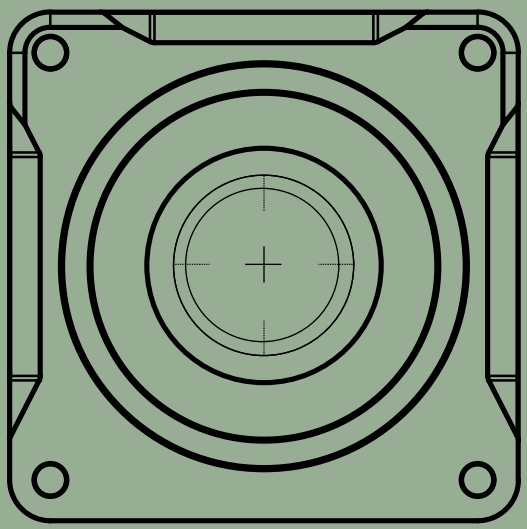
*ZED X One S

Monocular Camera Overview

The ZED X One S is an ultra-compact global-shutter camera built for tight robotic integrations, from high-speed pick-and-place AI systems to emerging humanoid platforms.

Its minimal footprint and lightweight design streamline mounting, while the global shutter delivers crisp captures of fast, dynamic motion.

The versatile lens suite adapts the camera to any setup. Options include a new fisheye lens for panoramic awareness, an IP69K wide-angle model engineered for harsh environments, and a narrow FOV configuration optimized for specific AI tasks.



ZED X One S Datasheet Revision History

Document Version	Description	Revision Date
1.0	• Initial release	December 2025
1.1	• Added: ZED X One S part numbers	January 2026
1.2	• Added: ZED X One S accessories	February 2026
1.3	• Added: Sensor positions	March 2026
1.4	• Added: Dimensions on technical drawings	April 2026
1.5	• Added: Sensor positions relative to mounting points	May 2026
1.6	• Added: Sensor specifications	June 2026
1.7	• Added: Compliance and certificates	July 2026
1.8	• Added: I2C address map	July 2026

*ZED X One S General Specifications



Ultra-compact form factor
A 35% smaller and lighter design fits tight robotic layouts and high-density sensor configurations, simplifying integration on arms, end-effectors, and humanoid platforms while expanding placement flexibility.

Secure GMSL2 connection
GMSL2 connectivity is ideal for robotics. Transmit video without EMI and high data rate through a lockable interface to a Jetson Orin over a distance of up to 15M with low latency.

Multi-camera synchronization
Hardware synchronization for multiple connected cameras at frame-level within 15 microseconds. Capture RGB and depth images of the same scene with multiple cameras all triggered at the same time.

High-performance global shutter
The global shutter and Full-HD 60 fps sensor capture fast motion with no distortion or blur, delivering sharp, reliable images for dynamic robotic tasks.

High-performance IMU
The all-new IMU combines a 16-bit triaxial accelerometer and gyroscope with vibration resistance, ultra low noise and bias for exceptional motion tracking.

Fisheye and IP69K options
Choose from versatile lens options, including a new fisheye lens for maximum field awareness and an IP69K-rated Wide lens that resists demanding industrial environments.

Camera

Sensor Type	1/2.6" 2.3MP CMOS - Global Shutter
Output Resolution	1920x1200 @60fps 1920x1080 @60fps 960x600 @120fps
Image Format	16:10
Output Format	Raw 10 / YUV 4:2:2 (Argus)
Field of View	
Narrow lens	Max. 73°(H) x 45°(V) x 87°(D)
Wide lens	Max. 110°(H) x 80°(V) x 120°(D)
Fisheye lens	Max. 204° (H) x 137° (V) x 218° (D)
Focal Length	
Narrow lens	4.6mm (0.18")
Wide lens	2.2mm (0.086")
Fisheye lens	1.38mm (0.054")
Aperture	
Narrow lens	f/2.0
Wide lens	f/2.2
Fisheye lens	f/2.0
Distortion	
Narrow lens	-6.7% <
Wide lens	< 4.39%
Fisheye lens	+18.8% f-theta
Interface	GMSL2 Serial Coax GMSL2 Connector - FAKRA Z Type

Sensors

IP69K with Wide lens only

Image	RGB Global Shutter Sensor
Motion	BOSCH BMI088 IMU

Physical Specifications

Dimensions	
Narrow lens	25 x 25 x 35.7mm (0.98 x 0.98 x 1.41")
Wide lens	25 x 25 x 39.0mm (0.98 x 0.98 x 1.54")
Fisheye lens	25 x 25 x 34.2mm (0.98 x 0.98 x 1.34")
Mounting	Bottom: 2x M2x0.4x4mm | 2xM2x0.4x1.2mm Front: 4x M2x0.4x6mm
Weight	
Narrow lens	33g (0.07 lb.)
Wide lens	37g (0.08 lb.)
Fisheye lens	36g (0.08 lb.)
Power	Power over GMSL2 (PoC) Typical consumption: 0.89W (0.074A 12V)
Power Supply Ratings	5V to 20V
Environment	
IP-rating	IP69K (Wide lens)
Operating Temp.	-20°C to +60°C (-4°F to 140°F)
Relative Humidity	90% at 40°C
Vibrations	2g RMS @ 3-500Hz, 1h/axis
Warranty	2-year warranty

System Requirements

System	NVIDIA Jetson
OS	Jetson Linux (L4T) v35.1 or newer

*ZED X One S Detailed Specifications

Image Sensor

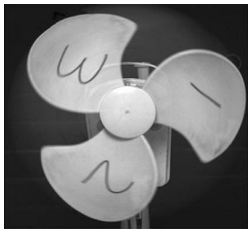
The ZED X One S sensor delivers 2.3MP clarity and great low-light capabilities, ideal for capturing crisp and distortion-free footage of fast moving objects in robotics applications.

