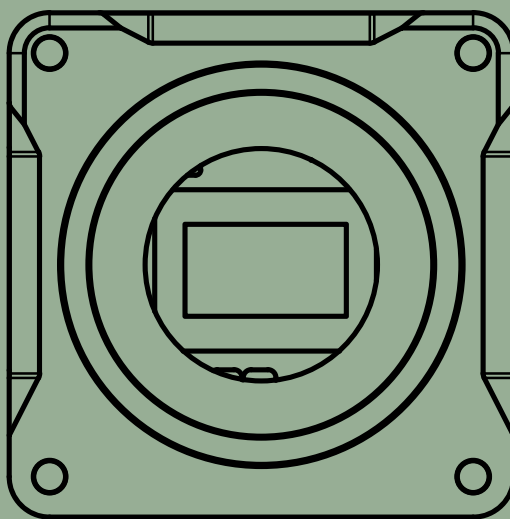# *ZED X One S

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
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.

IP69K with Wide lens only

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	
Fisheye lens	Max. 195° (H) x 115° (V) x 220° (D)
Wide lens	Max. 110°(H) x 80°(V) x 120°(D)
Narrow lens	Max. 80°(H) x 52°(V) x 91°(D)
Focal Length	
Fisheye lens	1.38mm (0.054")
Wide lens	2.2mm (0.086")
Narrow lens	3.8mm (0.150")
Aperture	
Fisheye lens	f/2.0
Wide lens	f/2.2
Narrow lens	f/1.8
Distortion	
Fisheye lens	+18.8% f-theta
Wide lens	< 4.39%
Narrow lens	< 6.9%
Interface	GMSL2
	Serial Coax GMSL2 Connector - FAKRA Z Type

Sensors

Image	RGB Global Shutter Sensor
Motion	BOSCH BMI088 IMU

Physical Specifications

Dimensions	
Fisheye lens	25 x 25 x 34.2mm (0.98 x 0.98 x 1.34")
Wide lens	25 x 25 x 38.7mm (0.98 x 0.98 x 1.52")
Narrow lens	25 x 25 x 38.1mm (0.98 x 0.98 x 1.50")
Mounting	Bottom: 2x M2x0.4x4mm and 2x M2x0.4x1.2mm
	Front: 4x M2x0.4x6mm
Weight	
Fisheye lens	36g (0.08 lb.)
Wide lens	37g (0.08 lb.)
Narrow lens	33g (0.07 lb.)
Power consumption	Power over GMSL2 (PoC)
	0.89W (12V)
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 CMOS
Array Size	1928 x 1208 pixels
Pixel Size	3μm x 3μm
Shutter	Electronical synchronized global shutter
Output Resolution	1920x1200 @60fps 1920x1080 @60fps cropping mode 960x600 @120fps binning mode
Output Format	RAW10 (v4l2) / NV21 (Argus)
Max S/N Ratio	38dB
Dynamic Range	71.4dB
Sensivity	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
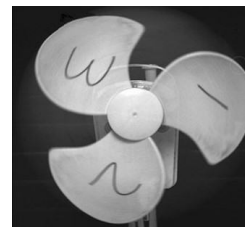
Global Shutter
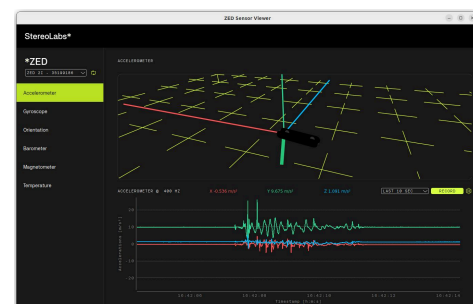
Motion Sensor BMI088 IMU

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 our cameras. 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	3.2 mg
Gyroscope Range	+/- 1000 dps
Gyroscope Resolution	0.03 dps
Gyroscope Noise Density	0.10 dps
Sensitivity Error	+/- 0.5%
Output Data Rate	400 Hz

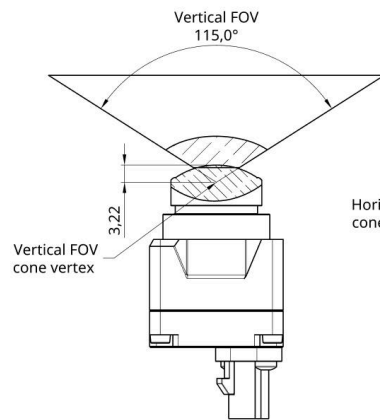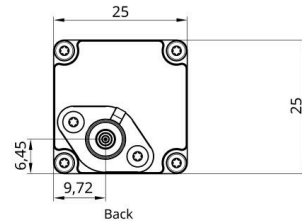### Sensors API

