

DIA-3D

Stereo Camera with 5 MP, Color, NVIDIA Jetson

Key Features

- 5 MP global shutter
- 6-Core ARM processor
- 384-Core GPU
- 8 GB RAM
- High performance 6-axis IMU
- Gigabit ethernet with POE++
- IP69K protection
- Hardware synced sensors
- Region-based auto exposure control



Applications

- Automotive
- Machine vision
- Autonomous driving
- Augmented reality
- Industrial robotics
- Process monitoring and measurement

Image Sensor		
Sensor type	2 x Sony IMX264	
Mono/Color	Color	
Optical format	2/3" CMOS	
Shutter type	Global	
Resolution	2448 x 2048 pixel	
Bit-depth	12-bit	
Pixel size	3.45 x 3.45 μm	
Exposure time	0.03 to 27.9 ms	
Gain	0 to 48 dB	
Frame rate	All-pixel	35.7 fps
	Full HD	60 fps

System-on-Module	
Processor	NVIDIA Jetson Xavier NX
CPU type	6-Core Carmel ARMv8.2 64-bit
GPU type	384-Core Volta
RAM	8 GB 128-bit LPDDR4x

System-on-Module		
Flash	16 GB eMMC	
AI performance	21 TOPs	
Frequency	CPU	1900 MHz
	GPU	1100 MHz
	RAM	1866 MHz
Video encoding	H.265, H.264, VP9	

IMU	
Sensor type	Bosch BMI088
Accelerometer	16-bit triaxial with configurable measuring range
	±3, ±6, ±12, ±24g
Gyroscope	16-bit triaxial with configurable measuring range
	125, 250, 500, 1000, 2000°/s

Mechanical characteristics	
Baseline distance	200 mm
Housing	Black anodized aluminum
	284 x 83 x 77 mm
Mounting holes	M6
Weight	2.45 kg

Interface and Power	
Interface and Power	Gigabit ethernet
	PoE++ Type 3 (802.3bt)
Connector	M12 X-Coded
Power consumption	depends on selected power model
	approx. 15W to 30W

Environment condition		
Temperature	Operating	-40°C to +60°C ¹
	Storage	-40°C to +80°C
Protection class	IP69K ²	

- 1 The internal heater-logic will heat the camera interior to temperatures above -20°C. After the system will power-on and thereby allow a full startup under controlled conditions.
- 2 Only if mounted and locked in combination with specified network cable.

