Leading Provider of Robotics and AI Vision

ROBOTICS VISION
PRODUCTS HANDBOOK

Gemini 335Lg

Gemini 336L

Gemini 336

Gemini 335L

Gemini 335

Gemini 335Le

Gemini 435Le

Femto Mega I

Femto Mega

Femto Bolt

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Pulsar ME450

Pulsar SL450

◉ ORBBEC

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Orbbec Stereo Vision 3D Camera

Gemini 330 Series

Orbbec iToF 3D Camera

Femto Series

Orbbec Structured Light 3D Camera

Astra Series

Orbbec Camera Computer

Persee Series

Orbbec LiDAR

Pulsar Series

🟠 Industry Leader

Founded in 2013, Orbbec has been on a mission to democratize robotics and AI vision technology, offering products with exceptional performance and value spanning structured light, stereo vision and ToF technologies.

As an industry leader in robotics and AI vision technology, Orbbec is committed to building a central platform for the robotics and AI vision industry, providing robots with advanced "eyes."

Orbbec's technology enables thousands of robots, manufacturing, logistics, retail, 3D scanning, healthtech and fitness solutions. With in-house R&D, state-of-the-art factory, supply chain management and global support, Orbbec also offers ODM/OEM engagements for custom and embedded designs.

No.1	1 million ft²	5,000,000+
Over 70% market share in China's service robot and South Korea's mobile robot 3D vision market	A manufacturing base of over 1 million sq. ft. located in the Shunde District of Foshan City	Million-unit shipments of 3D modules for retail and smartphones, with a cumulative production of 5M+ sensors
Patent Strength	**National Qualifications**	**Major National Projects**
Nearly 2000 3D vision patent applications, 1000+authorized patents, comparable to Apple and Microsoft, ranking among the top in the world	National High-Tech Enterprise, Top Performers Among Specialized, High-end and Innovation-driven SMEs, National Intellectual Property Advantage Enterprise	Entrusted with numerous major project construction tasks at the national, provincial, and municipal levels

*Sources: GGII, *2023 Blue Book of Machine Vision Industry*; Interact Analysis, *3D Vision for South Korean Commercial and Industrial Mobile Robots, 2024*.

🟠 In-Depth Partnership

Orbbec, in collaboration with Microsoft and NVIDIA, has launched the Femto series of high-performance iToF cameras. These cameras are authorized under Microsoft's Azure Kinect DK product line, providing access to over a decade of developer and customer insights accumulated by Microsoft. Furthermore, Orbbec's 3D sensor array has been integrated into NVIDIA's robotics development platform, addressing the critical needs of millions of robotics developers.

🟠 Field Excellence

Since 2015, Orbbec has partnered with hundreds of robotics companies, including industry giants like Gaussian, Yunji Technology, Pudu Robotics, Standard Robots, Jabil, Pelican Robotics, and UBTECH Robotics. Orbbec's sensors are integral to a wide range of applications, such as smart factories, warehouse logistics, building automation, intelligent inspection, and more, spanning from lawn mowing to ROS education in commercial and educational sectors.

🟠 Development and Compatibility Support

- Orbbec SDK（Open-source）
- Orbbec Viewer
- Orbbec SDK ROS1/ROS2 Wrapper（Open-source）

Orbbec Gemini 330 Series

The Next Generation Universal Stereo Vision 3D Camera

Integrating Orbbec's latest custom ASIC MX6800, the Gemini 330 series combines active and passive stereo vision technologies to deliver consistent high-quality depth data in dynamic environments and various lighting conditions, from pitch black to full sunshine. The series offers up to 1M resolution at 60 FPS, with a field of view exceeding 100° and a maximum range of over 20 meters, making it ideal for indoor and outdoor applications like AMRs, inspection robots, delivery robots, humanoid robots, robotic arms, and body reconstruction.

The series also provides exceptional adaptability through modular expansions to meet diverse application needs. Current models include the versatile Gemini 335 and Gemini 335L, and the enhanced depth imaging models Gemini 336 and Gemini 336L, which feature IR-Pass filters to improve depth imaging quality in specific scenarios.In addition, the lineup includes the Gemini 335Lg, now enhanced with GMSL2/FAKRA interfaces, and the Gemini 335Le, equipped with robust M12 X-coded and M8 A-coded industrial-grade interfaces.

🟠 Gemini 330 Series Comparison

Feature				
Model	Gemini 335 / 336	Gemini 335L / 336L	Gemini 335Lg	Gemini 335Le
Use Environment	Indoor / Outdoor			
Technology	Active & Passive Stereo			
Baseline	50 mm	95 mm		
Interface	USB 3		GMSL2 FAKRA & USB 3	Gigabit Ethernet M12 X-coded
UVC Compliant	Yes			N/A
SDK	Orbbec SDK v2			
Depth				
Depth Range[1]	0.10m – 20m+	0.17m – 20m+		0.25m – 20m+
Ideal Range	0.26m – 3m	0.25m – 6m		
Depth Resolution @ Frame Rate		Up to: 1280 x 800 @ 30fps 848 x 480 @ 60fps		Up to: 1280 x 800 @ 30fps 848 x 530 @ 60fps
Depth FOV(H x V)	90° x 65° ± 3° @ 2m			
Depth FOV (H x V) with D2C	Up to: 86° x 55° ± 3° @ 2m	Up to: 90° x 65° ± 3° @ 2m		
Spatial Precison[2]	≤ 1.5% @ 2m	≤0.8% @ 2m ; ≤1.6% @ 4m		
Depth Sensor Technology	Global Shutter			
Depth Filter	All-pass / IR-pass	Visible+NIR-pass / IR-pass	Visible+NIR-pass	
IR				
Resolution@ Frame Rate		Up to: 1280 x 800 @ 30fps 848 x 480 @ 60fps		Up to: 1280 x 800 @ 30fps 848 x 530 @ 60fps
IR FOV (H x V)	91° x 65° ± 3°			
RGB				
RGB Resolution @ Frame Rate	Up to: 1920 × 1080 @ 30fps 1280 × 720 @ 60fps	Up to: 1280 × 800 @ 60fps 1280 × 720 @ 60fps		
RGB Sensor FOV (H x V)	86° x 55° ± 3°	94° x 68° ± 3°		
RGB Sensor Technology	Rolling Shutter	Global Shutter		
Built-in Sensor				
IMU	Support			
Electrical				
Power Consumption	Average ≤ 3.0W (Peak ≤ 6.5W)	Average ≤ 3.0W (Peak ≤ 6.0W)	GMSL2: Average ≤ 3.8W (Peak ≤ 7.5W) USB 3: Average ≤ 3.0W (Peak ≤ 6.0W)	DC Average ≤ 4W (Peak ≤ 8.5W) PoE Average ≤ 5W (Peak ≤ 12W)
Power Supply	DC 5V & ≥ 1.5A	For Best & Default Performance: DC 5V ≥ 1.5A (Laser Engergy Level: 6)	GMSL2: For Best Performance: DC 12V & ≥ 0.7A (Laser Energy Level: 6) For Default Performance: DC 12V & ≥ 0.5A (Laser Energy Level: 4) USB 3: DC 5V ≥ 1.5A	Power supply by DC via M8 A-coded: 9–24V ≥1A Power supply by PoE via M12 A-coded: IEEE 802.3af
Physical				
Multi- camera Hardware Sync	8-pin		8-pin & FAKRA-Z	M8 A-coded
Dimensions (W x H x D)	90 mm x 25 mm x 30 mm / 90 mm x 25 mm x 30.7 mm	124 mm x 29 mm x 27 mm / 124 mm x 29 mm x 27.7 mm	124 mm x 29 mm x 36 mm	124 mm × 29 mm × 50 mm
Ingress Protection Rating	IP5X	IP65[3]		IP67
Installation	Bottom: 1 x 1/4-20 UNC Back: 2 x M3	Bottom: 1 x 1/4-20 UNC Back: 2 x M4		Bottom: 4 x M4 or 1 x 1/4-20 UNC Back: 2 x M4
Environmental				
Ambient Temperature	-10℃ – 45℃ @ 15fps -10℃ – 40℃ @ 30 / 60fps	-10℃ – 50℃ @ 15 / 30fps -10℃ – 45℃ @ 60fps	-10℃ – 50℃ @ 15fps -10℃ – 45℃ @ 30/ 60fps	
Others				
Lifespan[4]	5 Years: Default Operating Mode & Operating Environment			

Note:[1] Theoretical maximum depth range up to 65 meters;
   [2] Data measured during factory calibration;
   [3] Both Gemini 335L & 335Lg require the use of IP65-compliant cables during power-on operations to achieve IP65 protection.
   [4] No more than 16h working per day.

Gemini 335

Orbbec Gemini 335 is one of the flagship products of Gemini 330 series. Featuring a 50mm baseline and an IP5X rating, Gemini 335 delivers highly accurate and reliable data across various lighting conditions, from pitch darkness to bright outdoor environments. It is also designed for easy setup and operation using the Orbbec SDK. This camera is ideal for applications such as autonomous mobile robots (AMRs), delivery robots, collaborative robots, and shelf inspection robots.

■ Explore Everywhere with Confidence

Designed for indoor and outdoor; Reliable depth data for a broad range of lighting conditions; IP5X rated; Pre-set depth modes for various scenarios
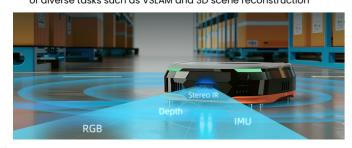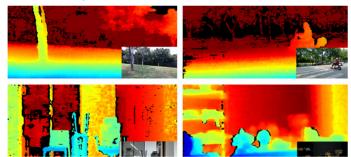
■ Reliable Performance in Complex Environments

Stable and reliable depth data in bright sunlight; Handles coexistence of high & low-reflective objects; Effective with translucent materials and small objects

■ Broad and Clear Vision

Maximum depth range > 20m; Diagonal FoV > 100º; RGB FoV equivalent to depth FoV

■ Dynamic Precision

High clarity and accuracy in motion capture; Image frame rate up to 60fps; Significantly reduces motion blur


■ Compact Synchronized Excellence

Integrates depth, stereo, RGB, and IMU; Supports simultaneous execution of diverse tasks such as VSLAM and 3D scene reconstruction

■ Comprehensive Tech Support

Rich metadata

Online Upgrade Functionality

Compatible with mainstream platforms and systems

Flexible multi-device synchronization

Comprehensive SDK and detailed documentation

Professional technical support

● Applications

Autonomous Mobile Robots(AMRs)

Delivery Robots

Collaborative Robots

Shelf Inspection Robots

● Product Specifications

Note:[1] Theoretical maximum depth range up to 65meters.

Feature	
Operating Environment	Indoor/Outdoor
Depth Range [1]	0.10 - 20m+
Ideal Range	0.26 – 3.0m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

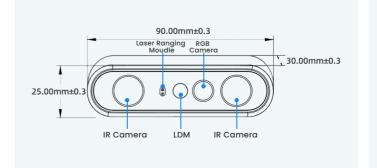| Depth	
Technology	Active & Passive Stereo
Baseline	50 mm
Spatial Precision	≤ 1.5% (1280 x 800 @ 2m & 90% x 90% ROI)
FoV	90º x 65º @ 2m (1280 x 800)
Resolution and Frame Rate	Up to: 1280 x 800 @ 30fps
Shutter Type	Global Shutter

RGB	
FoV	86º x 55º
Resolution and Frame Rate	Up to: 1920 x 1080 @ 30fps
Image Format	YUYV & MJPEG
Shutter Type	Rolling Shutter

Electrical	
Power Supply	DC 5V & ≥ 1.5A
Power Consumption	< 3 W

Physical	
IR Filter Cover	N/A
Operating Environment	-10 – 45℃
Protection	IP5X
Dimensions(W x H x D)	90 mm x 25 mm x 30 mm
Weight	97g
Connector	USB 3.0 & USB 2.0 Type-C
Multi-device Sync port	8-pin
Installation	Bottom: 1x 1/4-20 UNC, Max Torque: 4.0 N.m; Back: 2x M3, Max Torque:0.4 N.m

90.00mm±0.3
Laser Ranging Moudle   RGB Camera
30.00mm±0.3
25.00mm±0.3
IR Camera   LDM   IR Camera
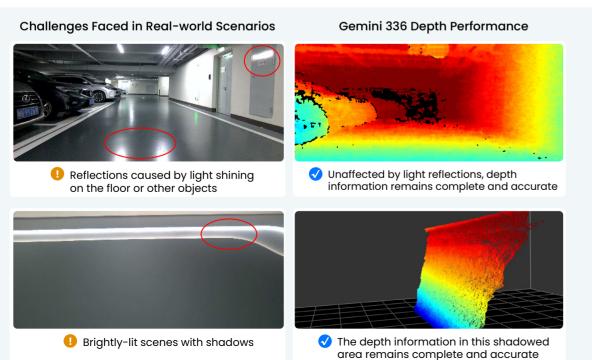

Scan the code to view more product information

Gemini 336

Building on the exceptional depth performance and quality of the Gemini 335, the Gemini 336 enhances active infrared imaging by filtering out the visible light spectrum. This improvement ensures stable and precise imaging even in challenging lighting conditions, such as indoor reflective surfaces causing glare, brightly-lit scenes with shadows, and strong outdoor lighting.