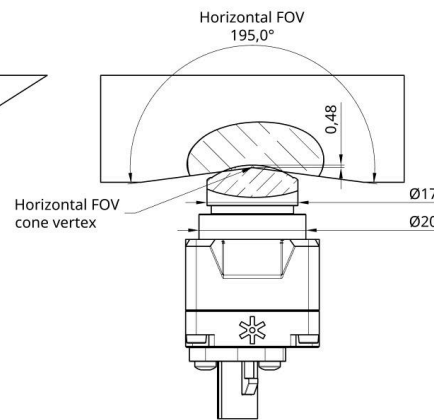You can access these sensors and acquire sensor data by using the Sensors API.
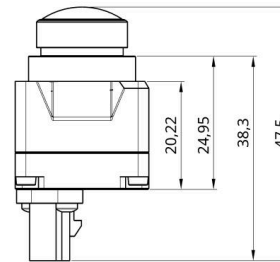
Please visit stereolabs.com/docs for tutorials.
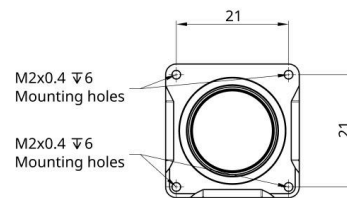
*ZED X One S – Fisheye lens
Technical Drawings

