



DS series

Features Sony DepthSense TOF sensor

Class 1 Laser Product



- Sony ToF Sensor
- RGB + Depth
- Support PoE+

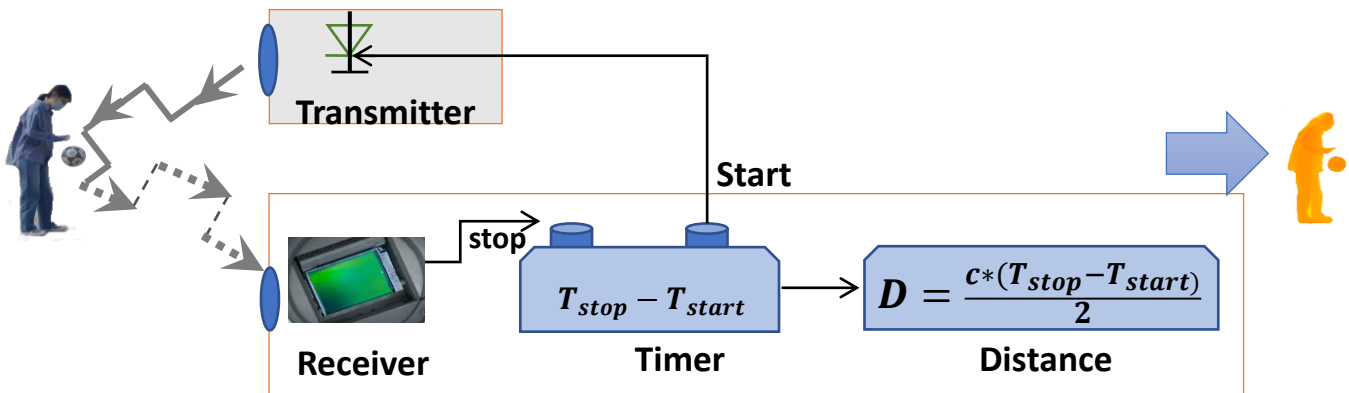


Focus on Industrial 3D Time-of-Flight Cameras

Letting Machines Perceive the 3D World

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www.vzense.com

3D Time-of-Flight Principle



A 3D time-of-flight sensor emits modulated infrared light outside the visible range. It is reflected by objects in its field of vision and then captured by the sensor. The time between the emission and reception of the reflected infrared light is called “time-of- flight” (ToF).

NEW DESIGN

RGB-D ToF Camera



DS86 & DS87

SONY ToF + RGB Camera

Industrial Grade

[Specification Download](#)

[2D Drawing Download](#)

Model	DS87	DS86
Part No.	608000200069	608000200067
Sensor	Sony DepthSense ToF CMOS+Global Shutter RGB	
Illumination	940nm 10W VCSEL * 2	
ToF Resolution/Frame rate	640*480dpi, Max.15fps	
ToF HDR Mode	Supported with Max. 10fps	
ToF FOV	60°(H)*45°(V)	
RGB Camera	1600*1200, 15fps, 70°(H)*50°(V)	
Output Format	16bit(depth) + 8bit(IR) + JPEG(RGB)	
Interface	1000Mbps Ethernet and RS485	
Physical Connection	M12+M8 Aviation Plugs	RJ45 + M8 Aviation Plugs
Power Supply	PoE+ or 12V~24V (DC), <7W	12V~24V (DC), <7W
Accuracy	<1% (4mm@1m) *	
Working Range	0.15m to 5m*	
Working Temperature	-20°C to 50°C	
Operation System & Platform	Windows/Linux/Arm Linux/ROS1/ROS2	
SDK	C/C++/Python/C#	
Enclosure Rating	IP67	IP42
Conformity	CE, FCC, FDA	
Back View		

* Accuracy and working range will vary with the reflectivity of the object

TOP SELLING

RGB-D ToF Camera DS77C



DS77C PRO & DS77C Lite

SONY ToF + RGB Camera

Industrial Grade

[Specification Download](#)

[2D Drawing Download](#)


