LEOPARD
IMAGING

LI-AR0234CS-ST75-GM2C-120H

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INTRODUCTION

The LI-AR0234CS-ST75-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

120°
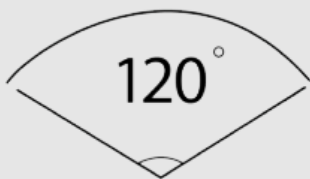
With 121.5° horizontal and 147.5° diagonal field of view, it helps to perceive the world in 3D with greater depth and dimension of field, sharper image quality and more details.

Global Shutter

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.

Easy to Install

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

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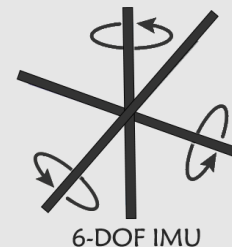
Built-in 6-axis IMU for enhanced spatial and positional awareness.

APPLICATIONS

- Bar Code Scanner
- 3D Scanning
- Positional Tracking
- Iris Scanning
- Machine Vision

- Augmented Reality
- Virtual Reality
- Biometrics
- Gesture Recognition
- Depth Sensing

TECHNICAL SPECIFICATIONS

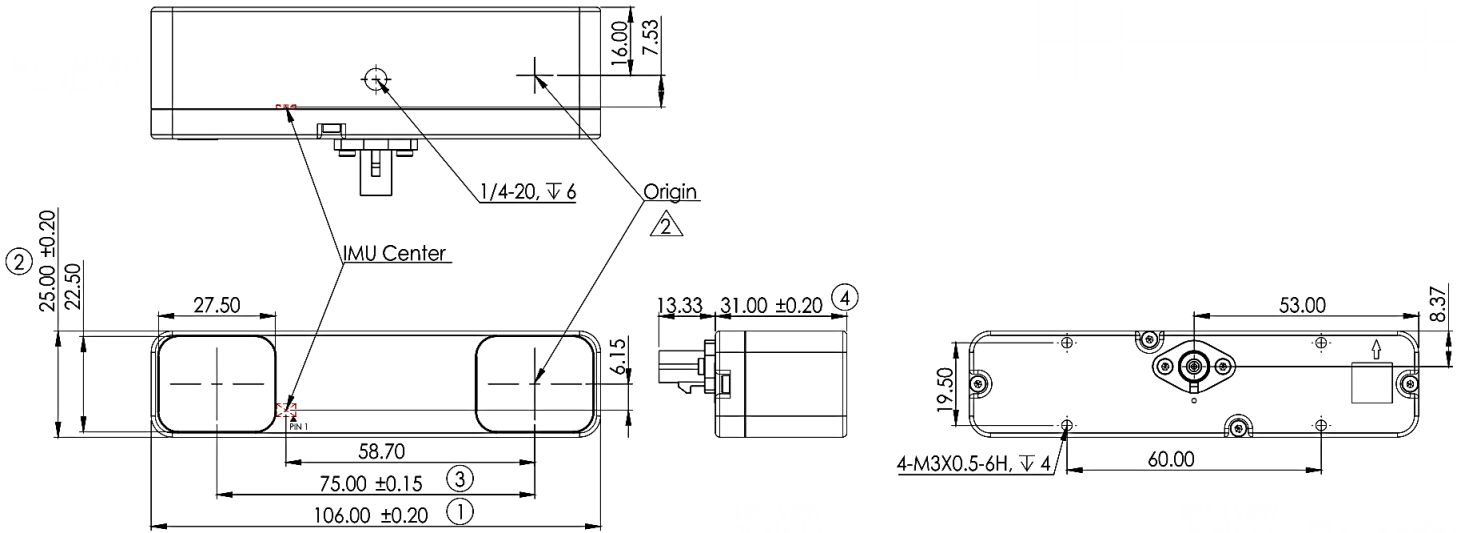| General	
Use environment	Indoor / Outdoor
Baseline	75 mm
IP Rating	IP67
Video Output	1200P @ 60 fps with output resolution side-by-side 2 × (1920 × 1200) 1200P @ 30 fps with output resolution side-by-side 2 × (1920 × 1200)
Power Supply Range	9 ~ 19 VDC
Power Consumption (NVIDIA® AGX Xavier™)	118 mA @ 12 VDC (2 * 1920 × 1200 @ 60 fps)
IMU (Inertial Measurement Unit)	BMI088
Serializer	Maxim GMSL2
Part#	LI-AR0234CS-ST75-GM2C-120H
Depth	
Depth Range	0.39 ~ 8 m
Depth Technology	Neural Stereo Depth Sensing
Object Detection	
Object Types	Vehicles, persons, custom objects
Object Tracking	Supported
Detection Outputs	Location, unique ID, bounding boxes 2D, segmentation masks
Image Sensor	
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	~ 131 g
Size	106.0 (L) × 25.0 (W) × 44.33 (D) mm
Connector	Fakra Z type connector
Mounting Mechanism	• One 1/4"-20 UNC-2B thread mounting point. Thread depth: 6 mm • Four M3 × P0.5-6H thread mounting points. Thread depth: 4 mm • Tripod 1/4"-20 UNC-2B thread mounting point M3 × P0.5-6H thread mounting point
Environmental Features	
Operating Temp	-20℃ ~ +50℃
Storage Temp	-40℃ ~ +70℃