■ Infrared Enhanced: Superior Depth Imaging in Specific Scenarios

Challenges Faced in Real-world Scenarios	Gemini 336 Depth Performance
⚠️ Reflections caused by light shining on the floor or other objects	✅ Unaffected by light reflections, depth information remains complete and accurate
⚠️ Brightly-lit scenes with shadows	✅ The depth information in this shadowed area remains complete and accurate

● Applications

Autonomous Mobile Robots(AMRs)
Targeted enhancement of depth imaging quality in reflective areas of high-gloss floor paint or tiled floors under indoor incandescent lighting, as in well as in shadowed areas of high dynamic range scenes with sunlight exposure.

Retail Shelf Robots
Targeted enhancement of depth imaging quality in shadowed areas of high dynamic range scenes with sunlight exposure.

Outdoor Delivery Robots
Targeted enhancement of depth imaging quality under strong outdoor lighting.

● Product Specifications

Note:[1] Theoretical maximum depth range up to 65meters.

Feature	
Operating Environment	Indoor/Outdoor
Depth Range [1]	0.10 - 20m+
Ideal Range	0.26 – 3.0m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

Depth	
Technology	Active & Passive Stereo
Baseline	50mm
Spatial Precision	≤ 1.5% (1280 x 800 @ 2m & 90% x 90% ROI)
FoV	90° x 65°@ 2m (1280 x 800)
Resolution and Frame Rate	Up to: 1280 x 800 @ 30fps
Shutter Type	Global Shutter

RGB	
FoV	86° x 55°
Resolution and Frame Rate	Up to: 1920 x 1080 @ 30fps
Image Format	YUYV & MJPEG
Shutter Type	Rolling Shutter

Electrical	
Power Supply	DC 5V & ≥ 1.5A
Power Consumption	< 3 W

Physical	
IR Filter Cover	IR-Pass
Operating Environment	-10 - 45℃
Protection	IP5X
Dimensions(W x H x D)	90mm x 25mm x 30.7mm
Weight	99g
Connector	USB 3.0 & USB 2.0 Type-C
Multi-device Sync Port	8-pin
Installation	Bottom: 1x 1/4-20 UNC, Max Torque: 4.0 N.m; Back: 2x M3, Max Torque:0.4 N.m

90.00mm±0.3
Laser Ranging Moudle   RGB Camera
30.00mm±0.3
25.00mm±0.3
IR Camera   LDM   IR Camera

Scan the code to view more product information

Gemini 335L

Orbbec Gemini 335L is one of the flagship products of Gemini 330 series. It is easy to set up and operate with the Orbbec SDK. Featuring a 95mm baseline and an IP65 rating, Gemini 335L delivers extremely accurate and reliable data in various lighting conditions, ranging from pitch black to outdoor environments.

It is perfect for applications such as inspection robots, autonomous mobile robots (AMRs), robotic arms, and 3D scanning.
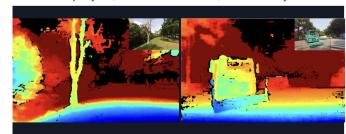
■ Adapt Everywhere

Designed to excel both indoors and outdoors;
Reliable depth data across a broad range of lighting conditions;
Sustaining up to 100K Lux illumination

■ Reliable in Complex Environments

Consistently delivers stable and reliable depth data in challenging scenarios: outdoor full sunshine, coexistence of high and low reflectivity objects, translucent materials, and small objects

■ Dynamic Precision

Captures and analyzes motion with exceptional clarity and accuracy; Supports image frame rates up to 60fps

■ IP65 Rated Industrial Use

■ Broad and Clear Vision
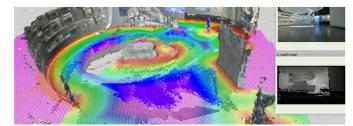
Maximum depth range > 20m; Diagonal FoV > 100°; RGB FoV equivalent to depth FoV

■ Compact Synchronized Excellence

Integrates depth, stereo, RGB, and IMU; Supports simultaneous execution of diverse tasks such as VSLAM and 3D scene reconstruction. Outputs high-quality point cloud, texture, color, motion, and timestamp information

● Applications

Autonomous Mobile Robots(AMRs)

Outdoor Inspection Robots

Robotic Arms

Humanoid Robots

● Product Specifications

Note:[1] Theoretical maximum depth range up to 65meters.

Feature	
Operating Environment	Indoor/Outdoor
Depth Range [1]	0.17 - 20m+
Ideal Range	0.25 - 6m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

Depth	
Technology	Active & Passive Stereo
Baseline	95 mm
Spatial Precision	≤ 0.8% (1280 x 800 @ 2m & 90% x 90% ROI)
	≤1.6% (1280 x 800 @ 4m & 80% x 80% ROI)
FoV	90° x 65°@ 2m (1280 x 800)
Resolution and Frame Rate	Up to: 1280 x 800 @ 30fps
Shutter Type	Global Shutter

RGB	
FoV	94°x 68°
Resolution and Frame Rate	Up to: 1280 x 800 @ 60fps
Image Format	YUYV & MJPEG
Shutter Type	Global Shutter

Electrical	
Power Supply	DC 5V & ≥ 1.5A
Power Consumption	< 3 W

Physical	
IR Filter Cover	N/A
Operating Environment	-10 - 50℃
Protection	IP65
Dimensions(W x H x D)	124 mm x 29mm x 27 mm
Weight	133g
Connector	USB 3.0 & USB 2.0 Type-C
Multi-device Sync Port	8-pin
Installation	Bottom: 1x 1/4-20 UNC, Max Torque: 4.0 N.m
	Back: 2x M4, Max Torque: 0.4 N.m

124.00mm±0.5
Laser Ranging Moudle   RGB Camera
27.00mm±0.5
29.00mm±0.5
IR Camera   LDM   IR Camera

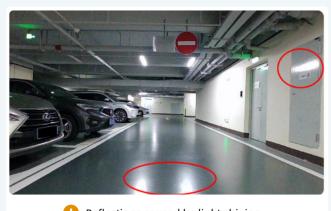Scan the code to view more product information

Gemini 336L

Building on the outstanding depth performance and quality of the Gemini 335L, the Gemini 336L improves active infrared imaging by filtering out the visible light spectrum. This enhancement ensures stable and precise imaging even under challenging lighting conditions, such as reflective indoor surfaces that cause glare.
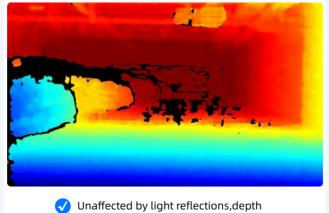
■ Infrared Enhanced: Superior Depth Imaging in Specific Scenarios
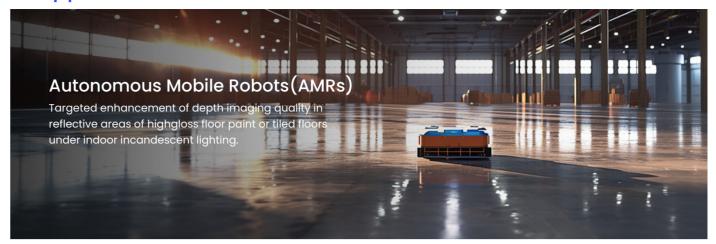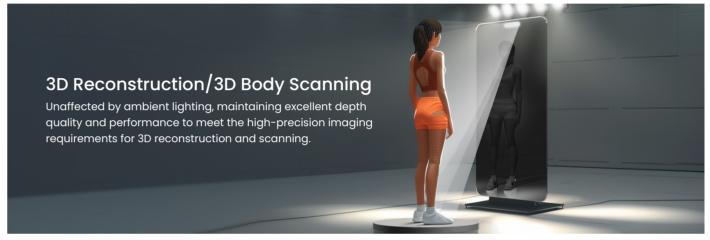
Challenges Faced in Real-world Scenarios	Gemini 336L Depth Performance
⚠ Reflections caused by light shining on the floor or other objects	✔ Unaffected by light reflections,depth information remains complete and accurate

● Applications

Autonomous Mobile Robots（AMRs）

Targeted enhancement of depth imaging quality in reflective areas of highgloss floor paint or tiled floors under indoor incandescent lighting.

3D Reconstruction/3D Body Scanning

Unaffected by ambient lighting, maintaining excellent depth quality and performance to meet the high-precision imaging requirements for 3D reconstruction and scanning.

● Product Specifications

Note:[1] Theoretical maximum depth range up to 65meters.

Feature	
Operating Environment	Indoor / Outdoor
Depth Range [1]	0.17 - 20m+
Ideal Range	0.25 - 6m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

Depth	
Technology	Active & Passive Stereo
Baseline	95mm
Spatial Precision	≤ 0.8%（1280 x 800 @ 2m & 90% x 90% ROI）
	≤ 1.6% (1280 x 800 @ 4m & 80% x 80% ROI)
FoV	90° x 65°@ 2m (1280 x 800)
Resolution and Frame Rate	Up to: 1280 x 800 @ 30fps
Shutter Type	Global Shutter

RGB	
FoV	94° x 68°
Resolution and Frame Rate	Up to: 1280 x 800 @ 60fps
Image Format	YUYV & MJPEG
Shutter Type	Global Shutter

Electrical	
Power Supply	DC 5V & ≥ 1.5A
Power Consumption	< 3 W

Physical	
IR Filter Cover	IR-Pass
Operating Environment	-10 - 50℃
Protection	IP65
Dimensions(W x H x D)	124 mm x 29mm x 27.7 mm
Weight	135g
Connector	USB 3.0 & USB 2.0 Type-C
Multi-device Sync Port	8-pin
Installation	Bottom: 1x1/4-20 UNC, Max Torque: 4.0 N.m
	Back: 2x M4, Max Torque: 0.4 N.m

124.00mm±0.3
Laser Ranging Moudle RGB Camera
27.70mm±0.3
29.00mm±0.3
IR Camera   LDM   IR Camera

Scan the code to view more product information

Gemini 335Lg GMSL2/FAKRA

Gemini 335Lg is a standout model in the Gemini 330 series, serving as the GMSL2/FAKRA version of the industry-proven Gemini 335L. The GMSL2 serializer combined with the FAKRA connector ensures secure and reliable connectivity for autonomous mobile robots (AMRs) navigating complex environments and robotic arms requiring flexible cabling.