25

25

6,45

9,72

Back

Body
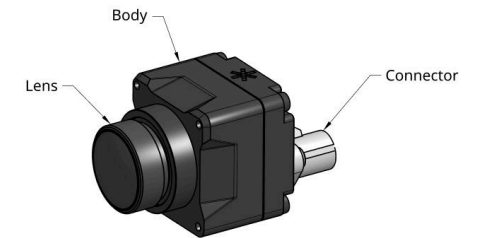
Lens

Connector

2:1

Vertical FOV
115,0°

Horizontal FOV
195,0°

3,22

Vertical FOV
cone vertex

Horizontal FOV
cone vertex

0,48

Ø17

Ø20

Right

Top

20,22

24,95

38,3

47,5

Left

8

9

M2x0.4 ⍂4
Mounting holes

15,22

3

7,5

10

M2x0.4 ⍂1.2
Mounting holes

Bottom

21

M2x0.4 ⍂6
Mounting holes

M2x0.4 ⍂6
Mounting holes

21
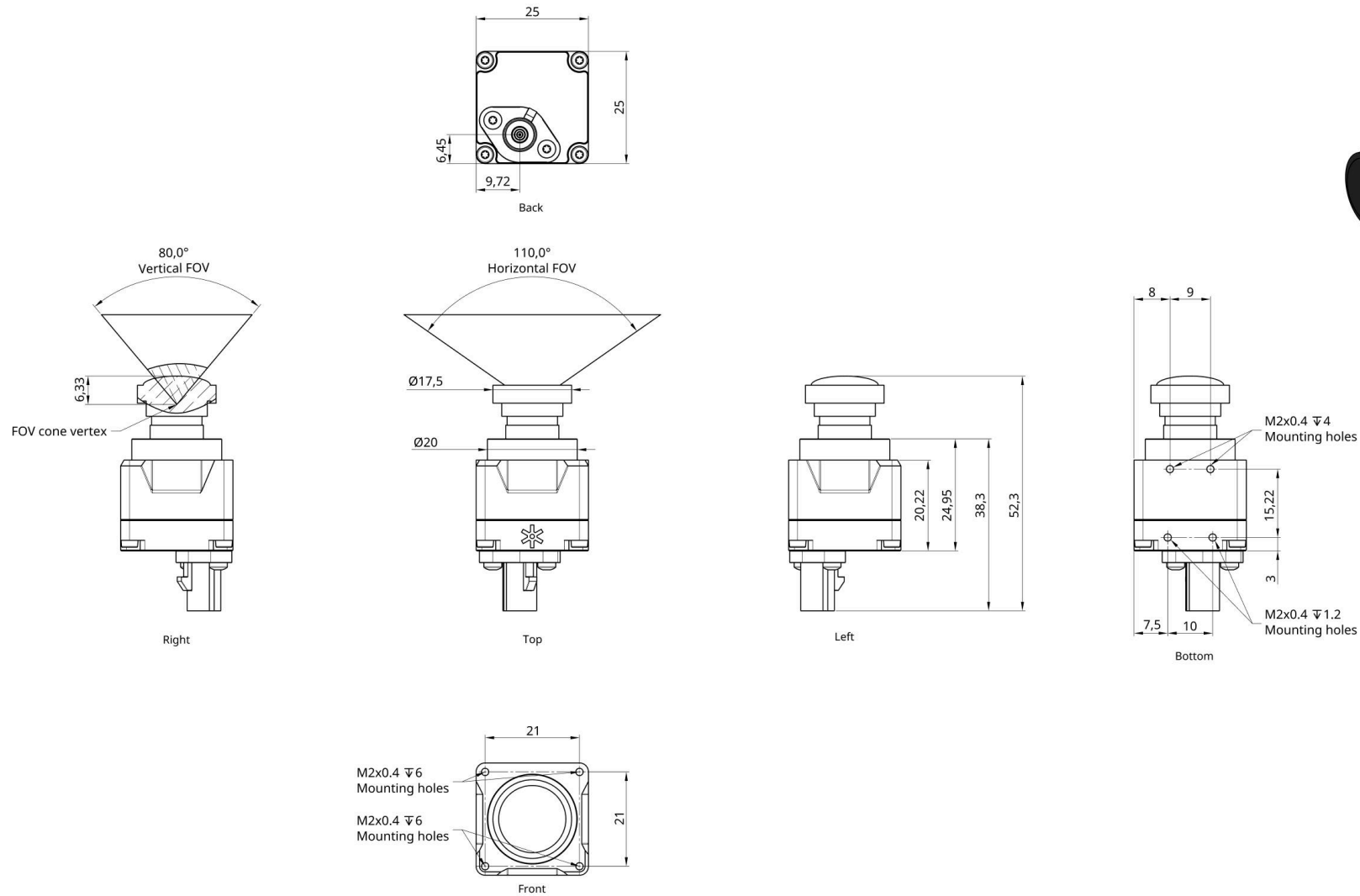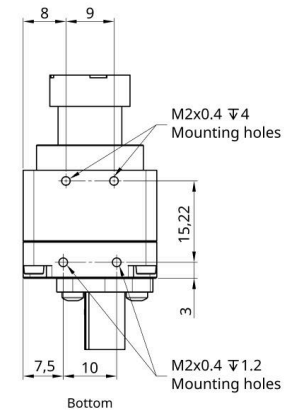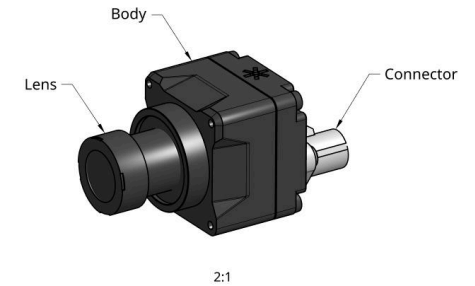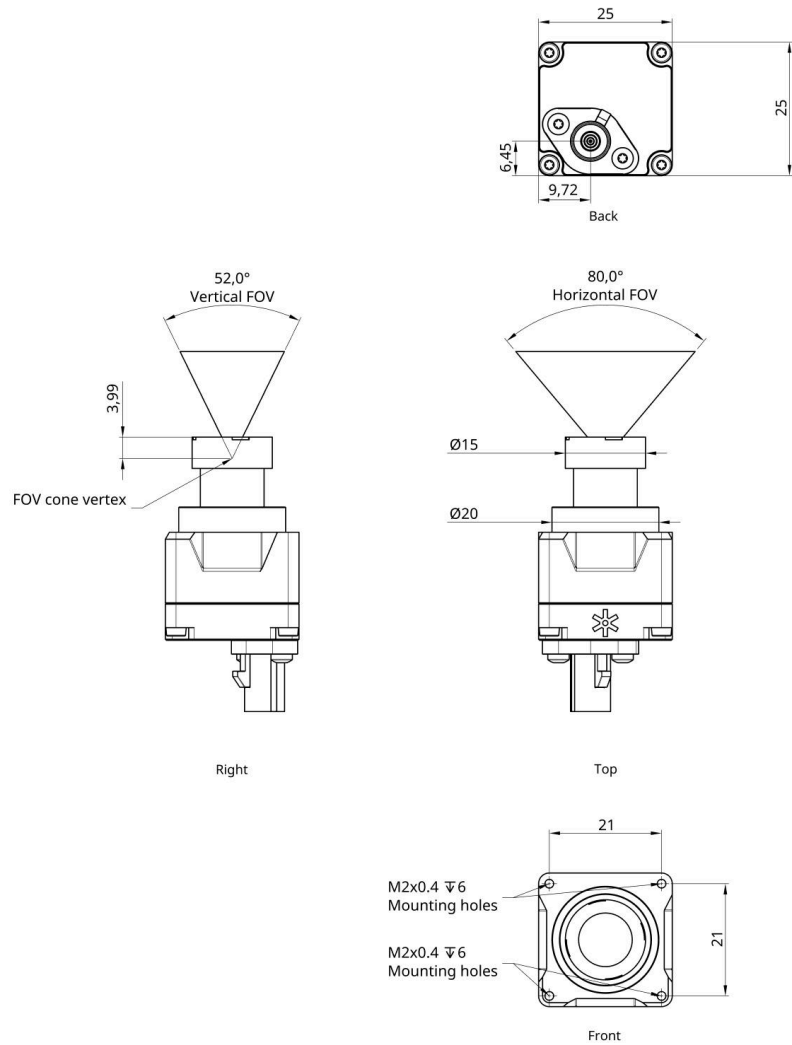
Front
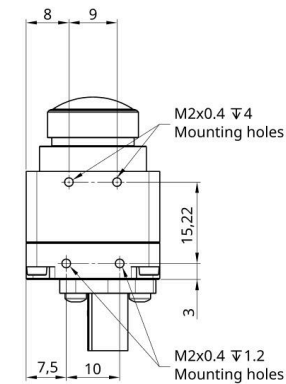
*ZED X One S – Wide lens
Technical Drawings