Sensor Type	1/2.6” 2.3MP RGB
Array Size	1928 x 1208 pixels
Pixel Size	3µm x 3µm
Chief Ray Angle	0°
Recommended Lens CRA	0° ± 3°
Shutter	Electronically Synchronized Global Shutter
Output Resolution (Side by side)	1920x1200 @60fps 1920x1080 @60fps cropping mode 960x600 @120fps binning mode
Output Format	RAW10 (v4l2) / NV21 (Argus)
Max S/N Ration	38 dB
Dynamic Range	71.4 dB
Sensitivity	22.3Ke/Lux*s
Camera Control	Exposure, analog & digital gain, gamma, white balance, saturation, sharpness, denoising, brightness, contrast

Distortion free images of fast moving objects



Rolling Shutter



Global Shutter

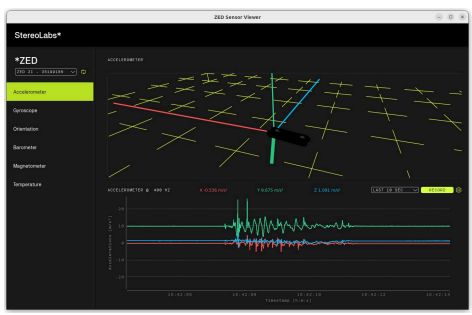
The integrated IMU is a high-performance 6-axis inertial sensor with a 16-bit triaxial accelerometer and gyroscope, providing precise orientation and motion detection of the camera. Offering high vibration robustness and excellent temperature stability, it’s ideal for harsh industrial robotics environments.

Motion Sensor	BOSCH BMI088 IMU
Accelerometer Range	± 12G
Accelerometer Resolution	0.36 mg
Accelerometer Noise Density	2.3 mg
Gyroscope Range	± 1000 dps
Gyroscope Resolution	0.03 dps
Gyroscope Noise Density	0.20 dps
Sensitivity Error	± 0.5%
Output Data Rate	200 Hz

