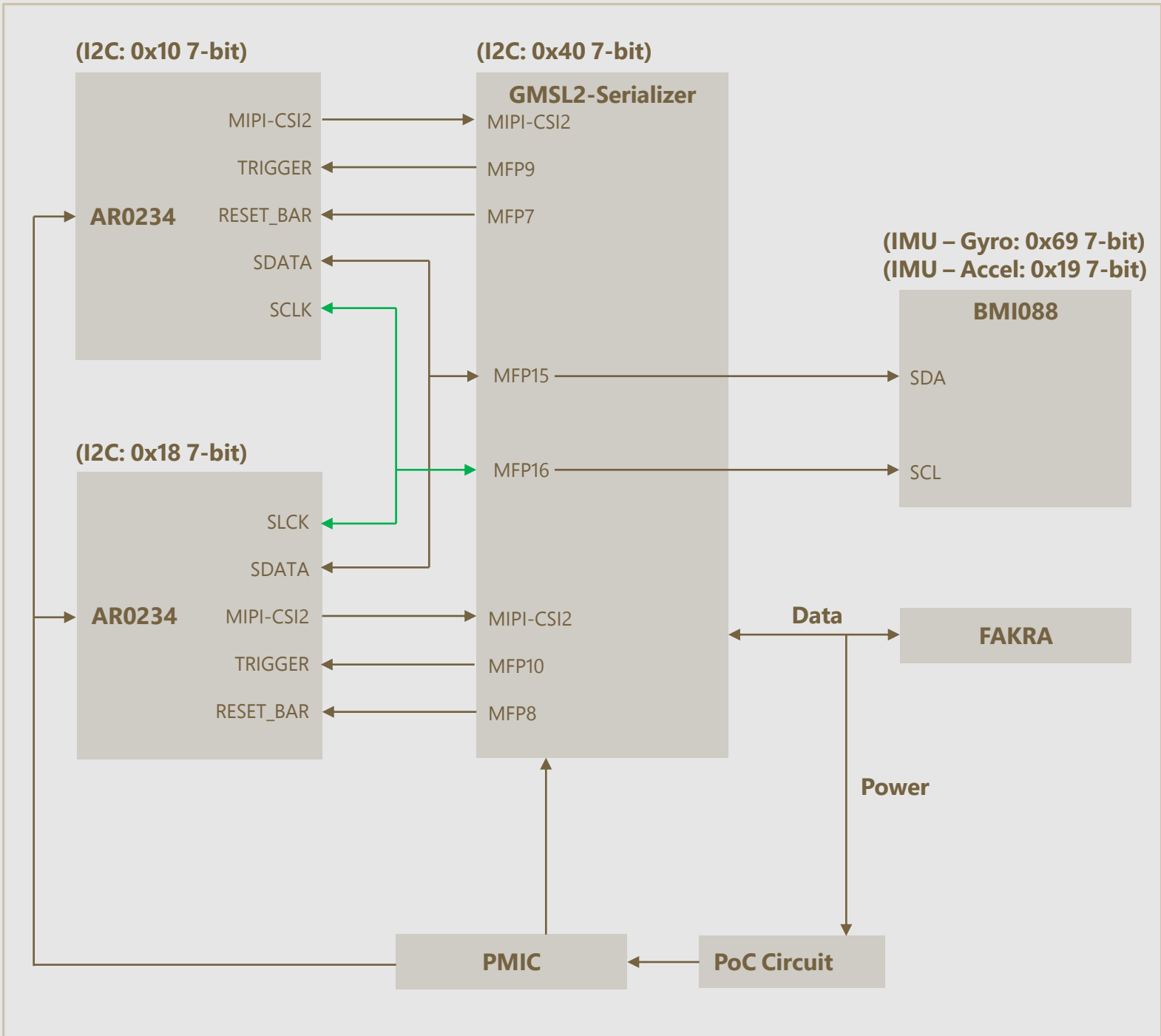
**Test Condition:**

1. Target to generate depth image: random\_target.bmp (image on the right)
2. The same ROI is selected under all measured distances.
3. ROI size: 100 (W) x 50 (H) pixels