DS77C Pro



DS77C Lite



EXW price

Model	DS77C PRO	DS77C LITE
Part No.	608000200024	608000200025
Sensor	Sony DepthSense ToF CMOS+Global Shutter RGB	
Illumination	940nm VCSEL * 2	
ToF Resolution/Frame rate	640*480dpi, Max.25fps	
ToF HDR Mode	Supported with Max. 15fps	
ToF FOV	70°(H)*50°(V)	
RGB Camera	1600*1200,25fps, 77°(H)*55°(V)	
Output Format	16bit(depth) + 8bit(IR) + JPEG(RGB)	
Interface	1000Mbps Ethernet and RS485	
Physical Connection	M12 Aviation Plug x 2	RJ45 x1 6pin Connector x 1
Power Supply	PoE+ or 12V~24V (DC), <7W	12V~24V (DC), <7W
Accuracy	<1% (4mm@1m) *	
Working Range	0.15m to 5m*	
Working Temperature	-20°C to 50°C	
Operation System & Platform	Windows/Linux/Arm Linux/ROS1/ROS2	
SDK	C/C++/Python/C#	
Enclosure Rating	IP67	IP42
Conformity	CE, FCC, FDA	
Back View	 	

* Accuracy and working range will vary with the reflectivity of the object



TOP SELLING

ToF Camera DS77



DS77 Pro



DS77 Lite



EXW price

DS77 PRO & DS77C Lite

SONY ToF Camera

Industrial Grade

[Specification Download](#)

[2D Drawing Download](#)

Model	DS77 PRO	DS77 LITE
Part No.	608000200022	608000200023
Sensor	Sony DepthSense ToF CMOS	
Illumination	940nm VCSEL * 2	
ToF Resolution/Frame rate	640*480dpi, Max.25fps	
ToF HDR Mode	Supported with Max. 15fps	
ToF FOV	70°(H)*50°(V)	
Output Format	16bit(depth) + 8bit(IR)	
Interface	1000Mbps Ethernet and RS485	
Physical Connection	M12 Aviation Plug x 2	RJ45 x1 6pin Connector x 1
Power Supply	PoE+ or 12V~24V (DC), <7W	12V~24V (DC), <7W
Accuracy	<1% (4mm@1m) *	
Working Range	0.15m to 5m*	
Working Temperature	-20°C to 50°C	
Operation System & Platform	Windows/Linux/Arm Linux/ROS1/ROS2	
SDK	C/C++/Python/C#	
Enclosure Rating	IP67	IP42
Conformity	CE, FCC, FDA	

Back View

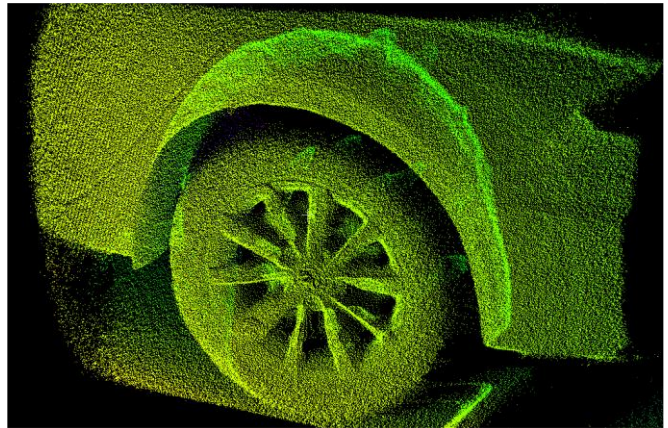


* Accuracy and working range will vary with the reflectivity of the object

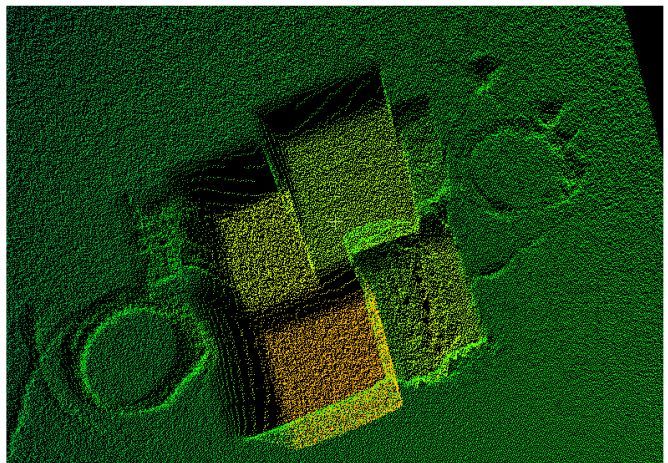


Key Feature

- High accuracy and precision
- HDR mode supported to obtain data in high contrast, complex scenes
- Works well under bright sunshine or in dark scenes
- 2MP RGB resolution, Global shutter (for DS86&DS87, DS77C Pro&Lite)
- Matched depth image and RGB image (for DS86&DS87, DS77C Pro&Lite)
- IP67 and aviation plugs option selectable