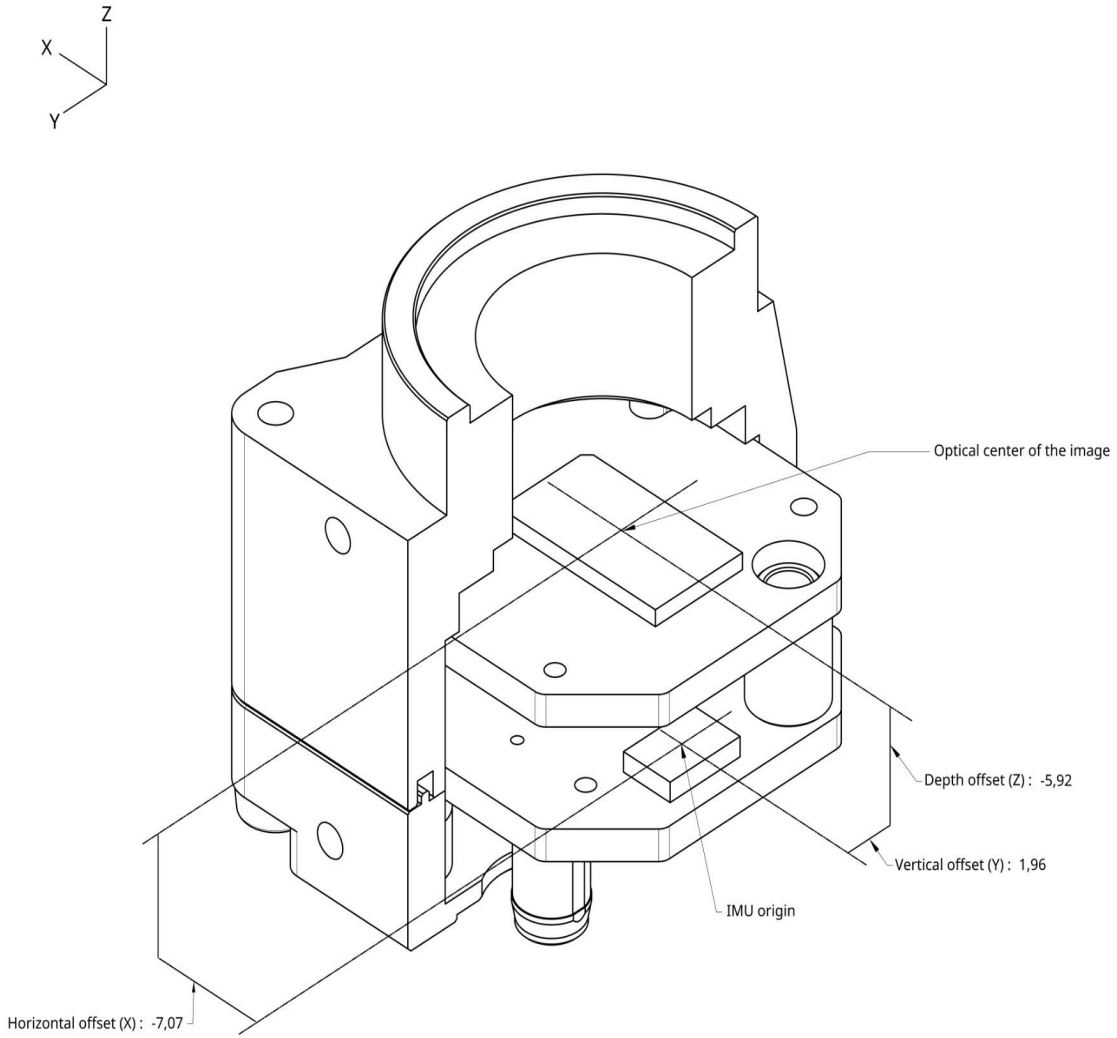
Sensors API

You can access these sensors and acquire sensor data by using the Sensors API.

Please visit stereolabs.com/docs for tutorials.

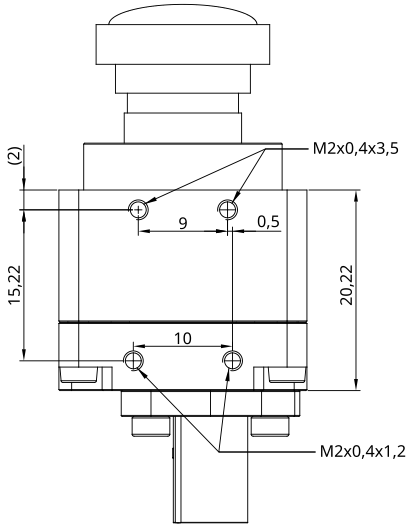


*ZED X One S
Sensor Positions

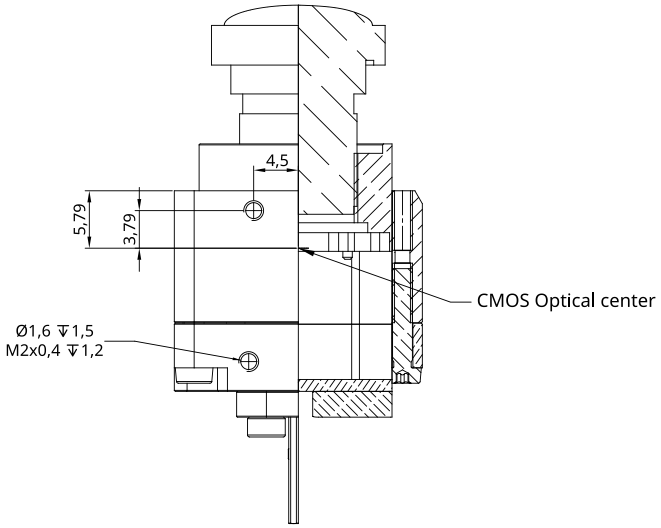


The offset values specify the location of the IMU origin
with respect to the center of the image plane

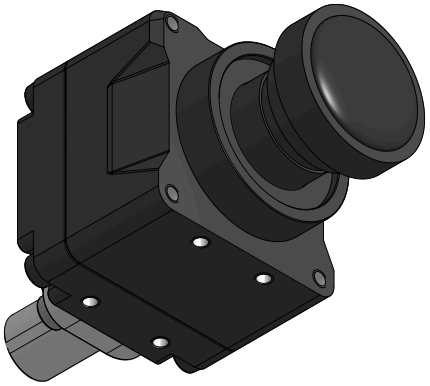
*ZED X One S Sensor Positions



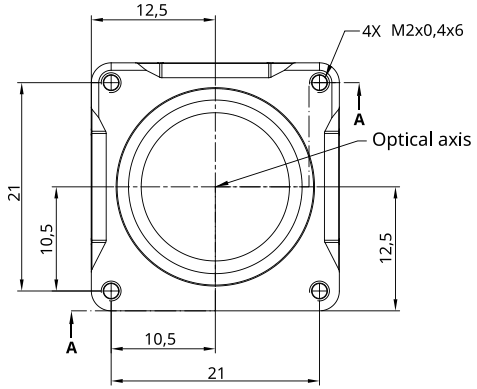
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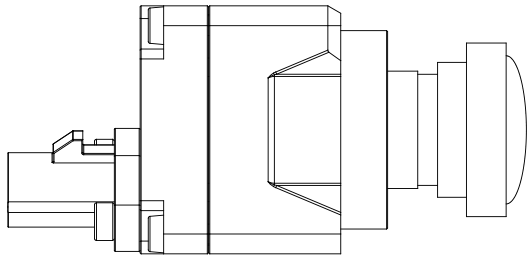
A - A