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			120 < X≤400	±10'
120 < X≤400	±0.5				
400 < X≤1000	±0.8	X > 30	±2	X > 400	±5'
X > 1000	±1.2				

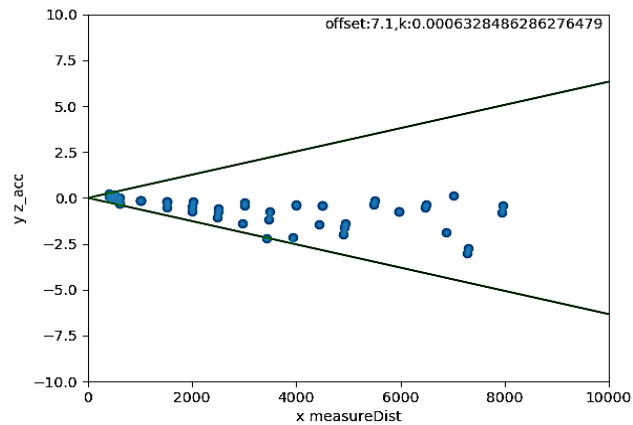# IMAGE ORIENTATION

DEPTH PERFORMANCE

DISTANCE & Z-ACCURACY

NOTE:

Z-STD, Z-DISTORTION, Z-Fill-Rate has little difference for the distance from 0.39 m to 8.0 m.
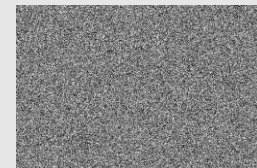
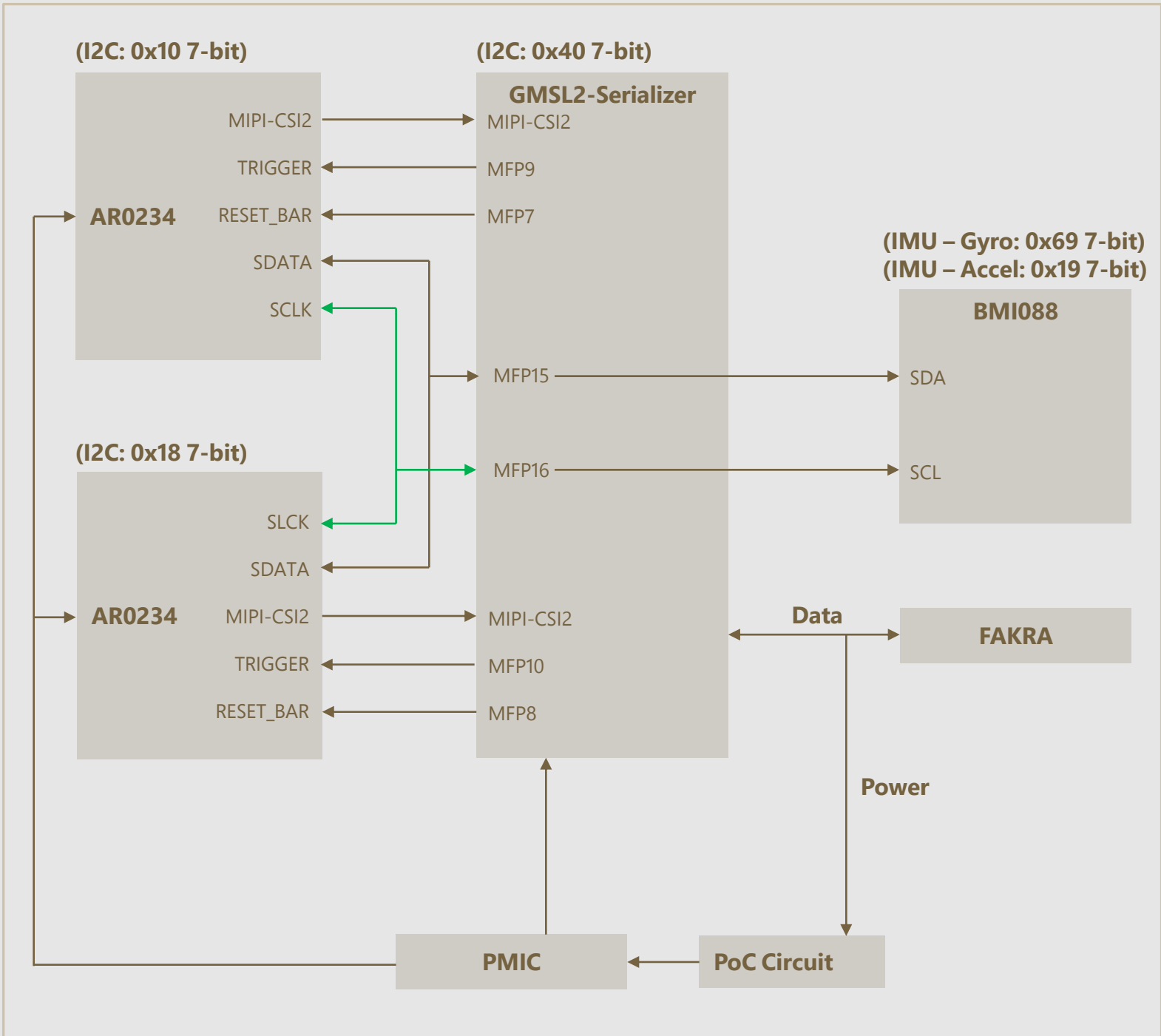| Distance	Theoretical - Z-Accuracy	Testing - Z-Accuracy
0.39 meter	< 0.16%	0.16%
1 meter	< 0.63%	-0.14%
2 meter	< 1.26%	-0.47%
3 meter	< 1.90%	-0.72%
4 meter	< 2.53%	-0.93%
5 meter	< 3.16%	-1.64%
6 meter	< 3.80%	-0.66%
7 meter	< 4.43%	-0.84%
8 meter	< 5.06%	-0.60%