random\_target.bmp

# SYSTEM BLOCK DIAGRAM



## RECOMMENDED ADAPTER BOARDS

### LI-JAG-ADP-GMSL2-8CH:

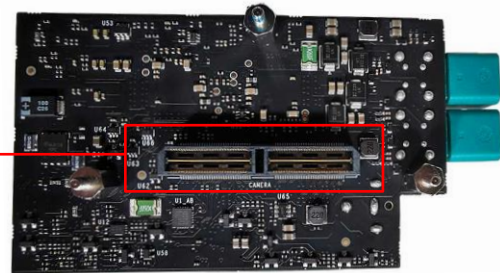
- Nvidia Part#: P3762\_A03
- Supports up to 8 cameras
- DeSerializer: Maxim MAX96712
- Compatible with NVIDIA® Jetson AGX Orin™ Developer Kit and LI-AGO-CB carrier board

For more info, refer to:

<https://leopardimaging.com/product/platform-partners/nvidia/nvidia-jetson-orin/agx-orin-camera-kits/li-jag-adp-gmsl2-8ch/>



Connector to  
NVIDIA®  
Jetson AGX  
Orin™  
Developer Kit  
or LI-AGO-CB

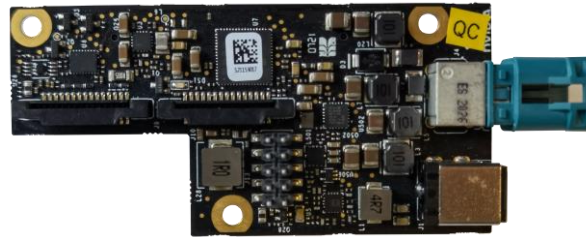


### E3653\_A03:

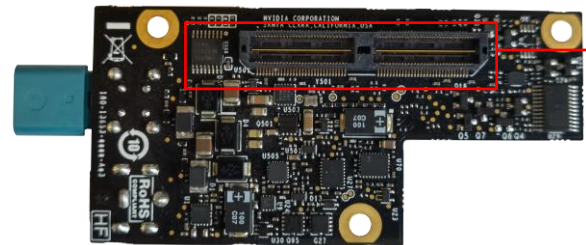
- Supports up to 4 cameras
- DeSerializer: Maxim MAX96712
- Compatible with NVIDIA® Jetson AGX Xavier™ and AGX Orin™ Developer Kit.

For more info, refer to:

<https://leopardimaging.com/product/accessories/adapters-carrier-boards/for-nvidia-jetson/e3653-a03/>



Connector to  
NVIDIA®  
Jetson AGX  
Xavier™ and  
AGX Orin™  
Developer Kit



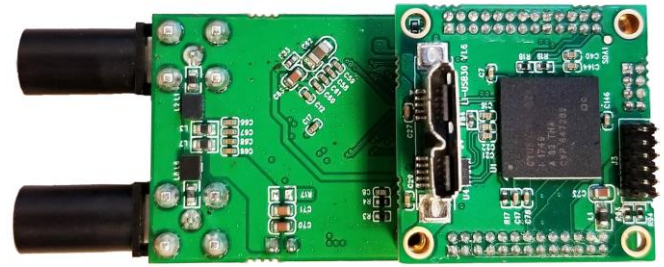


## USB3.0 CAMERA KIT

LI-GMSL2-USB



Top View



Bottom View

LI-AR0234CS-ST100-GM2C-120H can connect to LI-GMSL2-USB as a USB 3.0 camera.

Part#: **LI-USB30-AR0234CS-ST100-GM2C-120H**

### SPECIFICATIONS

- USB 3.0 Super Speed support
- UVC compliant
- Global shutter
- Allows customization
- 12 VDC power supply for camera
- Weight: ~ 251 g
- Single Coax Cable transmits up to 12 meters PoC (Power over Cable)
- Power consumption: 86 mA @ 12 VDC
- Resolution: 2 \* (1920 × 1200) @ 7.9 fps
- Compatible with Windows, Linux OS and other OS which have UVC drivers

**NOTE:** LI-AR0234CS-ST100-GM2C-120H syncs RAW images output side by side (no depth processing function)



### BOM

#	Items	QTY
1	LI-AR0234CS-ST100-GM2C-120H	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.	9 Aug 2024

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