Isometric

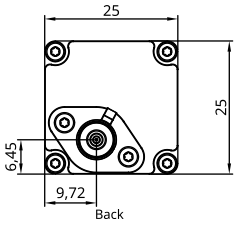


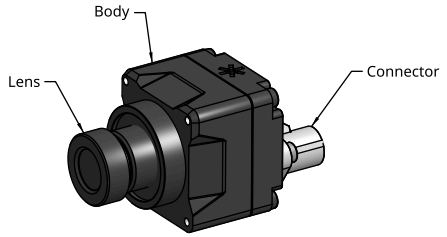
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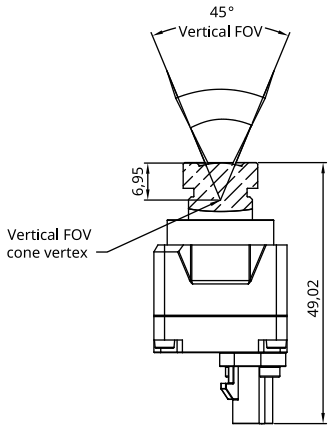
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*ZED X One S - Narrow lens Technical Drawings

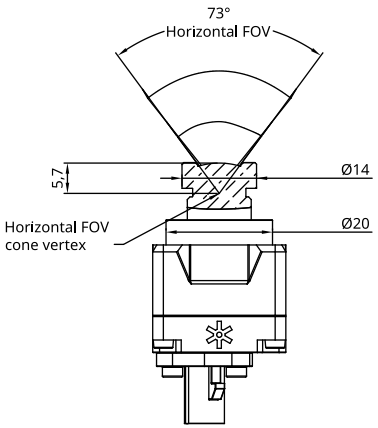




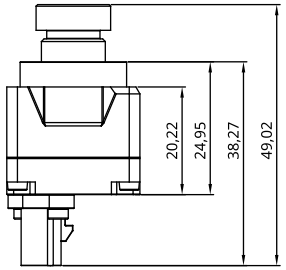
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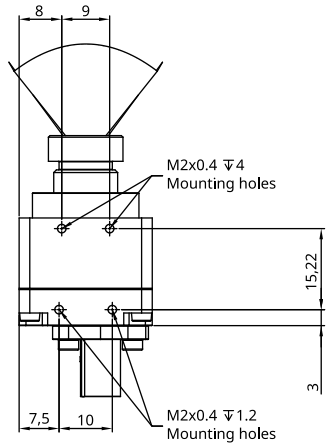
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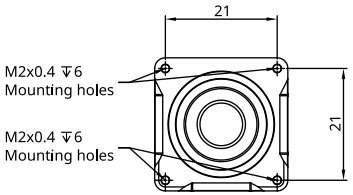
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Left

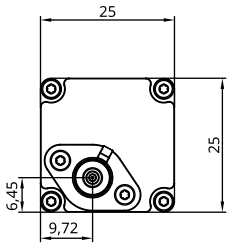


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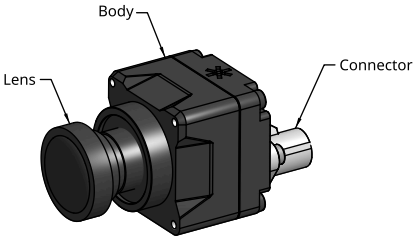


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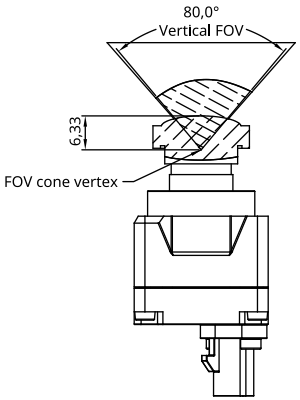
*ZED X One S - Wide lens Technical Drawings



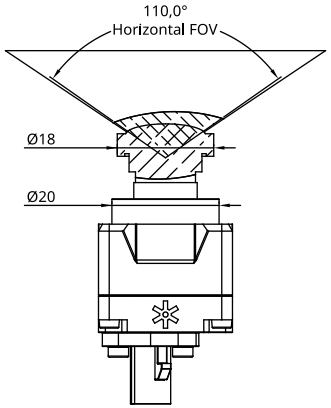
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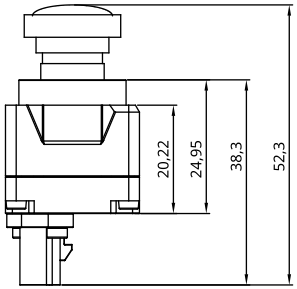
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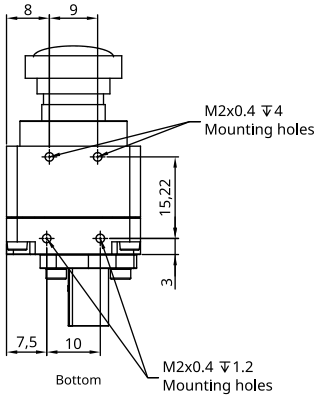
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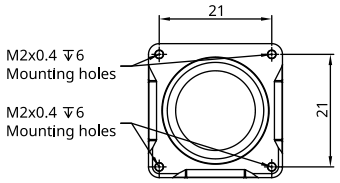
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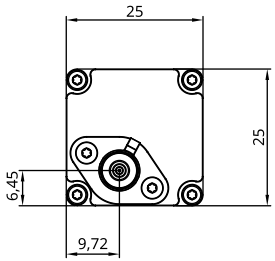