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

(I2C: 0x10 7-bit)

(I2C: 0x40 7-bit)

AR0234

- MIPI-CSI2
- TRIGGER
- RESET_BAR
- SDATA
- SCLK

GMSL2-Serializer

- MIPI-CSI2
- MFP9
- MFP7
- MFP15
- MFP16

(IMU – Gyro: 0x69 7-bit)
(IMU – Accel: 0x19 7-bit)

BMI088

- SDA
- SCL

(I2C: 0x18 7-bit)

AR0234

- SLCK
- SDATA
- MIPI-CSI2
- TRIGGER
- RESET_BAR

- MIPI-CSI2
- MFP10
- MFP8

Data

FAKRA

Power

PMIC

PoC Circuit

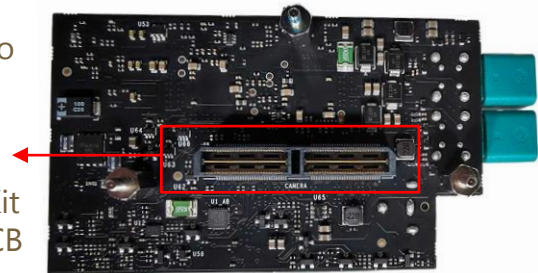# RECOMMENDED ADAPTER BOARDS FOR AGX Orin

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-cammera-kits/li-jag-adp-gmsl2-8ch/

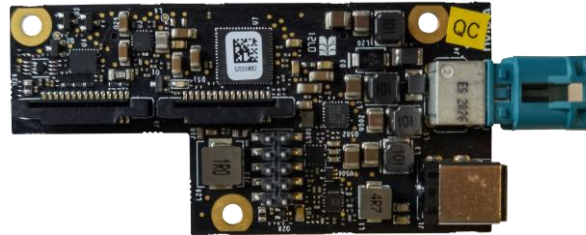Connector to NVIDIA® Jetson AGX Orin™ Developer Kit or LI-AGO-CB
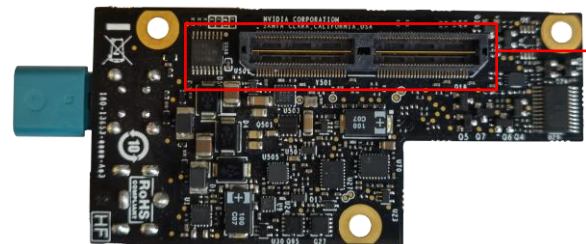
E3653_A03:

- 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
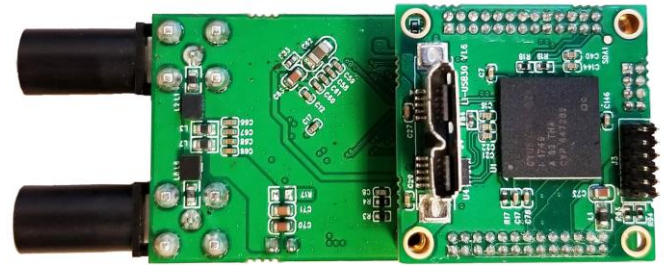
USB3.0 CAMERA KIT

LI-GMSL2-USB

Top View   Bottom View

LI-AR0234CS-ST75-GM2C-120H can connect to LI-GMSL2-USB as a USB 3.0 camera.

Part#: **LI-USB30-AR0234CS-ST75-GM2C-120H**

SPECIFICATIONS

- USB 3.0 Super Speed support

- UVC compliant

- Global shutter

- Allows customization

- 12 VDC power supply for camera

- Weight: ~ 227 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-ST75-GM2C-120H syncs RAW images output side by side (no depth processing function)

12 VDC power supply for camera

BOM

#	Items	QTY
1	LI-AR0234CS-ST75-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