■ GMSL2/FAKRA
Better for Robots in Motion

■ Resilient in Harsh Environments
IP65 waterproof and dustproof | Industrial EMC Compliant

■ High-speed Transmission
Higher bandwidth of up to 6Gbps | Higher transmission speed than mainstream GigE cameras | Support high frame rates and high resolution

■ Vibration Resistance
FAKRA ensures a stable connection.
The camera is also designed to withstand vibrations

■ Long-distance Connection
GMSL2: max. 15 meters (without extension cables)
USB: max. 3 meters (without extension cables)
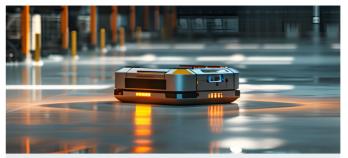
■ Streamlined and Precise Multi-device Collaboration
Support simultaneous connection of up to 16 Gemini 335Lg to the host platform ; Precise sync of depth and RGB streams across devices

● Applications

Fulfillment Centers

Warehouses & Factories

Lawn Mowers

Robotic Arms

Note:[1] Theoretical maximum depth range up to 65 meters;
[2] Data measured during factory calibration;
[3] Gemini 335Lg default laser energy level is set to Level 4 to reduce peak power consumption and prevent operational failures. When sufficient power is available, users can manually adjust the laser to the maximum Level 6 to achieve optimal performance;
[4] Both Gemini 335L & 335Lg require the use of IP65-compliant cables during power-on operations to achieve IP65 protection;

● Product Specifications

Feature	
Use Environment	Indoor & Outdoor
Technology	Active & Passive Stereo
Baseline	95mm
Data Connection	GMSL2 FAKRA & USB 3
Camera Protocol	USB & GMSL 2
UVC Compliant	Yes
IMU	Support
SDK	Orbbec SDK v2
Lifespan [5]	5 years

Depth	
Depth Range [1]	0.17m - 20m+
Ideal Range	0.25m - 6m
Depth Resolution @ Frame Rate	Up to: 1280 x 800 @ 30fps 848 x 480 @ 60fps
Depth FOV (H × V)	90° × 65° @ 2m
Depth FOV (H × V) with D2C	Up to: 90° x 65° @ 2m
Spatial Precision [2]	≤0.8% @ 2m ; ≤1.6% @ 4m
Depth Sensor Technology	Global Shutter
Depth Filter	N/A

IR	
IR Resolution @ Frame Rate	Up to: 1280 x 800 @ 30fps 848 x 480 @ 60fps
IR FOV (H x V)	91° x 65°

RGB	
RGB Resolution @ Frame Rate	Up to: 1280 x 800 @ 60fps 1280 x 720 @ 60fps
RGB Sensor FOV (H × V)	94° x 68°
RGB Sensor Technology	Global Shutter

Electrical	
Power Consumption	GMSL2: Average ≤ 3.8W (Peak ≤ 7.5W) USB 3: Average ≤ 3.0W (Peak ≤ 6W)
Power Supply	GMSL2: For Best Performance: DC 12V & ≥ 0.7A(Laser Energy Level: 6) For Default Performance DC 12V & ≥ 0.5A [3] (Laser Energy Level: 4) USB 3: DC 5V & ≥ 1.5A

Physical	
Multi-camera Hardware Sync	8-pin & FAKRA-Z
Dimensions (W × H × D)	124 mm × 29 mm × 36 mm
Weight	164g
Ingress Protection Rating [4]	IP65
Installation	Bottom: 1 x 1/4-20 UNC ; Back: 2 x M4
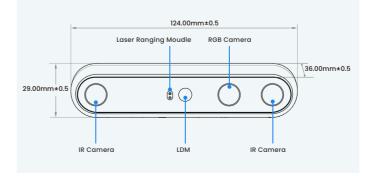
Environmental	
Ambient Temperature	-10℃ - 50℃ @ 15fps ; -10℃ - 45℃ @ 30/ 60fps
EMC Requirement	EN61000-6-2 ; EN61000-6-4
Vibration	3.8Grms @ 5 ~ 500 Hz, random, 2 hr/axis

Laser Ranging Moudle   RGB Camera
124.00mm±0.5
36.00mm±0.5
29.00mm±0.5
IR Camera   LDM   IR Camera

Scan the code to view more product information

Gemini 335Le `Gigabit PoE`

Building on the exceptional depth performance of the Gemini 335L, the Gemini 335Le expands our Gemini 330 stereo vision 3D camera series with industrial-grade interfaces, delivering more reliable real-time 3D visual data for robots in demanding industrial environments - all at a cost-effective price point.

■ M12 X-coded and M8 A-coded Industrial Interfaces

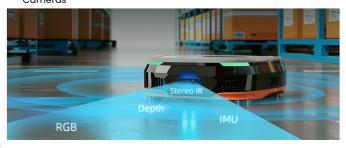Zero-drop Connections with Uninterrupted Transmission Powered by Robust Connectivity

■ Industrial-grade Reliability, Set-up in Minutes

Built to Withstand Industrial Vibrations | Extended Reach up to 100 Meters | Resistance to Electromagnetic Interference | Stable Data Flow over Ethernet | Power and Data Delivery Via A Single Cable

■ Excels in Harsh Conditions

IP67-rated Dust and Waterproof | Extended Operation in Sub-Zero Temperatures | Indoor/ Outdoor Operation | Industrial EMC Compliant

■ Ultra-Low Latency: See It, Process It, Deliver It

Real-Time Latency ≤ 40ms, Powered by Our Advanced Depth Engine ASIC MX6800 with Integrated Ethernet Design

■ Seamless Sync for Precision & Efficiency

Unified Timestamp: Depth, Stereo IR, RGB, IMU – Even Across Multiple Cameras

■ Accelerate Your Deployment

Ready-to-use Standard Industrial PoE Interface

Streamlined and Precise Multi-device Collaboration and Compatible Accessories

Online Upgrade Functionality

Professional Technical Team for Development Support

Open-source Powered, Ecosystem-ready

Open-source SDK

Support for ROS1/ROS2/ NVIDIA Isaac ROS

Pre-integrated with NVIDIA Jetson AGX Orin/Orin NX/ Orin Nano/AGX Xavier

OpenCV Support (Coming Soon)

● Applications

AMRs

Robotic Arms

Forklifts

Note: 【1】 Theoretical maximum depth range up to 65 meters;
【2】 Data measured during factory calibration;
【3】 Gemini 335Lg default laser energy level is set to Level 4 to reduce peak power consumption and prevent operational failures. When sufficient power is available, users can manually adjust the laser to the maximum Level 6 to achieve optimal performance；
【4】 Both Gemini 335L & 335Lg require the use of IP65-compliant cables during power-on operations to achieve IP65 protection；
【5】 No more than 16h working per day.

● Product Specifications

Basic	
Use Environment	Indoor & Outdoor
Technology	Active & Passive Stereo
Baseline	95mm
Interface	Gigabit Ethernet M12 X-coded
UVC Compliant	N/A
SDK	Orbbec SDK v2

Depth	
Depth Range [1]	0.25m - 20m+
Ideal Range	0.25m - 6m
Resolution @ Frame Rate	Up to: 1280 x 800 @ 30fps
	848 x 530 @ 60fps
Depth FOV (H × V)	90° x 65° ± 3° @ 2m
Depth FOV (H × V) with D2C	Up to: 94° x 68° ± 3° @ 2m
Spatial Precision [2]	≤0.8% @ 2m ; ≤1.6% @ 4m
Depth Sensor Technology	Global Shutter
Depth Filter	Visible+NIR-pass

IR	
Resolution @ Frame Rate	Up to: 1280 x 800 @ 30fps
	848 x 530 @ 60fps
IR FOV (H x V)	91° x 65° ± 3°

Built-in Sensor	
IMU	Support

RGB	
RGB Resolution @ Frame Rate	Up to: 1280 × 800 @ 60fps
	1280 × 720 @ 60fps
RGB Sensor FOV (H × V)	94° x 68° ± 3°
RGB Sensor Technology	Global Shutter

Electrical	
Power Consumption	DC Average ≤ 4W (Peak ≤ 8.5W)
	PoE Average ≤ 5W (Peak ≤ 12W)
Power Supply	Power supply by DC via M8 A-coded: 9-24V ≥1A
	Power supply by PoE via M12 X-coded: IEEE 802.3af

Physical	
Multi-camera Hardware Sync	M8 A-coded
Dimensions (W × H × D)	124 mm × 29 mm × 50 mm
Weight	220g ± 3g
Ingress Protection Rating [4]	IP67
Installation	Bottom：4 x M4 or 1 x 1/4-20 UNC
	Back：2 x M4

Environmental	
Ambient Temperature	-10℃ - 50℃ @ 15fps;-10℃ - 45℃ @ 30/60fps
EMC Requirement	EN61000-6-2;EN61000-6-4
Vibration	5Grms @ 5-500 Hz, random, 4 hr/axis

Others	
Lifespan [5]	5 Years: Default Operating Mode & Operating Environment

Laser Ranging Moudle RGB Camera

124.00mm±0.5

50.00mm±0.5

29.00mm±0.5
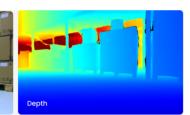
IR Camera   LDM   IR Camera

Scan the code to view more product information

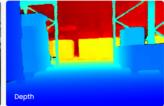# ORBBEC

Gemini 435Le `Gigabit PoE`

Gemini 435Le is an industrial-grade stereo vision camera specifically engineered to tackle robotic vision challenges. Optimized for long-range missions, it is capable of performing diverse perception purposes while delivering exceptional depth data — empowering bulky robots to achieve stable, precise, and flexible positioning, navigation, and object recognition in harsh environments.

■ Exceptional Reproduction of Object Edges and Contours

■ Stable Performance under Varying Light Conditions
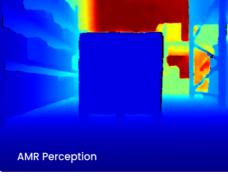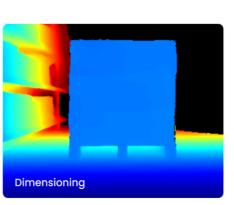
■ Multiple Depth Presets for Diverse Perception Purposes

AMR Perception Preset ｜Dimensioning Preset | Custom Presets

■ Robust Industrial-grade Design

IP67-rated Dust and Waterproof ｜Engineered to Withstand Industrial Vibration and Shock | EMI Resistance | Wide Temperature Adaptability

● Applications

Outdoor Scenarios

Inspection Robots

Commercial Cleaning Robots

Industrial Logistics Scenarios

Forklifts

Robotic Arms

Note: 【1】 Measure object reflectivity > 10%, up to 20m distance depth data. Theoretical maximum depth ranges up to 65 meters, but the actual accuracy varies with the distance and the object to be measured.
【2】 The minimum operating distance may vary depending on different offset configurations and Preset configurations.
【3】 The depth performance of each 3D camera is validated at the production line before shipping to customers. The metrics reflect the depth performance under typical conditions. External impact factors over 3D cameras' whole lifespan may have significant impacts on their depth performance.

● Product Specifications

Camera Specifications		Physical Parameters	
Depth Technology	Stereo Vision	IMU	Supported
Baseline	95mm	Depth Confidence Map	Supported
LDM Wavelength	850nm	Data Connection	Gigabit Ethernet
Working Range[1]	0.31 –20m+	Network Protocol	TCP/ IP; RTSP
Ideal Range[2]	0.31 - 10m	Interface	M12, 8-pin, X-coded
Spatial Precision[3]	≤ 0.4% (1280 x 800 @ 2 m & 90% x 90% ROI)		M12, 8-pin, A-coded
	≤ 0.8% (1280 x 800 @ 4 m & 80% x 80% ROI)	Power Supply	POE: IEEE 802.3af
Depth Accuracy	≤±1% (1280 x 800 @ 2 m & 90% x 90% ROI)		DC: ≥2A @ 9V - 24V
	≤±2% (1280 x 800 @ 4 m & 80% x 80% ROI)	Power Consumption	DC: Average < 6.5W (Peak < 11.0W)
Temporal Precision	≤ 0.1% @2m		PoE: Average < 8.0W (Peak < 15.0W)
Depth Resolution @ Frame Rate	Up to: 1280 x 800 @ 10fps	Operating Environment	–10℃ – 50℃
	640 x 400 @ 20fps		5% ~ 90 % RH (non-condensing)
Depth FoV	90° x 65° ± 3° @ 2m (1280 x 800)	Protection	IP67
RGB Resolution @ Frame Rate	Up to: 1280 x 800 @ 10fps MJPEG/I420	Supported Functions	Hardware Spatial Alignment of Depth to Color;
	640 x 400 @ 20fps MJPEG/I420		Hardware Timestamps; Multi-camera Sync;
RGB FoV	94° x 68° ± 3° （Aspect ratio 16:10 ）		RS485
Sensor Type	IR: Global Shutter	Dimensions(W x H x D)	138.5mm x 40.5mm x 70.0mm
	Color: Global Shutter	Weight	520g
		Installation	Back：4x M4；Bottom：4x M4；Top：4x M4
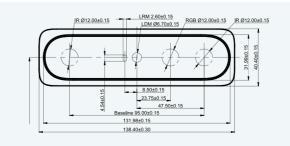
Scan the code to view more product information

Orbbec Gemini 2 Series

The General-Purpose High-Performance Stereo Vision 3D Camera

The Gemini 2 Series represent the flagship of Orbbec's stereo vision 3D camera portfolio, integrating Orbbec's latest custom ASIC MX6600 and a proprietary high-performance optical system. Engineered for versatility, scalability, and ease of use, the Gemini 2 Series excels in rapid prototyping and diverse industrial applications.