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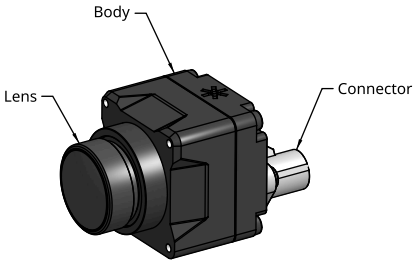


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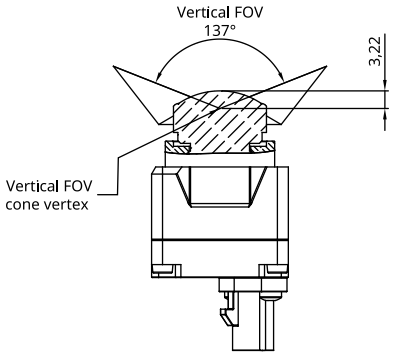
*ZED X One S - Fisheye lens Technical Drawings



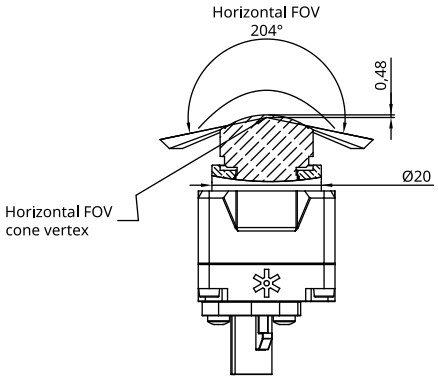
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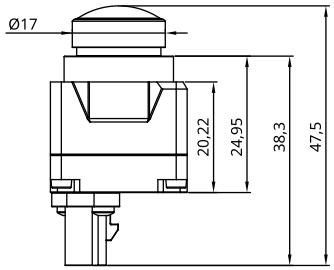
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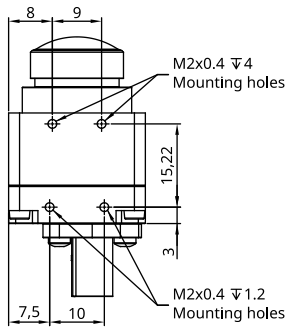
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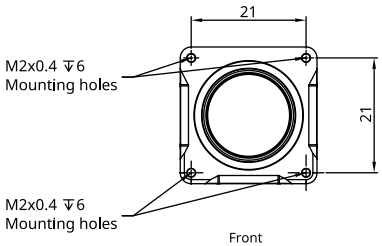
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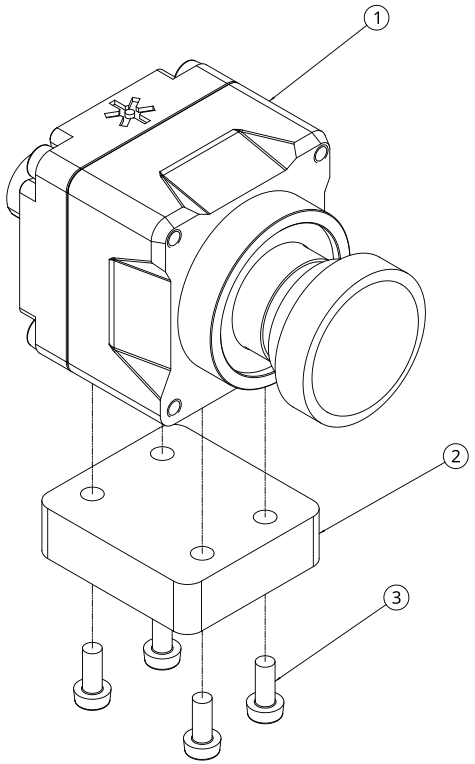


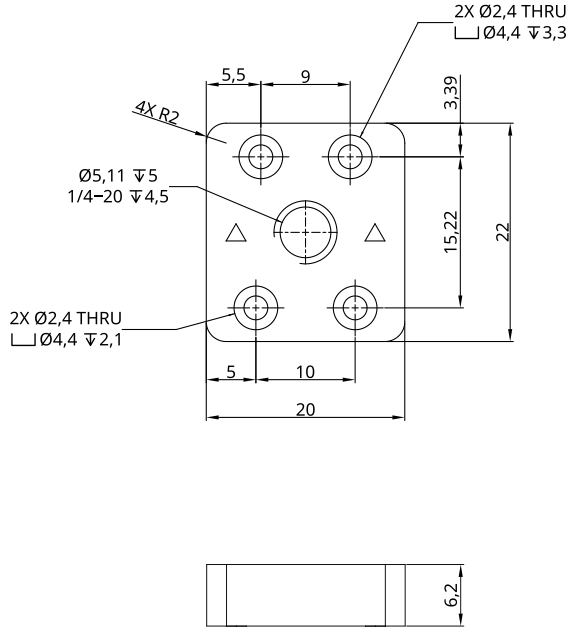
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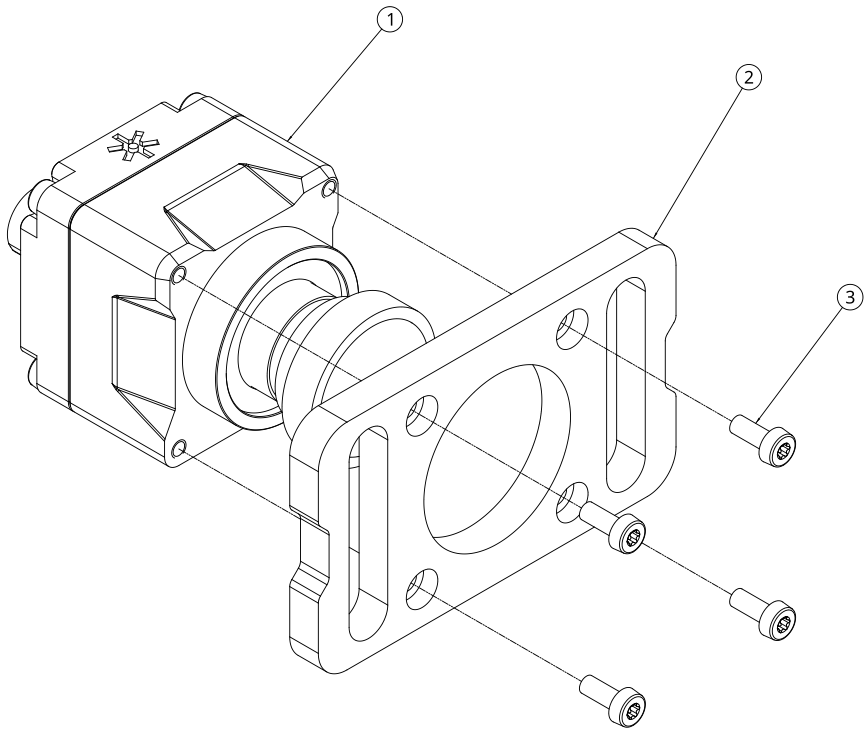
Front