Lens — Body — Connector

2:1

Back

25
25
6,45
9,72

Right

80,0°
Vertical FOV
6,33
FOV cone vertex

Top

110,0°
Horizontal FOV
Ø17,5
Ø20

Left

20,22
24,95
38,3
52,3

Bottom

8 9
M2x0.4 ⍔4
Mounting holes
15,22
3
7,5 10
M2x0.4 ⍔1.2
Mounting holes

Front

21
21
M2x0.4 ⍔6
Mounting holes
M2x0.4 ⍔6
Mounting holes

StereoLabs*

stereolabs.com
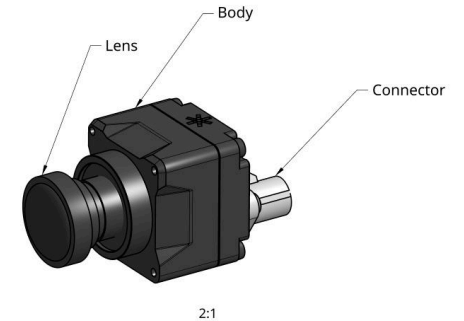
*ZED X One S – Narrow lens
Technical Drawings

25

25

6,45

9,72

Back

Body

Lens

Connector

2:1

52,0°
Vertical FOV

3,99

FOV cone vertex

Right

80,0°
Horizontal FOV

Ø15

Ø20

Top

Left

20,22

24,95

38,3

51,4

8 9

M2x0.4 ▽4
Mounting holes

15,22

3

7,5 10

M2x0.4 ▽1.2
Mounting holes

Bottom

21

M2x0.4 ▽6
Mounting holes

M2x0.4 ▽6
Mounting holes

21

Front

stereolabs.com

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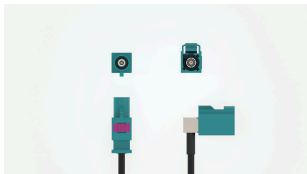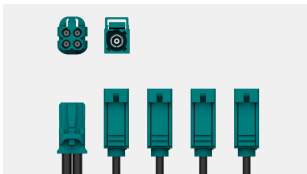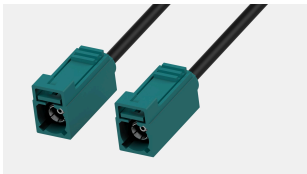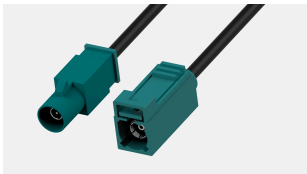
Male to Female	
0.5m (1.6ft)	CBL-310800
1.5m (4.93ft)	CBL-310100
5m (16.4ft)	CBL-310200
10m (32.8ft)	CBL-310300
15m (49.2ft)	CBL-310400