The Gemini 2 Series features multiple preset depth operation modes, hardware D2C functionality, synchronized depth and RGB frames, multi-camera synchronization, and a high-performance six-axis IMU. These capabilities ensure robots to achieve precise and reliable environmental perception. Moreover, with UVC protocol support and the cross-platform ORBBEC SDK, the series makes development and integration seamless and efficient.

The series currently offers three models to cater to different needs: the compact and versatile Gemini 2 with a small baseline for indoor applications, the long-baseline Gemini 2 L for enhanced measurement precision over greater distances, and the adaptable Gemini 2 XL, designed for both indoor and outdoor environments.

🟠 Product Specifications

Feature			
Model	Gemini 2	Gemini 2 L	Gemini 2 XL
Operating Environment	Indoor	Indoor	Indoor / Outdoor
Depth Range	0.15m - 10m	0.2m - 10m	0.4m - 20m
Ideal Range	0.2m - 5m	0.25m - 7m	0.4m - 10m
IMU	Supported		
Camera Driver	UVC		
SDK	Orbbec SDK v2		Orbbec SDK
Depth			
Technology	Active Stereo IR		Active & Passive Stereo
Baseline	50 mm	100mm	
Depth Accuracy	≤ 2% (1280x800@2m & 81% ROI)	≤ 2% (1280x800@4m & 81% ROI)	
FoV	91° x 66°		
Resolution and Frame Rate	Up to: 1280 x 800@30fps		Up to: 1280 x 800@10fps
Shutter Type	Global Shutter		
RGB			
FoV	86° x 55°	94° x 68°	
Resolution and Frame Rate	Up to: 1920 x 1080@30fps	Up to: 1280 x 800@30fps	Up to: 1280x800@20fps
Image Format	YUYV & MJPEG		
Shutter Type	Rolling Shutter	Global Shutter	
Electrical			
Power Supply	DC 5V ≥1.5A	DC 5V ≥ 2A	DC: 12V ≥ 2A POE: 802.3at (30W max)
Power Consumption	< 2.5W	< 3W	DC: < 6W PoE: < 7W
Physical			
Operating Environment	0°C - 40°C		
Dimensions(W x H x D)	90 x 25 x 30 mm	124 x 29 x 26 mm	Camera: 124 x 29 x 26mm OBox: 130 x 22.5 x 71mm
Weight	98g	152g	Camera: 152g OBox: 279g
Connector	USB Type-C	USB Type-C	USB 2.0 Type-C & Gigabit Ethernet
Multi-device Sync Port	8-Pin		Camera:
Installation	Bottom:1x 1/4-20 UNC Back:2x M3	Bottom:1x 1/4-20 UNC Back:2x M4	Bottom: 1 x 1/4-20 UNC Back: 2 x M4 OBox: Bottom: 4 x M3

Gemini 2

The Gemini 2 is the pioneering model in Orbbec's Gemini 2 Series. Based on active stereo IR technology, this compact camera is equipped with Orbbec's custom ASIC MX6600 for high-quality depth processing, an integrated IMU, and single cable USB 3.0 for power and connectivity. It delivers exceptional depth point cloud flatness and is resistant to indoor light interference.
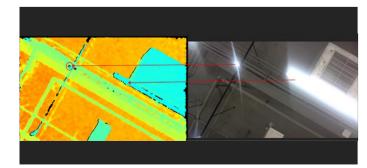
With a depth field of view (FoV) of up to 101° and zero blind spots up to 10 meters, the Gemini 2 achieves an RMSE accuracy of less than 2% at 2 meters. Featuring an integrated hardware D2C function to reduce the host computer's computational load and multi-camera synchronization capability, it is ideal for indoor applications such as patient positioning and collaborative robotics. The Gemini 2 is also easy to set up and operate with the Orbbec SDK.

■ Compact Design
Perfect for various robotic integrations
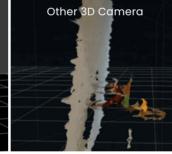
■ High-Quality Point Cloud Data
Ensures stable depth information

Gemini 2 / Other 3D Camera

■ Resistant to Indoor Light Interference
Maintains depth accuracy
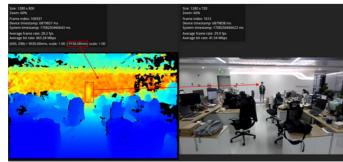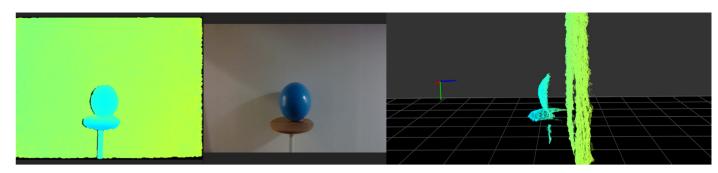
■ Wide Zero-Blind Spot Depth Measurement
Up to 101° depth FoV

■ Reduced Computational Load on The Host Computer by Aligning Depth and Color Information at Multiple Resolutions

■ Comprehensive Tech Support

● Depth Point Cloud Output

● Applications

Collaborative Robots

Agriculture Robots

Patient Positioning

● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.15m - 10m
Ideal Range	0.2m - 5m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

Depth	
Technology	Active Stereo IR
Baseline	50mm
Depth Accuracy	≤ 2% (1280 x 800@2m & 81% ROI)
FoV	91° x 66°
Resolution and Frame Rate	Up to： 1280 x 800@30fps
Shutter Type	Global Shutter

RGB	
FoV	86° x 55°
Resolution and Frame Rate	Up to： 1920 x 1080@30fps
Image Format	YUYV & MJPEG
Shutter Type	Rolling Shutter

Electrical	
Power Supply	DC 5V & ≥1.5A
Power Consumption	< 2.5W
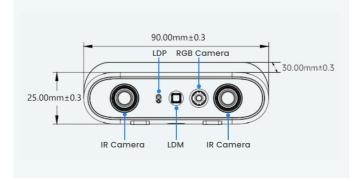
Physical	
Operating Environment	0℃ - 40℃
Dimensions(W x H x D)	90 x 25 x 30 mm
Weight	98g
Connector	USB Type-C
Multi-device Sync Port	8-Pin
Installation	Bottom: 1x 1/4-20 UNC
	Back: 2x M3

90.00mm±0.3
LDP   RGB Camera
30.00mm±0.3
25.00mm±0.3
IR Camera   LDM   IR Camera

Scan the code to view more product information
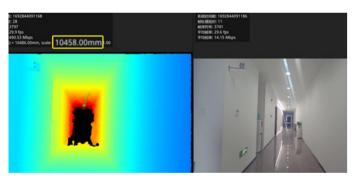
Gemini 2 L

The Gemini 2 L enhances the design and performance of the Gemini 2, extending the baseline to 100mm to support longer measurement distances and higher accuracy. With an RMSE accuracy of less than 2% at 4 meters, it meets the demands of applications requiring precision in measurement and reconstruction.
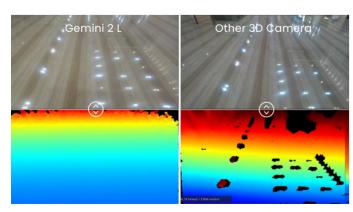
Featuring global shutter imaging technology for both depth and RGB cameras, the Gemini 2 L prevents motion-induced image distortion. Combined with precise Depth to Color (D2C) functionality, it ensures depth and RGB images are perfectly synchronized in space and time, enhancing reliable environmental perception for robots.

■ 100mm Long Baseline
Greater Depth Measurement Range and Higher Depth Accuracy
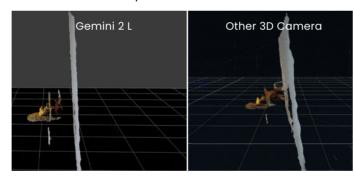
■ Resistant to Indoor Light Interference
Maintains depth accuracy

■ Reduced Computational Load on The Host Computer by Aligning Depth and Color Information at Multiple Resolutions
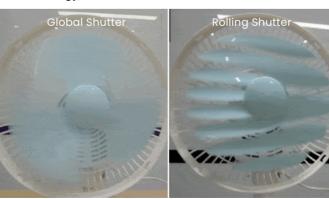
■ High-quality Point Cloud Data
Ensures stable depth information
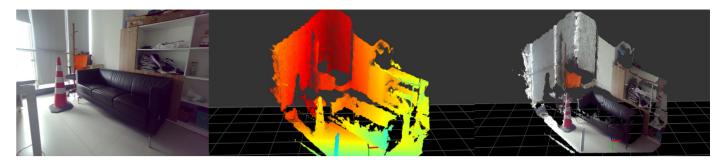
■ Enhanced Motion Compatibility
Depth & RGB cameras implement global shutter imaging technology, Free from motion distortion

■ Comprehensive Tech Support

● Depth Point Cloud Output

● Applications

| Indoor AMR | Collaborative Robot Pick-and-Place | Human Body Reconstruction |

● Product Specifications
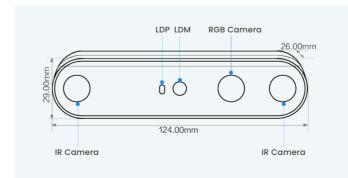
Feature	
Operating Environment	Indoor
Depth Range	0.2m - 10m
Ideal Range	0.25m - 7m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK v2

Depth	
Technology	Active Stereo IR
Baseline	100mm
Depth Accuracy	≤ 2% (1280 x 800@4m & 81% ROI)
FoV	91° x 66°
Resolution and Frame Rate	Up to: 1280 x 800@30fps
Shutter Type	Global Shutter

RGB	
FoV	94° x 68°
Resolution and Frame Rate	Up to: 1280 x 800@30fps
Image Format	YUYV & MJPEG
Shutter Type	Global Shutter

Electrical	
Power Supply	DC 5V & ≥ 2A
Power Consumption	< 3W

Physical	
Operating Environment	0℃ - 40℃
Dimensions(W x H x D)	124 x 29 x 26 mm
Weight	152g
Connector	USB Type-C
Multi-device Sync Port	8-Pin
Installation	Bottom: 1x 1/4-20 UNC
	Back: 2x M4

Scan the code to view more product information

![ORBBEC logo]
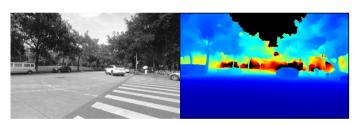
Gemini 2 XL

The Gemini 2 XL is an advanced long-range 3D camera with a working distance of up to 20 meters and a wide depth field of view (FoV) of up to 101º. This camera delivers precise depth information even in challenging conditions, such as high and low reflectivity objects, indoor dim light, and strong outdoor light. It consistently provides high-precision depth images and RGB quality throughout its entire 20-meter range. Equipped with both a USB interface and a gigabit Ethernet port that supports Power over Ethernet (PoE), the Gemini 2 XL meets the imaging needs of intelligent robots in complex and variable application scenarios. The camera is easy to set up and operate using the Orbbec SDK.
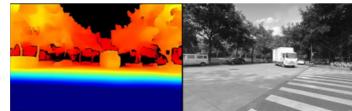
■ Resistant to Strong Light
Stable and reliable accuracy in outdoor scenarios
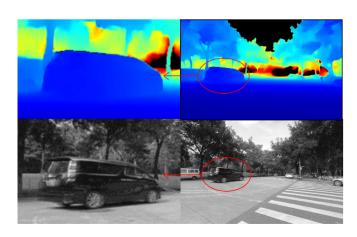
■ Broad Measurement Range
A depth FoV of up to 101º and high quality depth data over 20m
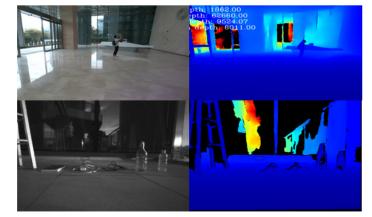
■ Superior RGB-D Output Quality