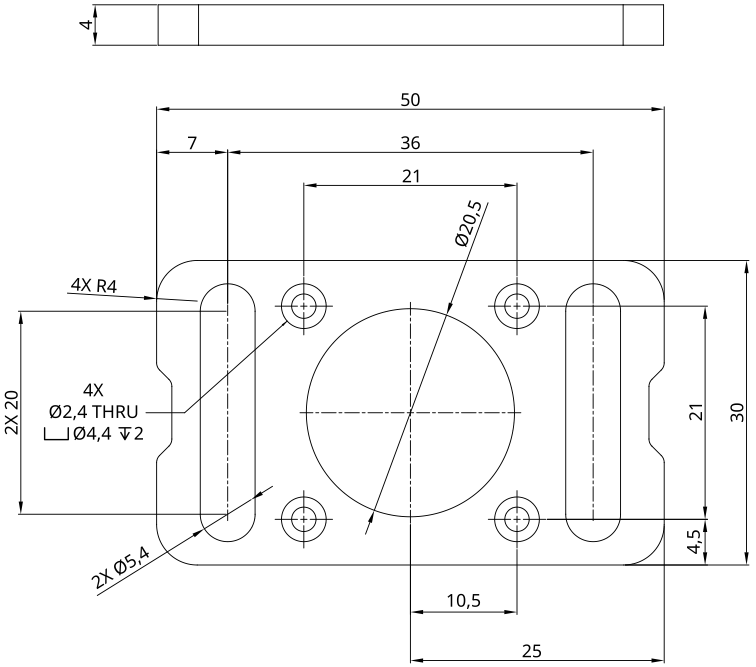
*ZED X One S - Adapter plate Mounting Guide



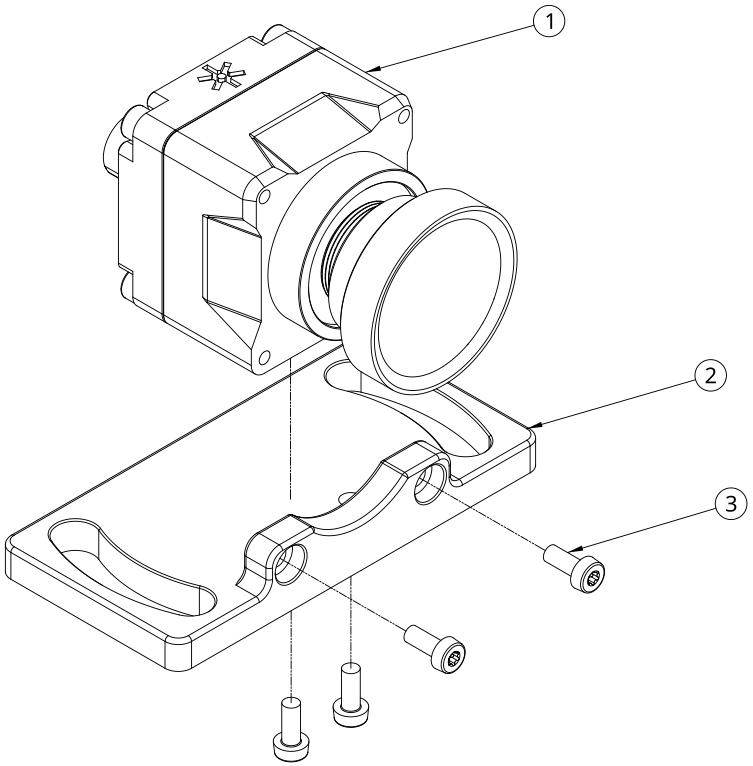


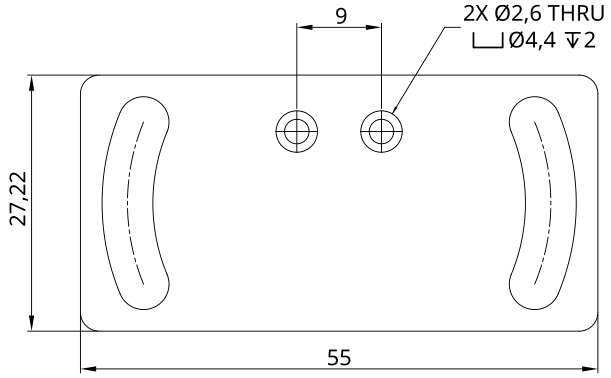
*ZED X One S - Front mount Mounting Guide