Special Features

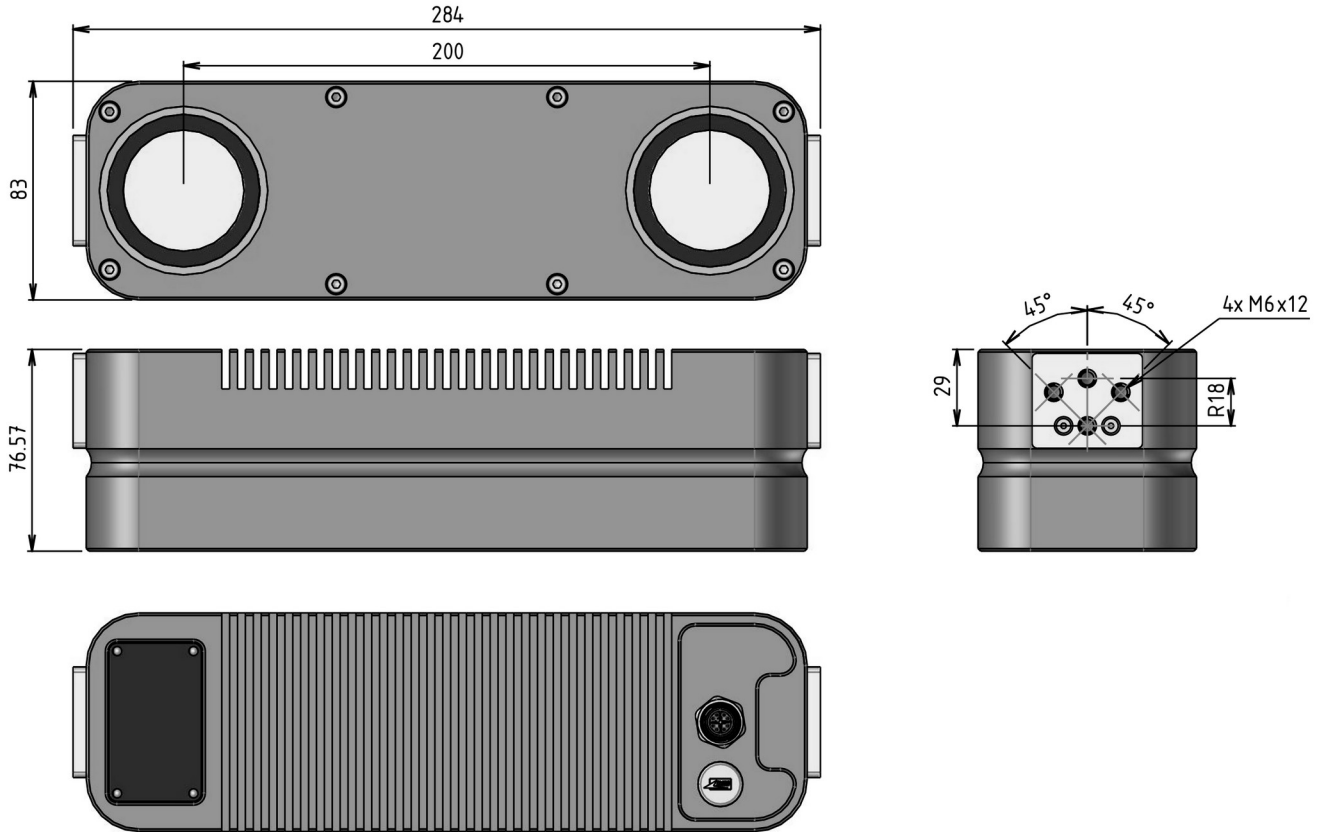
- **Processing stereo images on the edge.** The high-performance embedded computer module enables processing stereo images directly on the camera near the originating source. No need to stream raw images to an external server for further processing, improving latency and reducing complexity.
- **Linux operating system.** The all-in-one image processing system runs on Linux. Developers have the possibility to design their own algorithms directly on the camera. Images/videos can be streamed in various formats (h.264, h.265, JPEG etc.) to an external display or computer.
- **Ingress protection.** The camera is IP69K protected to meet highest demands. In other words it is completely dust tight and protected against close-range high pressure and high temperature spray downs.
- **Energy efficient AI system.** The camera includes neural networks for object detection, localization and more.
- **Hardware synchronized and calibrated image sensors.** Images are taken synchronously and are rectified via a set of calibration parameters (factory calibrated) such that the epipolar lines of both images are aligned horizontally. These corrected images can then be used to compute a full disparity map or to triangulate specific objects.
- **High baseline distance.** The distance between both image sensors of 200 mm allows for highly accurate triangulation of objects in 3D.
- **Automatic exposure and gain control.** If desired the camera will adjust exposure and gain to achieve a specific image brightness of either the full image or a region of interest. Alternatively, exposure and gain can be set manually via the service tool or a customized API.
- **Integrated heating.** An internal heater with temperature control allows to use the camera under arctic condition.
- **High-precision 6-axis IMU.** The integrated inertial measurement unit (IMU), including 3D accelerometer and gyroscope, provides measurements which can be fused with the vision data for pose estimation and map generation tasks.

Lens Specification

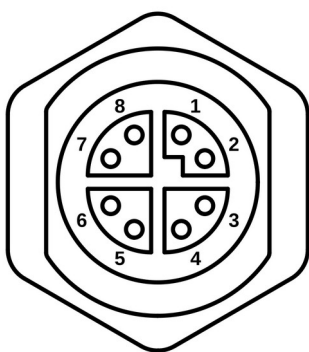
Type A		
Focal length	6.0 mm	
Aperture	F4.0	
Mount	M12	
Angle of view	Diagonal	84°
	Horizontal	67°
	Vertical	50 °
IR cut-off filter	yes	

Type B		
Focal length	4.41 mm	
Aperture	F1.8	
Mount	M12	
Angle of view	Diagonal	138°
	Horizontal	120°
	Vertical	67°
IR cut-off filter	yes	

Housing dimensions



Connector



female

Pin Assignment	
1	DA+
2	DA-
3	DB+
4	DB-
5	DD+
6	DD-
7	DC-
8	DC+

Camera Order Information

Order No.	Product Description	Lens Type	Protection Class	Operating Temperature
SSP1000-4000-001	IP69K stereo camera	A	IP69K	-40°C to +60°C
SSP1000-4000-002		B		
SSP1000-4001-001	<ul style="list-style-type: none"> with bottom housing shell (heatsink) without housing cover without integrated heating 	A	no	-20°C to +60°C
SSP1000-4001-002		B		
SSP1000-4002-001	<ul style="list-style-type: none"> board level with thermal transfer plate 	A	no	-20°C to +60°C
SSP1000-4002-002		B		

Accessory Order Information

Order No.	Description
SSP5120-0500-002	Ethernet cable, 2 meter
SSP5120-0500-010	Ethernet cable, 10 meter
SSP5120-0500-050	Ethernet cable, 50 meter

Revision History

Revision	Date	Changes
1.0	2023-03-15	First edition
1.1	2023-04-14	<ul style="list-style-type: none"> connector pin assignment table added additional ordering information added
1.2	2023-04-17	<ul style="list-style-type: none"> board level version added heater-logic description added
1.3	2024-02-01	<ul style="list-style-type: none"> product name added