■ Handles Diverse Surface Types
Adapts to high and low-reflective objects, semi-transparent, weak texture, and reflective surfaces
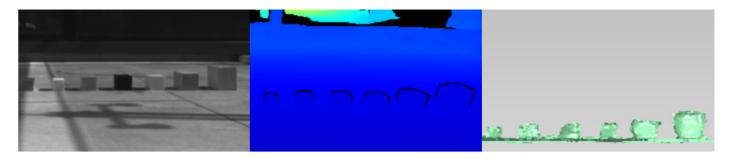
■ Multiple Hardware Interfaces
Gigabit Ethernet Port with PoE functionality, expanding application scenarios

● Depth Point Cloud Output

● Applications
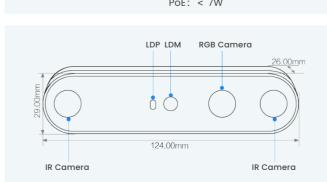
| Outdoor Inspection Robots | Warehouse Logistics: Pallet Recognition | Retail: Behavioral Analysis |

● Product Specifications

Feature	
Operating Environment	Indoor / Outdoor
Depth Range	0.4m - 20m
Ideal Range	0.4m - 10m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK
Depth	
Technology	Active & Passive Stereo
Baseline	100mm
Depth Accuracy	≤ 2% (1280 x 800@4m & 81% ROI)
FoV	91º x 66º
Resolution and Frame Rate	Up to: 1280 x 800@10fps
Shutter Type	Global Shutter
Electrical	
Power Supply	DC: 12V & ≥ 2A
	POE: 802.3at（30W Max）
Power Consumption	DC: < 6W
	PoE: < 7W

RGB	
FoV	94º x 68º
Resolution and Frame Rate	Up to: 1280x800@20fps
Image Format	YUYV & MJPEG
Shutter Type	Global Shutter
Physical	
Operating Environment	0℃ - 40℃
Dimensions(W x H x D)	Camera: 124 x 29 x 26mm
	OBox: 130 x 22.5 x 71mm
Weight	Camera: 152g
	OBox: 279g
Connector	USB 2.0 Type-C&Gigabit Ethernet
Multi-device Sync Port	8-pin
Installation	Camera:
	Bottom: 1x 1/4-20 UNC
	Back: 2x M4
	OBox: Bottom: 4 x M3

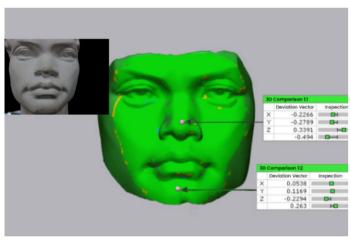Scan the code to view more product information

Gemini 215

Gemini 215, a member of Orbbec's stereo vision Gemini series, is specifically designed for high-precision short-range detailed 3D scanning applications such as body part and object scanning. Powered by Orbbec's custom ASIC MX6600 and a high-performance optical system, the Gemini 215 excels in short-range indoor scanining, delivering accurate and real-time depth images with fine details.
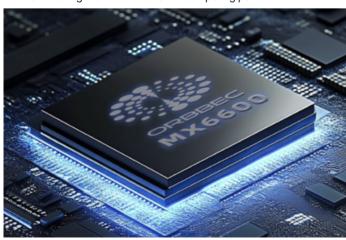
■ Excellent Accuracy

Captures depth data with ≤0.5mm precision at 300mm and it achieves a minimum point cloud resolution of 0.16mm at 0.15m, delivering highly detailed and accurate 3D scans.

■ Real-time Depth Processing

Up to 1280 x 800 @ 30fps capture rate ensures smooth, real-time data acquisition, enabling fast and accurate 3D modeling without motion blur orlag.

■ On-chip Depth Processing

Reduced latency and enhanced responsiveness while eliminating the need for external computing power.
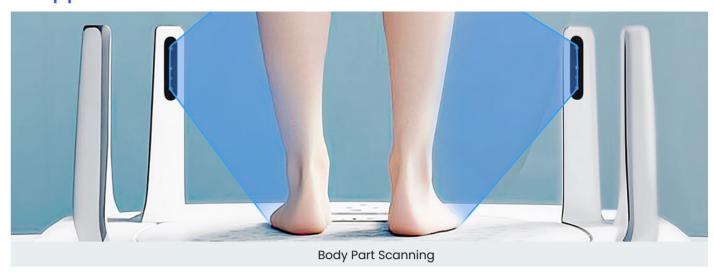
■ Class 1 Laser, Safe for Eyes

Scans without sensation, ensuring risk-free safety.

● Applications

Body Part Scanning

Object Scanning

● Product Specifications

*Spatial Precision: <0.5 mm（1280 X 800 @ 0.3m），<1.5 mm（1280 X 800 @ 0.6m)
* Minimum Point Distance/Resolution 0.16mm @ 0.15m

Camera Specifications	
Model	G20000-150
Depth Technology	Active Stereo
Wavelength	850nm
Depth Range	0.15 - 0.70m (Ideal Range 0.2 - 0.5m)
	Close_Up Precision Mode (0.15m - 0.30m)
	Extended Distance Mode (0.20m - 0.70m)
Depth Resolution/FPS	Up to 1280 × 800 @ 30fps
Depth FOV	H63.0° x V44.8° @ 0.7m
RGB Resolutions/FPS	Up to 1920 × 1080 @ 30fps
RGB FOV	H74.7° x V46.2° ± 3°
Processing	Orbbec ASIC
Capture Rate	Up to 30fps
Capture Zone	H126mm x V124mm @ 0.15m;
	H859mm x V577mm @ 0.7m

Physical Specifications	
Depth Filter	IR-Pass
IMU	Support
Data Connection	USB 3.0 & USB 2.0
Power Input	USB Type C
Sync Function Trigger	Support
Power Consumption	Average < 2.5W
	Max < 7.0W
Operating Environment	0°C~40°C; Indoor;
	5%-95%RH (non-condensing)
SDK Support	Orbbec SDK v2 (Open-source)
Data Output	Point Cloud, Depth, IR & RGB
Dimensions (W*H*D)	120 mm x 26 mm x 30 mm
Weight	105g ± 3g
Installation	Bottom: 1 x 1/4-20 UNC;
	Back: 2 x M3

Scan the code to view more product information

Orbbec Femto Series

The General-Purpose High-Precision iToF 3D Camera

To meet the increasing development demands in the 3D vision field, Orbbec has partnered with Microsoft to develop the high-performance Femto series iToF 3D cameras. This series significantly broadens the global application of high-performance 3D cameras in industries such as logistics, robotics, manufacturing, retail, healthcare, and fitness.

The Femto series includes Femto Bolt, Femto Mega, and Femto Mega I, delivering comprehensive functionality and exceptional performance while maintaining the benchmark user experience of Azure Kinect DK.

Femto Bolt is designed for customers interested in solutions like the Azure Kinect Developer Kit and can serve as a direct replacement. It offers compatibility with the depth camera and architecture layers, features a more compact form factor, easier installation, and enhanced HDR capabilities.

Femto Mega, an advanced alternative to Azure Kinect DK, is equipped with an NVIDIA® Jetson™ Nano to run depth vision algorithms, converting raw data into precise depth images. This addresses issues of excessive bandwidth and high host computing power requirements and offers a gigabit Ethernet port with PoE functionality.

Femto Mega I, the industrial version of Femto Mega, features an IP65 protection rating, making it ideal for use in warehouses, manufacturing, and other demanding environments.

🔶 Product Specifications

| Feature			
Model	Femto Bolt	Femto Mega	Femto Mega I
Operating Environment	Indoor		
Depth Range	0.25~5.46m		
IMU	Supported		
SDK	Orbbec SDK K4A Wrapper Orbbec SDK v2		Orbbec SDK v2
Depth			
Technology	iToF		
FoV	WFoV: 120° x 120° HFoV: 75° x 65°		
Depth Accuracy	<11 mm+0.1% distance		
Resolution and Frame Rate	Up to： 1024 x 1024@15fps		
Shutter Type	Global Shutter		
RGB			
FoV	80° x 51°		
Resolution and Frame Rate	Up to： 3840 x 2160@15fps		Up to： 3840 × 2160@25fps
Shutter Type	Rolling Shutter		
Electrical			
Power Supply	DC： 12V / 2A USB： 5V / 3A	DC： 12V / 2A USB： 5V / 3A POE： 802.3at（24W）	DC： 12 - 24V POE： 802.3at（24W）
Power Consumption	DC Power + USB data: 4.7W USB power + data: 4.3W	DC Power + USB data: 11W USB power + data: 10W POE power + Gigabit Ethernet data: 13W	< 11.0W
Physical			
Operating Environment	10℃ - 25℃		0℃ - 45℃
Dimensions(W x H x D)	115 × 40 × 65mm	115 x 40 x 145mm	180 × 50 × 110mm
Connector	USB 3.0 Type-C	USB 3.0 Type-C Gigabit Ethernet	Gigabit Ethernet
Protection	N/A		IP65
Multi-device Sync Port	8-pin	8-pin	12-Pin A-code
Weight	348g	560g	1080g
Installation	1x 1/4-20 UNC 4x M2.5		8 x M5

Femto Bolt
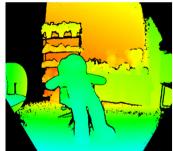
Microsoft-Recommended Alternative to Azure Kinect DK

Femto Bolt is a compact, high-performance iToF 3D camera co-developed by Orbbec and Microsoft. It integrates multiple sensing capabilities, including a multi-mode depth camera, color video camera, and inertial sensor. Utilizing Microsoft's industry-proven ToF technology, the depth camera offers identical operating modes and performance to the Microsoft Azure Kinect.

The Femto Bolt supports simultaneous data transmission and power supply through a single USB Type-C connection. Its versatility and competitive pricing make it an attractive option for AI developers working on 3D vision applications.