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 GS on the NVIDIA Jetson AGX platform, one solution is to utilize a GMSL2 capture card that directly connects to the Jetson's CSI port.
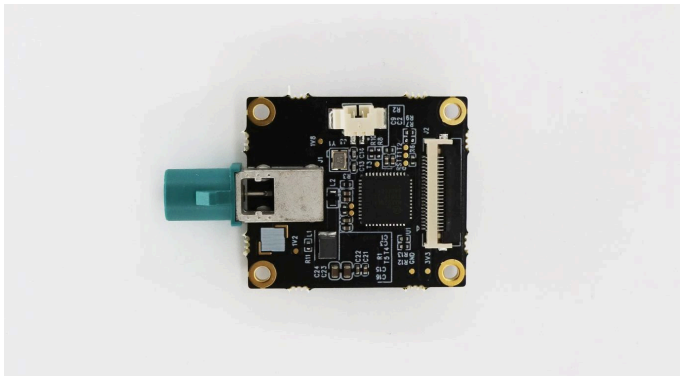
Model	ZED Link Mono Capture Card
Compatibility	NVIDIA Jetson Orin Platform (NX/Nano) NVIDIA Jetson Xavier Platform (NX)
Max. number of cameras	Capture 1x GMSL2 camera input in SD/HD, up to 1920x1200@60fps
Deserializer	MAX9296A
Power	Requires external 12-19V power supply.
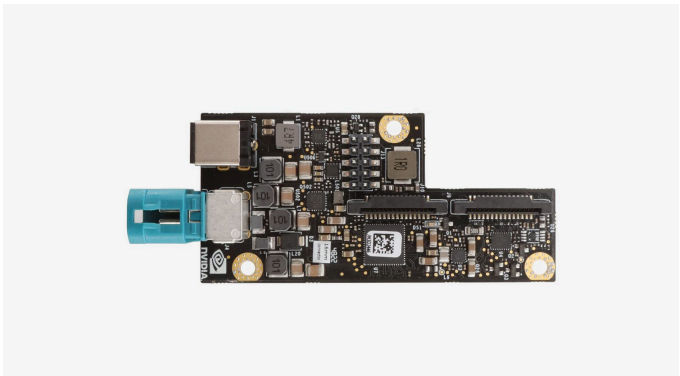
Model	ZED Link Duo Capture Card
Compatibility	NVIDIA Jetson Orin Platform (AGX/NX/Nano) NVIDIA Jetson Xavier Platform (AGX/NX)
Max. Number of cameras	Capture 4x GMSL2 camera input in SD/HD, up to 1920x1200@30fps
Deserializer	MAX96712
Power	Connects to and is powered by the Samtec port of the Orin/Xavier AGX Developer Kit. Requires external power supply for NX/Nano (12V-19V) when using MIPI port
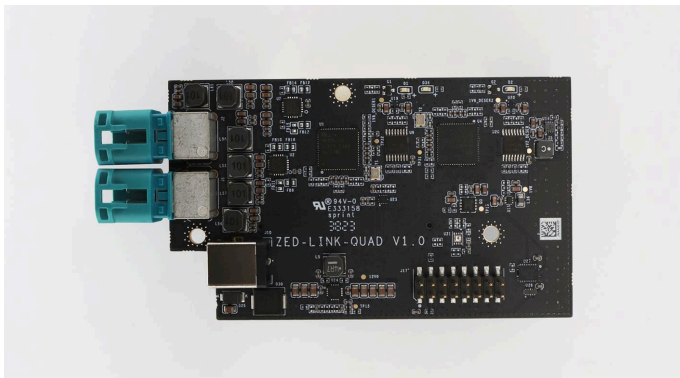
Model	ZED Link Quad Capture Card
Compatibility	NVIDIA Jetson Orin Platform (AGX) NVIDIA Jetson Xavier Platform (AGX)
Max. number of cameras	Capture 8x GMSL2 camera input in SD/HD, up to 1920x1200@30fps
Deserializer	2 x MAX96712
Power	Requires external 12-19V power supply.

*ZED X One S
Part Number

ZED X One S Part Number

	ZED X One S Without lens	ZED X One S Narrow lens	ZED X One S Wide lens IP69K	ZED X One S Fisheye lens
SKU	ZED-411012	ZED-413012	ZED-412012	ZED-414012