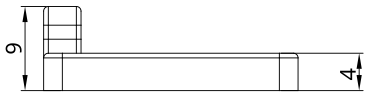


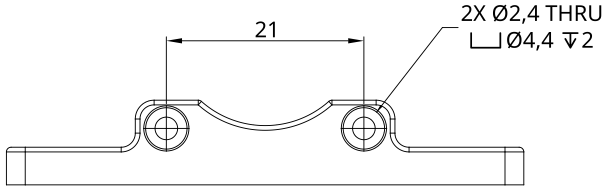


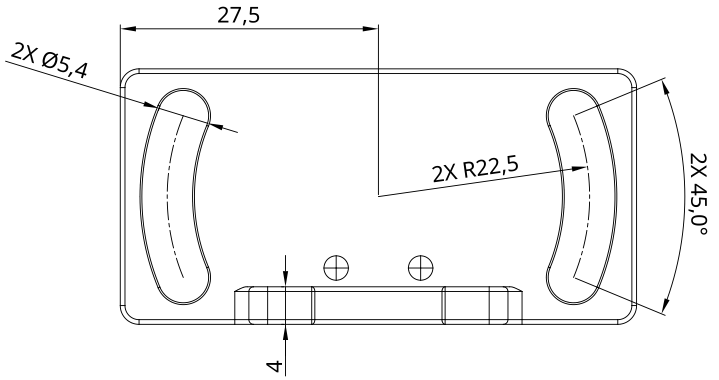
*ZED X One S - Bottom mount Mounting Guide







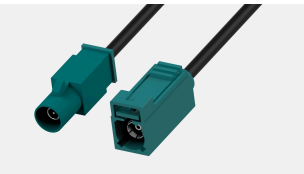




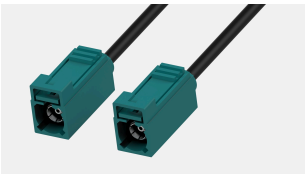
*ZED X One S Accessories

FAKRA Z Cables

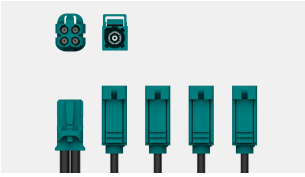
A wide range of camera cables are readily available, tailored to diverse requirements and applications, offered in varying lengths to suit both compact and expansive setups.



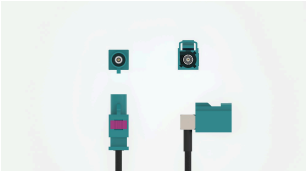
Male to Female	
0.5m (1.6ft)	CBL-310800
1.5m (4.93ft)	CBL-310100
5m (16.4ft)	CBL-310200
10m (32.8ft)	CBL-310300
15m (49.2ft)	CBL-310400



Female to Female	
0.3m (0.98ft)	CBL-320100
1.5m (4.93ft)	CBL-320200
5m (16.4ft)	CBL-320300
10m (32.8ft)	CBL-320400



Female to Female 1-to-4	
0.5m (1.64ft)	CBL-320510



Right-Angle Extension	
0.3m (0.98ft)	CBL-310500
0.5m (1.6ft)	CBL-310900

ZED Box Embedded Computers

Stereolabs ZED Boxes are powered with NVIDIA Jetson Orin modules and serves as a robust AI embedded computers for autonomous robotics and AI applications.



Model	ZED Box Orin NX
Jetson Modules	Orin NX 8GB, NX 16GB
I/Os	3x USB 3.2 Gen2 (10 Gbps) 1x Gigabit Ethernet 1x HDMI 4x GMSL2 ** WiFi 6 connectivity 1x RTK GNSS GPS Ublox ZED F9P**



Model	ZED Box Mini
Jetson Modules	Orin Nano 4GB, Nano 8GB, NX 8GB, NX 16GB
I/Os	2x GMSL2 1x USB 3.0 (5 Gbps) 1x Gigabit Ethernet 1x HDMI WiFi 6 connectivity**

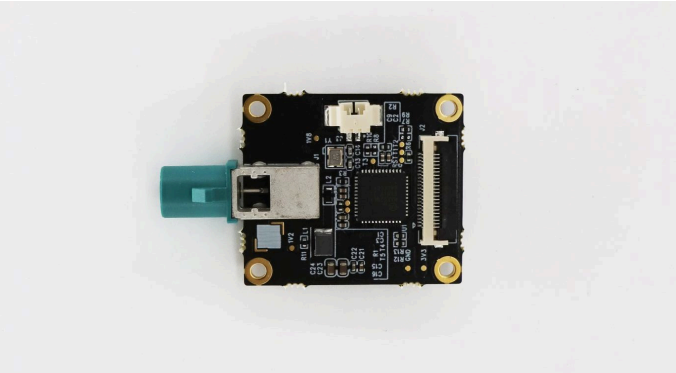
** Available as options.