■ Full Compatibility with Azure Kinect DK

Identical depth modes and performance as the Azure Kinect DK

Femto Bolt | Azure Kinect Developer Kit

■ High Adaptability

The same API interface for easy integration with existing Azure Kinect DK applications
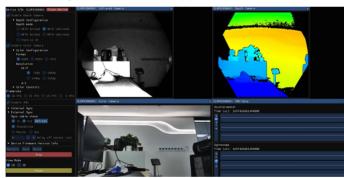
■ High-performance RGB

High-quality 4K RGB with HDR support

Femto Bolt | Azure Kinect Developer Kit

■ Enhanced Alignment Precision

Four times the alignment accuracy compared to Azure Kinect DK

Femto Bolt | Azure Kinect Developer Kit

■ Easy Integration

Compact design with a form factor half the original size

■ Stable Data Transmission
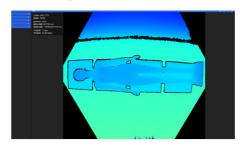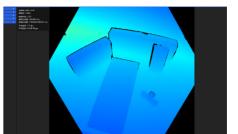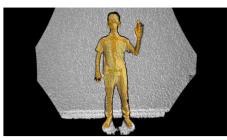
Locking USB-C port for increased mechanical stability, supporting both power and data transmission
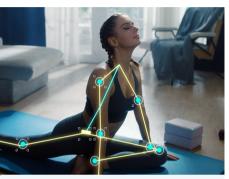

● Depth Point Cloud Output

● Applications
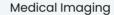
Medical Imaging | Volumetric Video | Rehabilitation and Fitness
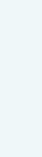
● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.25-5.46m
IMU	Supported
SDK	Orbbec SDK K4A Wrapper
	Orbbec SDK v2

Depth	
Technology	iToF
FoV	WFoV: 120º x 120º
	HFoV: 75º x 65º
Depth Accuracy	<11 mm+0.1% distance
Resolution and Frame Rate	Up to： 1024 x 1024@15fps
Shutter Type	Global Shutter

RGB	
FoV	80º x 51º
Resolution and Frame Rate	Up to： 3840 x 2160@15fps
Shutter Type	Rolling Shutter

Electrical	
Power supply	DC： 12V / 2A
	USB： 5V / 3A
Power Consumption	DC Power + USB data: 4.7W
	USB power + data: 4.3W

Physical	
Operating Environment	10℃ - 25℃
Dimensions(W x H x D)	115 × 40 × 65mm
Connector	USB 3.0 Type-C
Protection	N/A
Multi-device Sync port	8-pin
Weight	348g
Installation	1x 1/4-20 UNC ; 4x M2.5

RGB Camera Depth Camera IR Emitters Power Indicator

115.3mm 64.95mm 37.05mm

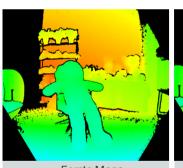Scan the code to view more product information

Femto Mega

Femto Mega is a next-generation iToF camera co-developed by Orbbec, Microsoft, and NVIDIA. This programmable multi-mode depth and RGB camera offers real-time streaming of processed images over Ethernet or USB connections. It utilizes Microsoft's industry-proven ToF technology and the NVIDIA® Jetson™ platform to deliver a comprehensive depth and RGB vision solution without requiring additional processing power. Femto Mega not only provides OrbbecSDK for enhanced PoE performance but also offers a fully compatible API interface with Microsoft Azure Kinect ecosystem applications. Migration documentation are provided for easy transition.
Femto Mega has achieved large-scale and stable mass production, meeting the needs of applications in logistics, robotic arms, manufacturing, retail, healthcare, and fitness.

■ Full Compatibility with Azure Kinect DK
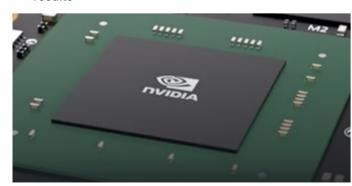
Identical depth modes and performance as the Azure Kinect DK

Femto Mega	Azure Kinect Developer Kit

■ High Adaptability

The same API interface for easy integration with existing Azure Kinect DK applications

■ No Computer or System Limitations

Built-in computing power delivers direct depth results
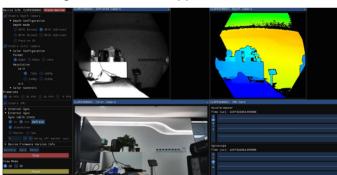
■ Supports Long-Distance Stable Data Transmission

Supports Gigabit Ethernet and PoE Supply

■ Enhanced Alignment Precision

Four times the alignment accuracy compared to Azure Kinect DK
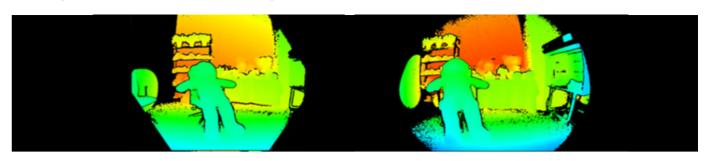
■ Comprehensive Development support

Easy multi-camera synchronization

● Depth Point Cloud Output

● Applications
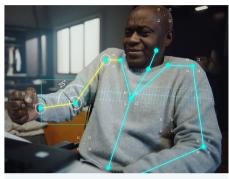
Dimensioning - Warehouse Management	Industrial Robotic Arms	Rehabilitation

● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.25-5.46m
IMU	Supported
SDK	Orbbec SDK K4A Wrapper
	Orbbec SDK v2

Depth	
Technology	iToF
FoV	WFoV: 120° x 120°
	HFoV: 75° x 65°
Depth Accuracy	<11 mm+0.1% distance
Resolution and Frame Rate	Up to：1024 x 1024@15fps
Shutter Type	Global Shutter

RGB	
FoV	80° x 51°
Resolution and Frame Rate	Up to：3840 x 2160@15fps
Shutter Type	Rolling Shutter

Electrical	
Power Supply	DC：12V / 2A
	USB：5V / 3A
	POE：802.3at（24W）
Power Consumption	DC Power + USB data: 11W
	USB power + data: 10W
	POE power + Gigabit Ethernet data: 13W

Physical	
Operating Environment	10℃ - 25℃
Dimensions(W x H x D)	115 x 40 x 145mm
Connector	USB 3.0 Type-C Gigabit Ethernet
Protection	N/A
Multi-device Sync Port	8-pin
Weight	560g
Installation	1x 1/4-20 UNC
	4x M2.5
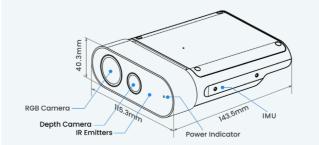
Scan the code to view more product information

Femto Mega I

The Femto Mega I is the industrial-grade version of the Femto Mega, featuring an IP65 rating. This programmable multi-mode depth and RGB camera offers real-time streaming of processed images over Ethernet connections. It combines Microsoft's cutting-edge ToF technology with NVIDIA's superior computing power, enhanced by high-precision depth algorithms to create a robust software-defined vision system capable of flexible depth perception and image processing.

The camera is equipped with million-level iToF and 4K RGB sensors, delivering high-quality RGB-D image data. The Femto Mega I meets the needs of AI and computer vision developers and is well-suited for industrial automation scenarios, such as warehouse logistics automation, production line material handling, and the measurement of dimensions and volumes of large objects.

■ IP65 Protection
Industrial-grade dust and water resistance

■ Industrial Aviation Connectors
Supports Gigabit Ethernet and PoE Supply

■ Covering Ultra-wide Field of View for Close-range Scenarios
Supporting long-distance operations

■ Ambient Light Resistance Improved by 100%
Ideal for various logistics and material handling environments

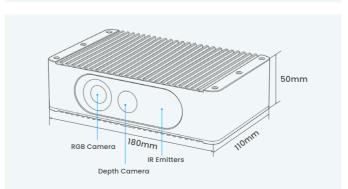## ● Depth Point Cloud Output

● Applications

Depalletizing

Loading and Unloading

Large Object Dimensioning

● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.25-5.46m
IMU	Supported
SDK	Orbbec SDK v2

Depth	
Technology	iToF
FoV	WFoV: 120° x 120°
	HFoV: 75° x 65°
Depth Accuracy	<11 mm+0.1% distance
Resolution and Frame Rate	Up to : 1024 x 1024@15fps
Shutter Type	Global Shutter

RGB	
FoV	80° x 51°
Resolution and Frame Rate	Up to : 3840 × 2160@25fps
Shutter Type	Rolling Shutter

Electrical	
Power supply	DC：12 - 24V
	POE：802.3at（24W）
Power Consumption	< 11.0W

Physical	
Operating Environment	0℃ - 45℃
Dimensions(W x H x D)	180 × 50 × 110mm
Connector	Gigabit Ethernet
Protection	IP65
Multi-device Sync port	12-Pin A-code
Weight	1080g
Installation	8 x M5

H-FOV:120°
V-FOV:120°

50mm
RGB Camera
180mm
110mm
IR Emitters
Depth Camera

Scan the code to view more product information

Orbbec Astra Series

General-Purpose High-Performance Structured Light 3D Camera

The Orbbec Astra Series represents the next geneartion structured light 3D cameras, including the Astra Mini S Pro and Astra 2. These cameras leverage extensive application experience from previous Astra series models, offering enhanced performance and versatility for various industrial and interactive applications.

The Astra Mini S Pro, the latest addition to the Orbbec Astra Mini Series, is designed for compatibility with both the Astra Mini Pro and Astra Mini S models. It offers configurable working distance ranges to meet the specific requirements of the Astra Mini S and Astra Mini Pro, ensuring optimal performance across various applications.

As the flagship model of the Astra Series, the Astra 2 supports the UVC protocol, simplifying integration and providing a more user-friendly experience. Its hardware D2C functionality aligns depth and color information across different resolutions, reducing the computational load on the host system.

Additionally, the Astra 2 features an integrated 6-axis IMU, enabling the camera to track its own motion and rotation for enhanced pose tracking. The camera supports synchronization of depth and RGB frames, as well as multi-camera setups, allowing for flexible configurations and eliminating common issues of multi-camera interference. This expands the field of view and measurement range, making it ideal for complex setups.

The Astra 2 provides real-time high-resolution depth measurement with resolutions up to 1600x1200 at 30fps, and it also supports 1920x1080 at 30fps for color images. This combination of high-quality color and depth data makes the Astra 2 ideal for applications such as dimensioning, interactive display, and indoor scanning.
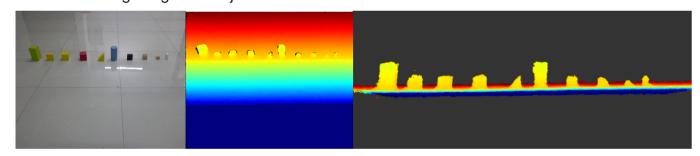
🔶 Product Specifications

Feature		
Model	**Astra 2**	**Astra Mini S Pro**
Operating Environment	Indoor	Indoor
Depth Range	0.6m - 8m	0.4m - 4m
Description of Depth Measurement Range	Ideal Range：0.6m - 5m	Default is 0.4m - 2m,(to use 2m - 4m you need to set the gain to 8000 via the SDK interface)
IMU	Supported	N/A
Camera Driver	USB 3.0 & USB 2.0	OpenNI
SDK	Orbbec SDK v2	Orbbec SDK & OpenNI 2
Depth		
Technology	Structured Light	
Baseline	75mm	55mm
Depth Accuracy	Typical depth accuracy： ≤0.16%(1600x1200@1m& 81% ROI) ≤0.3% (1600x1200@2m & 81% ROI)	3mm@1m
FoV	58° x 45°	
Resolution and Frame Rate	Up to：1600x1200@30fps	Up to：1280x1024@7fps
Shutter Type	Rolling Shutter	
RGB		
FoV	16:9 74°x 46° 4:3 59°x 46°	62° x 49°
Resolution and Frame Rate	Up to：1920x1080@30 fps	Up to：1280x960@7 fps
Shutter Type	Rolling Shutter	
Electrical		
Power Supply	DC 5V & ≥1.5A	DC 5V & ≥0.5A
Power Consumption	≤3.0W	<2.0W
Physical		
Operating Environment	0℃ - 35℃	10℃ - 40℃
Dimensions(W x H x D)	144.5 x 34.6 x 35.8 mm 144.5 x 45.3 x 38.6 mm (with mounting base)	84.90 × 20.00 × 19.92 mm
Weight	195g 240g (with mounting base)	34g
Connector	USB Type-C	USB 2.0 DF13 Connector
Multi-device Sync port	8-pin	N/A
Installation	Bottom: 1x 1/4-20 UNC Back: 2x M3	Embedded

Astra 2

The Astra 2 is the flagship model of the Orbbec Astra Series, leveraging structured light technology. It is equipped with Orbbec's custom ASIC MX6600, delivering high-quality depth processing. The Astra 2 retains the FoV and depth measurement range of its predecessors while featuring a fully upgraded optical system that enhances measurement accuracy and stability. Additionally, it supports multi-camera synchronization to prevent interference when multiple cameras are used simultaneously.

■ High-Resolution Depth Measurement up to 1600x1200 @ 30fps
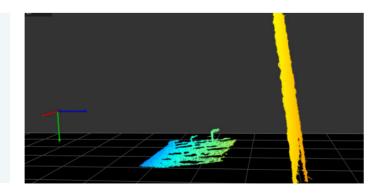
Ideal for recognizing small objects

■ Multi-Camera Synchronization

Prevents interference and allows for seamless operation of multiple cameras in the same environment

■ Stable and Accurate Depth Measurement
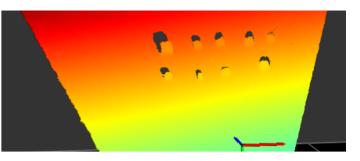
≤0.16%(1600 x 1200 @ 1m & 81% ROI)

■ Low Power Consumption: Average Consumption below 2W Depth and Color Information Alignment

Reduces computational load on host systems

■ Integrated With high performance 6-axis IMU

● Depth Point Cloud Output

● Applications

Dimensioning   Indoor Scanning   Interactive Display

● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.6m - 8m
Ideal Range	0.6m - 5m
IMU	Supported
Camera Driver	USB 3.0 & USB 2.0
SDK	Orbbec SDK v2
Depth	
Technology	Structured Light
Baseline	75mm
Typical depth accuracy	≤0.16%(1600 x 1200 @ 1m & 81% ROI)
	≤0.3% (1600 x 1200 @ 2m & 81% ROI)
FoV	58° x 45°
Resolution and Frame Rate	Up to : 1600x1200@30fps
Shutter Type	Global Shutter
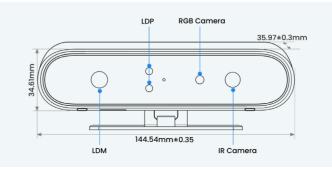
RGB	
FoV	16:9 74° x 46°
Resolution and Frame Rate	4:3 59° x 46°
Shutter Type	Up to : 1920x1080@30 fps
	Rolling Shutter
Electrical	
Power supply	DC 5V & ≥1.5A
Power Consumption	≤3.0W
Physical	
Operating Environment	0℃ - 35℃
Dimensions(W x H x D)	144.5 x 34.6 x 35.8 mm
	144.5 x 45.3 x 38.6 mm (with mounting base)
Weight	195g
	240g (with mounting base)
Connector	USB Type-C
Multi-device Sync port	8-pin
Installation	Bottom: 1x 1/4-20 UNC
	Back: 2x M3

LDP   RGB Camera

35.97±0.3mm

34.61mm

144.54mm±0.35

LDM   IR Camera
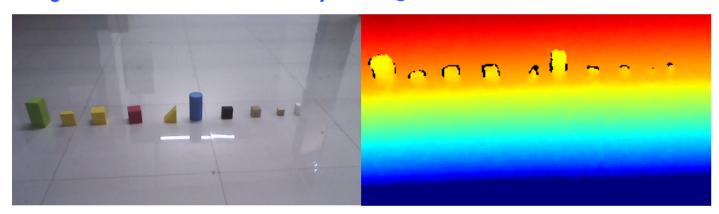
Scan the code to view more product information

Astra Mini S Pro

The Astra Mini S Pro, as a compatible product to the Orbbec Astra Mini series which includes the Astra Mini Pro and Astra Mini S, offers an optimal working distance range that can be tailored through parameter configuration to meet the specific operational distance requirements of both the Astra Mini S and Astra Mini Pro.

The Orbbec Astra Mini series, as Orbbec's embedded product line targeted at the robotics industry, has been in consistent and stable supply for over six years. Target markets of this series include service robots, gesture interaction, and volumetric measurement.

■ High Precision, Relative Accuracy ≤3mm @ 1m

■ Compact and Embedded Design, Easy Integration for Various Applications
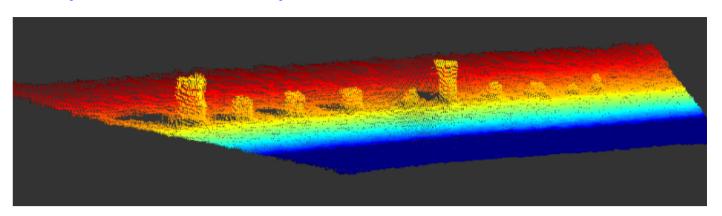

■ Low Power Consumption:
Average Consumption below 2W

■ Depth and Color Information Alignment
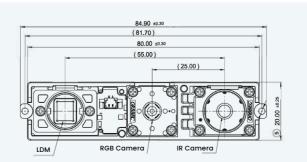Reduces computational load on host systems

● Depth Point Cloud Output

● Applications

Service Robots

Dimensioning

Interactive Display

● Product Specifications

Feature	
Operating Environment	Indoor
Depth Range	0.4m – 4m
Description of depth measurement range	Default is 0.4m - 2m, (to use 2m - 4m you need to set the gain to 8000 via the SDK interface)
IMU	N/A
Camera Driver	OpenNI
SDK	Orbbec SDK & OpenNI 2

Depth	
Technology	Structured light
Baseline	55mm
Typical depth accuracy	3mm@1m
FoV	58° x 45°
Resolution and Frame Rate	Up to: 1280x1024@7fps
Shutter Type	Rolling Shutter

RGB	
FoV	62° x 49°
Resolution and Frame Rate	Up to: 1280x960@7 fps
Shutter Type	Rolling Shutter

Electrical	
Power supply	DC 5V & ≥0.5A
Power Consumption	<2.0W

Physical	
Operating Environment	10℃ – 40℃
Dimensions(W x H x D)	84.90 × 20.00 × 19.92 mm
Weight	34g
Connector	USB 2.0 DF13 Connector
Multi-device Sync port	N/A
Installation	Embedded

Exclusive for Enterprise Customers

Orbbec Persee Series

High-Performance Camera Computer

The Orbbec Persee series is an intelligent 3D camera lineup designed for the AIOT market, aiming to provide developers and industry customers with comprehensive hardware support and reliable 3D vision data output. This enables users to focus on software applications and algorithm development, accelerating project validation and product deployment.

The series currently includes the Persee N1 3D development kit, co-developed with NVIDIA, and the Persee 2, a 3D smart camera based on a high-performance AI ARM platform.

🔶 Product Specifications

Feature		
Model	**Persee N1**	**Persee 2**
Operating Environment	Indoor	
Processor	NVIDIA Jetson Nano	Amlogic A311D
Depth technology	Active Stereo IR	
Depth Range	0.15m-10m	0.2m-10m
Ideal Range	0.2m - 5m	0.25m- 7.0m
IMU	Supported	
Camera Driver	UVC	
SDK	Orbbec SDK	
Algorithm SDK	Orbbec Face Reconstruction SDK	N/A
Depth		
Baseline	50mm	100mm
Depth Accuracy	≤ 2% (1280x800@2m & 81% ROI)	≤ 2% (1280x800@4m & 81% ROI)
FoV	91° x 66°	
Resolution and Frame Rate	Up to：1280 x 800@30fps	
Shutter Type	Global Shutter	
RGB		
FoV	86° x 55°	94° x 68°
Resolution and Frame Rate	Up to：1920 x 1080@30fps	Up to：1280 x 800@30fps
Shutter Type	Rolling Shutter	Global Shutter
Electrical		
Power supply	DC 12V & ≥3A	DC：12V & ≥2A
Power Consumption	<12W	< 7.0W
Physical		
Operating Environment	0℃ - 40℃	
Dimensions(W x H x D)	200 x 100 x 90 mm	180 x 76.5 x 45mm
Data Connector	USB: USB 3.0 Type A x 2 USB 2.0 Type A x 2 USB 3.0 Type C Male x 1 (Camera) USB 2.0 Type-C Female x 1 (System Installation) UART：6-Pin GPIO：40-Pin Display Output：HDMI x 1, DisplayPort x 1 Micro SD: Up to 128GB Storage：16GB eMMC with M.2 M key expansion slot Ethernet：RJ45 Gigabit Ethernet, supports 802.3 at PoE RTC：CR2032, 3V	Display Output：HDMI 2.0 Audio Output：3.5mm RTC：CR2032, 3V USB 2.0 Type C (Debug and Firmware Update) Micro SD: Up to 128GB Storage：32GB eMMC Wifi/BT: 802.11a/b/g/n/ac, Bluetooth 5.0 Ethernet: RJ45 Gigabit Ethernet Microphone：4 Microphone Linear Microphone Array
Power Connector	12V DC 802.3.at POE	12V DC

Persee N1

The Persee N1, co-developed by Orbbec and NVIDIA, is a 3D development kit that integrates the high-performance Gemini 2 stereo camera with the versatile NVIDIA Jetson Nano platform. In addition to its default configuration, this kit supports flexible integration of various Orbbec 3D cameras and NVIDIA computing platforms to meet user needs.

The kit features a diverse range of hardware interfaces, catering to robotics, smart vehicles, and human reconstruction control requirements.

It also supports software platforms such as NVIDIA Jetpack, VisionWorks, and DeepStream, enabling the development, validation, deployment, and optimization of 3D-related projects from the NVIDIA open-source community, including motion sensing, obstacle avoidance, and volume measurement. This reduces development costs and further promotes innovation in 3D applications and the commercialization of smart camera products.

■ Plug and Play
Flexible compatibility with various Orbbec 3D cameras

Gemini 2

Gemini 335

■ Rich Hardware Interfaces
Supports connection to various hardware peripherals to meet diverse application needs

■ Support NVIDIA Jetson Nano
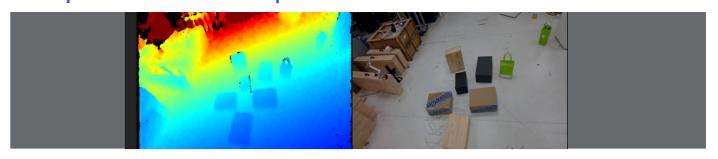Enables flexible and rapid 3D application development and product validation

■ ODM/OEM Services
Offers ODM/OEM services for customers using the NVIDIA ecosystem
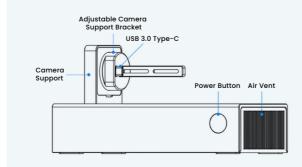

● Depth Point Cloud Output

● Applications

Autonomous Mobile Robot (AMR)

Human Body Reconstruction

Collaborative Robots

● Product Specifications

Feature	
Operating Environment	Indoor
Processor	NVIDIA Jetson Nano
Depth technology	Active Stereo IR
Depth Range	0.15m-10m
Ideal Range	0.2m - 5m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK
Algorithm SDK	Orbbec Face Reconstruction SDK

Depth	
Baseline	50mm
Depth Accuracy	≤ 2% (1280x800@2m & 81% ROI)
FoV	91° x 66°
Resolution and Frame Rate	Up to: 1280 x 800@30fps
Shutter Type	Global Shutter

RGB	
FoV	86° x 55°
Resolution and Frame Rate	Up to: 1920 x 1080@30fps
Shutter Type	Rolling Shutter

Electrical	
Power supply	DC 12V & ≥3A
Power Consumption	<12W

Physical	
Operating Environment	0℃ - 40℃
Dimensions(W x H x D)	200 x 100 x 90 mm
Data Connector	USB:
	USB 3.0 Type A x 2
	USB 2.0 Type A x 2
	USB 3.0 Type C Male x 1 (Camera)
	USB 2.0 Type-C Female x 1 (System Installation)
	UART: 6-Pin
	GPIO: 40-Pin
	Display Output: HDMI x 1, DisplayPort x 1
	Micro SD: Up to 128GB
	Storage: 16GB eMMC with M.2 M key expansion slot
	Ethernet: RJ45 Gigabit Ethernet, supports 802.3 at PoE
	RTC: CR2032, 3V
Power Connector	12V DC
	802.3.at POE

Adjustable Camera Support Bracket
USB 3.0 Type-C
Camera Support
Power Button   Air Vent
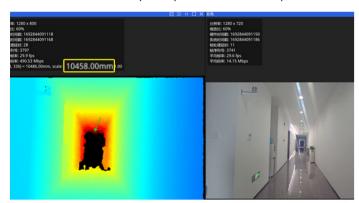

Scan the code to view more product information

Persee 2

Persee 2 is Orbbec's next-generation 3D smart camera. It is equipped with a high-performance AI ARM platform (Amlogic A311D), supporting up to 5 TOPS computing power and achieving depth measurement with zero blind spots up to 10 meters. The camera features a built-in IMU, integrated hardware D2C functionality, and supports various depth operating modes to suit different application scenarios.