The Multiband GNSS antenna ANN-MB-00 is an additional accessory.

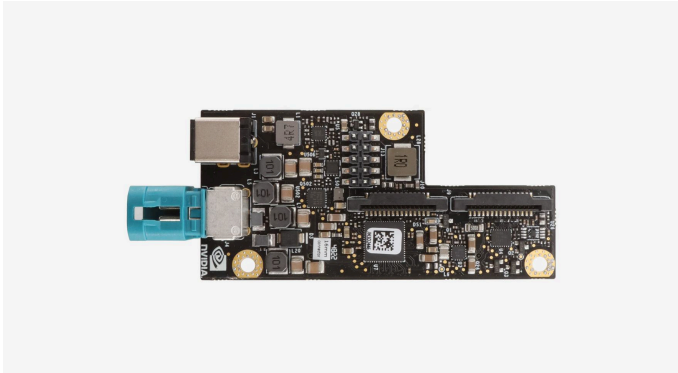
*ZED X One S Accessories

Capture Cards

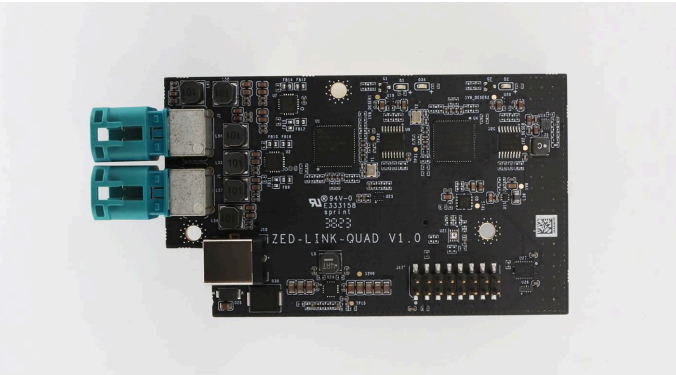
To capture the ZED X One S on the NVIDIA Jetson AGX platform, one solution is to utilize a GMSL2 capture card that directly connects to the Jetson's CSI port.



Model	ZED Link Mono Capture Card
Compatibility	NVIDIA Jetson Orin Platform (NX/Nano) NVIDIA Jetson Xavier Platform (NX)
Max. number of cameras	Capture 1x GMSL2 camera input in SD/HD, up to 1920x1200@60fps
Deserializer	MAX9296A
Power	Requires external 9-14V power supply.



Model	ZED Link Duo Capture Card
Compatibility	NVIDIA Jetson Orin Platform (AGX/NX/Nano) NVIDIA Jetson Xavier Platform (AGX/NX)
Max. Number of cameras	Capture 4x GMSL2 camera input in SD/HD, up to 1920x1200@30fps
Deserializer	MAX96712
Power	Connects to and is powered by the Samtec port of the Orin/Xavier AGX Developer Kit. Requires external power supply for NX/Nano (9V-19V) when using MIPI port.

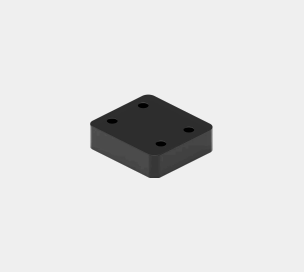


Model	ZED Link Quad Capture Card
Compatibility	NVIDIA Jetson Orin Platform (AGX) NVIDIA Jetson Xavier Platform (AGX)
Max. number of cameras	Capture 8x GMSL2 camera input in SD/HD, up to 1920x1200@30fps
Deserializer	2 x MAX96712
Power	Requires external 9-19V power supply.

*ZED X One S Accessories

ZED X One S mounts

Flexible, modular camera mounts that simplify integration across any robotic or industrial mechanical design.



Adapter plate

ACC-151200



Front mount

ACC-151300



Bottom mount

ACC-151400

*ZED X One S Interfaces

ZED X One S - I2C Address Map

Address (7-bit)	Device
0x10	AR0234 Image Sensor
0x42	Serializer
0x68	BMI IMU — Accelerometer
0x18	BMI IMU — Gyroscope
0x56	EEPROM
0x57	EEPROM

Notes

AR0234 Image Sensor	The address can be reassigned by the driver to another value via the sensor's internal registers.
BMI IMU	Usually translated to a different address, specified in the device tree, via the serializer.
EEPROM	Usually read only once, at driver probe time, by opening each link one by one.

*ZED X One S
Part Numbers & Compliance

ZED X One S Part Numbers

	ZED X One S No lens	ZED X One S Narrow lens (4.6mm)	ZED X One S Wide lens IP69K (2.2mm)	ZED X One S Fisheye lens (1.38mm)
SKU	ZED-411012	ZED-413012	ZED-412012	ZED-414012

Standards & Compliance

Certificate	Region
CE Declaration of Conformity	European Union
REACH	European Union
RoHS Compliance	European Union
TSCA	United States
EMC	European Union
FCC	United States
Certificate of Origin	Global