Pre-installed with Orbbec Viewer and Orbbec Pose SDK, the Persee 2 can quickly and accurately perform human skeleton tracking and output various types of data, such as depth maps, color images, IR images, and point clouds. Additionally, the camera supports the cross-platform development toolkit Orbbec SDK, enabling developers and enterprise customers to rapidly develop and validate application-specific products.

■ High-Precision Depth Measurement
Enables zero-blind-spot depth measurement up to 10 meters

■ Dual System Support (Android 9 and Ubuntu 18.04)
Rich hardware interfaces to meet diverse customer needs

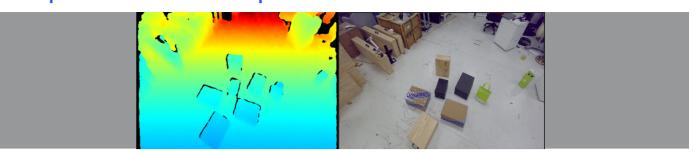## ■ Flexible and Versatile Mounting Options
Supports vertical, horizontal, and hanging installations with a detachable mounting bracket

Vertical | Horizontal | Hanging

■ Comprehensive Functionality
Supports RTC (Real-Time Clock), WOL (Wake on LAN), and dual-band 2.4G/5G WiFi
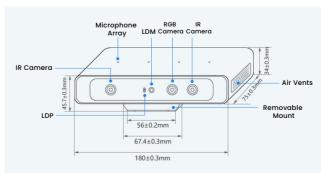
● Depth Point Cloud Output

● Applications

Elderly Care – Body Motion Analysis | Retail Traffic Analysis

● Product Specifications

Feature	
Operating Environment	Indoor
Processor	Amlogic A311D
Depth technology	Active Stereo IR
Depth Range	0.2m-10m
Ideal Range	0.25m- 7.0m
IMU	Supported
Camera Driver	UVC
SDK	Orbbec SDK
Algorithm SDK	N/A
Depth	
Baseline	100mm
Depth Accuracy	≤ 2% (1280x800@4m & 81% ROI)
FoV	91° x 66°
Resolution and Frame Rate	Up to: 1280 x 800@30fps
Shutter Type	Global Shutter
RGB	
FoV	94° x 68°
Resolution and Frame Rate	Up to: 1280 x 800@30fps
Shutter Type	Global Shutter

Electrical	
Power supply	DC：12V & ≥2A
Power Consumption	< 7.0W
Physical	
Operating Environment	0℃ - 40℃
Dimensions(W x H x D)	180 x 76.5 x 45mm
Data Connector	Display Output：HDMI 2.0
	Audio Output：3.5mm
	RTC：CR2032, 3V
	USB 2.0 Type C (Debug and Firmware Update)
	Micro SD: Up to 128GB
	Storage : 32GB eMMC
	Wifi/BT: 802.11a/b/g/n/ac, Bluetooth 5.0
	Ethernet: RJ45 Gigabit Ethernet
	Microphone:4 Microphone Linear Microphone Array
Power Connector	12V DC

Scan the code to view more product information

Orbbec Pulsar Series

The High-Performance Low-Cost LiDAR

Orbbec has been deeply engaged in the LiDAR field for many years, continuously launching a variety of LiDAR products that strike a balance between performance and cost. Widely applicable in robotics, perimeter security, warehouse logistics, environmental scanning, 3D reconstruction, and mapping, the lineup also includes solutions for robot navigation and obstacle avoidance, such as the single-line Pulsar SL450 and the 3D Pulsar ME450 with both repetitive and non-repetitive scanning modes.

Product Specifications

Feature		
Model	**Pulsar SL450**	**Pulsar ME450**
Measurement principle	dToF	
Measurement range	0.05~45.0m@90% ; 0.05~15.0m@10%	0.1~45.0m@90% ; 0.1~15.0m@10%
Accuracy	±20mm@90% ; ±25mm@10%	±30mm
Precision	≤15mm	≤20mm
Horizontal scanning angle	270°	
Vertical angle	N/A	60°, can be set as 45°/ 30°
Measurement frequency	72kHz	200kHz
Rotation frequency	15Hz/20Hz/25Hz/30Hz/40Hz	10Hz/15Hz/20Hz
Angular resolution	0.12°/0.18°/0.24°/0.3°/0.36°	N/A
Emission pitch angle	0° ± 0.5°	N/A
Laser wave length	905 ± 10nm	
Ambient light limit	60,000Lux	80,000Lux
Multi-device anti-interference	Yes	
Mechanical/electrical parameters		
Operating voltage	24V（9~28V DC）	
Power consumption	Typ. ＜3W ; Max. ＜5W	Typ. ＜6W ; Max. ＜8W
Data interface type	100Mbps Ethernet connector	8-pin aviation connector ; 100 Mbps network
Dimensions	60mm×60mm×88mm	65mm×65mm×83mm
Weight	~320g	~270g
Environmental parameters		
Degree of protection	IP65	IP67
Ambient operation temperature	-10℃~55℃	-20℃~55℃
Storage temperature	-20℃~70℃	-40℃~70℃
Relative humidity	0~85%	
Laser class	Class 1	

Pulsar SL450

Pulsar SL450 employs direct Time of Flight (dToF) ranging technology. It's constructed around a high-precision rotating-mirror optical scanning system and a high-frequency laser pulse transmitter. Sophisticated optical, mechanical, and structural design permits robust and accurate scanning within a 270° horizontal area, up to a distance of 45m. SL450 can be used in many fields, including robot positioning and navigation, area security, logistics, environmental scanning, and 3D scene reconstruction.

■ High-density Point Cloud Scanning

With a scanning frequency of up to 72 kHz and an angular resolution as fine as 0.075°, it ensures highly detailed surface scanning without missing any details.
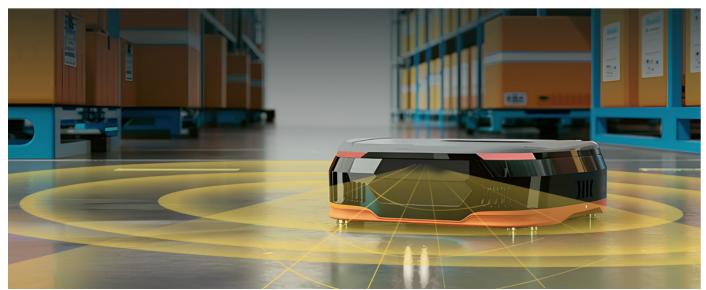
■ Robust Environmental Perception

Reliable ranging capability, combined with a multi-echo noise filtering design, enables precise scanning and accurate data feedback, even in environments containing light dust or fog.
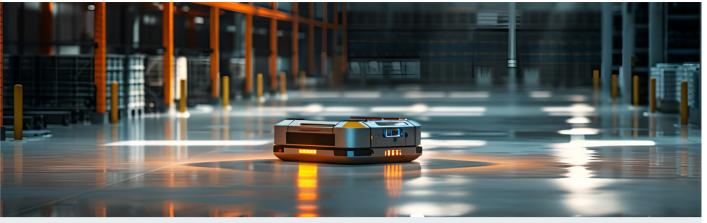

■ Accurate and Consistent Mapping

High degree of point cloud consistency, ensuring uniform distribution of accuracy tand precision trends, and avoiding the presence of varying positive or negative offsets.This enables each sensor to generate maps of consistent quality, enabling reliable environmental reconstruction.

● Applications

Warehouse AMRs

Commercial Service Robots

Autonomous Forklifts

● Product Specifications

Note:[1] At least 100 times data statistics are collected. The accuracy is the difference between the mean and true value of the data, and the precision is the standard deviation value of the data (1σ).
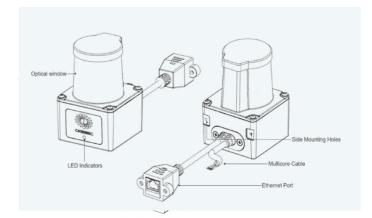
General	
Measurement PrincipleTechnology	dToF
Measurement Range	45.0m @ 90%; 15.0m @ 10%
Accuracy[1]	±20mm @ 90%; ±25mm @ 10%
Precision[1]	≤15mm @ 90% & 10%
Scanning Angle	270°
Measurement Frequency	72kHz
Angular Resolution	0.075°/0.1°/0.125°/0.15°/0.2°
Emission Pitch Angle	0° ± 0.5°
Laser Wave Length	905 ± 10nm

Structure	
Dimensions (L x W x H)	60mm × 60mm × 88mm
Weight	~320g

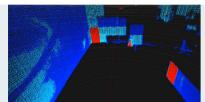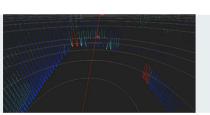| Environment	
Ambient Operation Temperature	−10℃ ~ 55℃
Laser Class	Class 1
Ingress Protection	IP65

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Pulsar ME450

Pulsar ME450 is an innovative dToF-based 3D LiDAR that supports multiple scanning patterns. It features a high-performance optical system that combines MEMS-based pitch scanning with motorized azimuth control, and emits 200 kHz laser pulses through a precisely engineered opto-mechanical design. It offers a maximum detection range of up to 45 meters at 90% reflectivity. This enables flexible switching between scanning patterns for use in robot navigation and obstacle avoidance, as well as in general-purpose laser scanning for surveying.
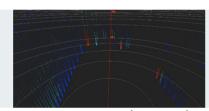
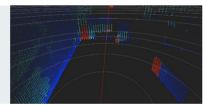## ■ Configurable Repetitive & Non-repetitive Scanning

Non-repetitive Scanning

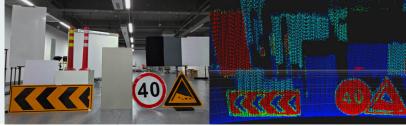Repetitive Scanning（Non-dense）

Repetitive Scanning (2x Dense)

Repetitive Scanning (4x Dense)

■ Achieves millimeter-level accuracy and precise localization for high-fidelity 3D reconstruction, as well as reliable reflectivity detection.

*Millimeter-level accuracy applies under typical indoor conditions—e.g., white walls within 30 m or 10% reflectivity targets within 10 m. In outdoor or long-range cases, error may exceed 10 mm.

Applications

Lawn Mowers

Forklifts

Warehouse AMRs

Logistics Vehicles

Product Specifications

Note:[1] At least 100 times data statistics are collected. The accuracy is the difference between the mean and true value of the data, and the precision is the standard deviation value of the data (1 σ).

Product Specifications	
Measurement principle	dToF
Measurement range	0.1~45.0m@90% ； 0.1~15.0m@10%
Accuracy [1]	±30mm
Precision [1]	≤20mm
Output data	Distance, angle, feature
Horizontal FoV	270º
Vertical FoV	60º, can be set as 45º/ 30º
Measurement frequency	200kHz
Horizontal rotation frequency	10Hz/15Hz/20Hz
Vertical scanning frequency	1100Hz±25Hz
Laser wave length	905±10nm
Time synchronization	PTP, GPS, PPS
IMU	Built-in IMU, 6-axis
Ambient light limit	80,000Lux

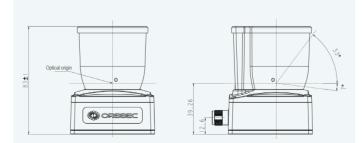| Physical Parameters	
Operating voltage	24V（9~28V DC）
Power consumption	Typ.＜6W
Interface type	M12 8P aviation connector, 100 Mbps network
Dimensions	65mm×65mm×83mm(L×W×H)
Weight	~272g (without connection cable)
Degree of protection	IP67
Laser class	Class 1
Ambient operation temperature	-20℃~55℃
Storage temperature	-40℃~70℃
Relative humidity	0~85%

Scan the code to view more product information

ORBBEC

ORBBEC INC.

Tel: +86 755-86722886
E-mail: business@orbbec.com
Web: www.orbbec.com
Add: Orbbec Technology Building, No. 88 High-tech
North 1st Road, Nanshan District, Shenzhen, China

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