[Click to download Point Cloud Data with HDR ON/OFF](#)

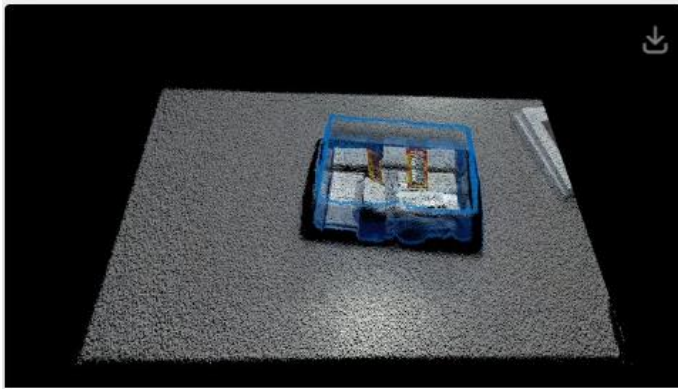


[Click to download Point Cloud Data with HDR ON/OFF](#)

More Data Reference

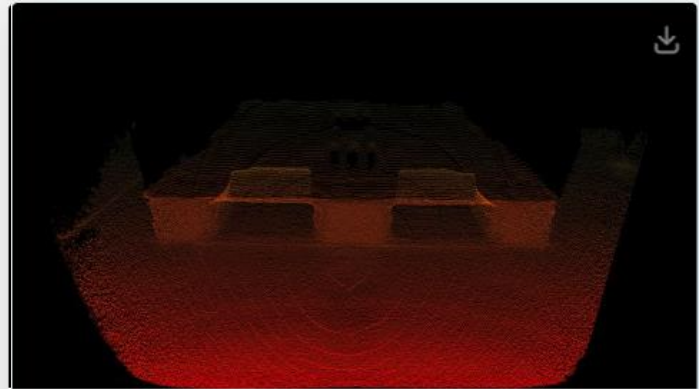
You can refer to or download more point cloud data here:

https://sketchfab.com/Vzense_ToF/models



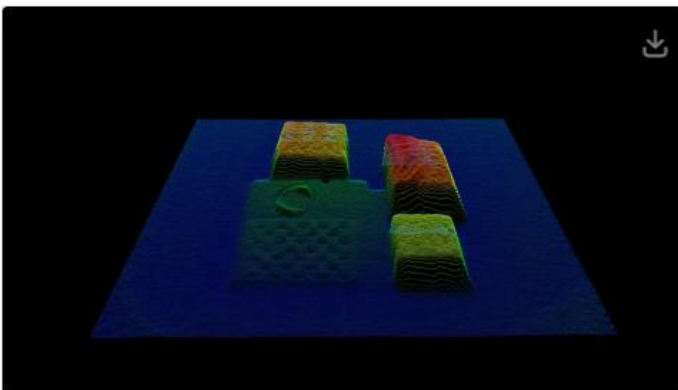
DS_Items In A Bin

6 0 0



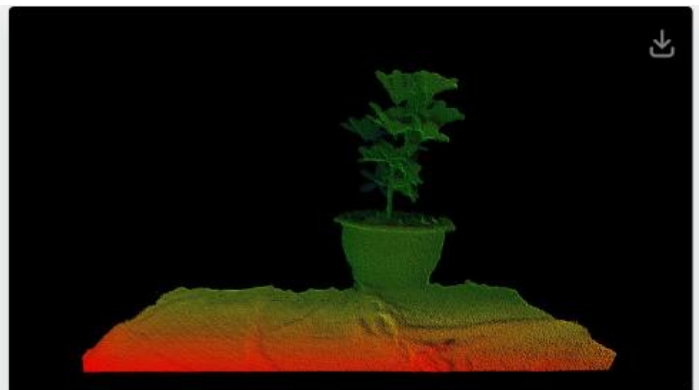
DS_1m away Black pallet

27 0 0



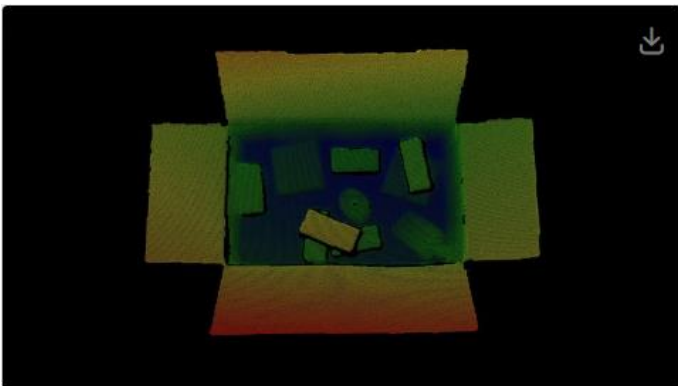
DS_Black Objects

108 0 0



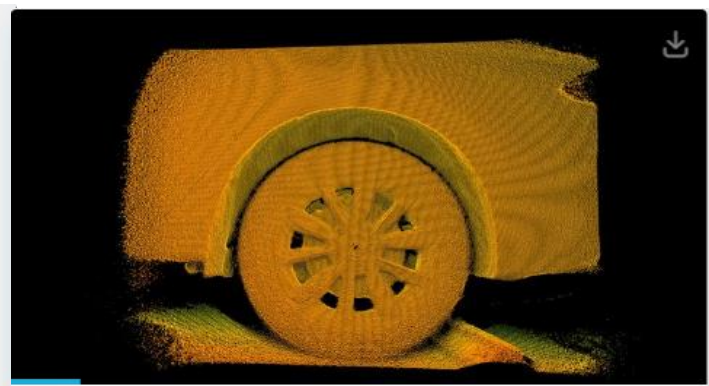
DS_A baby plant

88 0 0



DS_Boxes and plastic bottles in ...

73 0 0

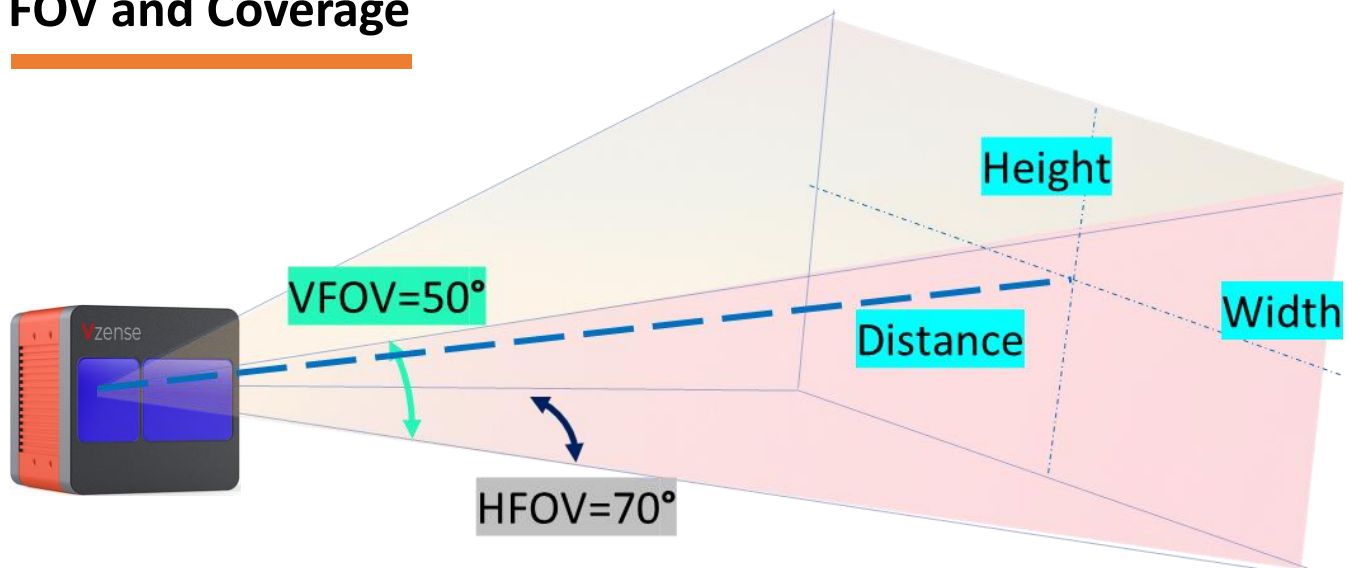


DS_Car Wheel, HDR

31 0 0



FOV and Coverage



$$Width = \tan\left(\frac{HFOV}{2}\right) * Distance * 2$$

$$Height = \tan\left(\frac{VFOV}{2}\right) * Distance * 2$$

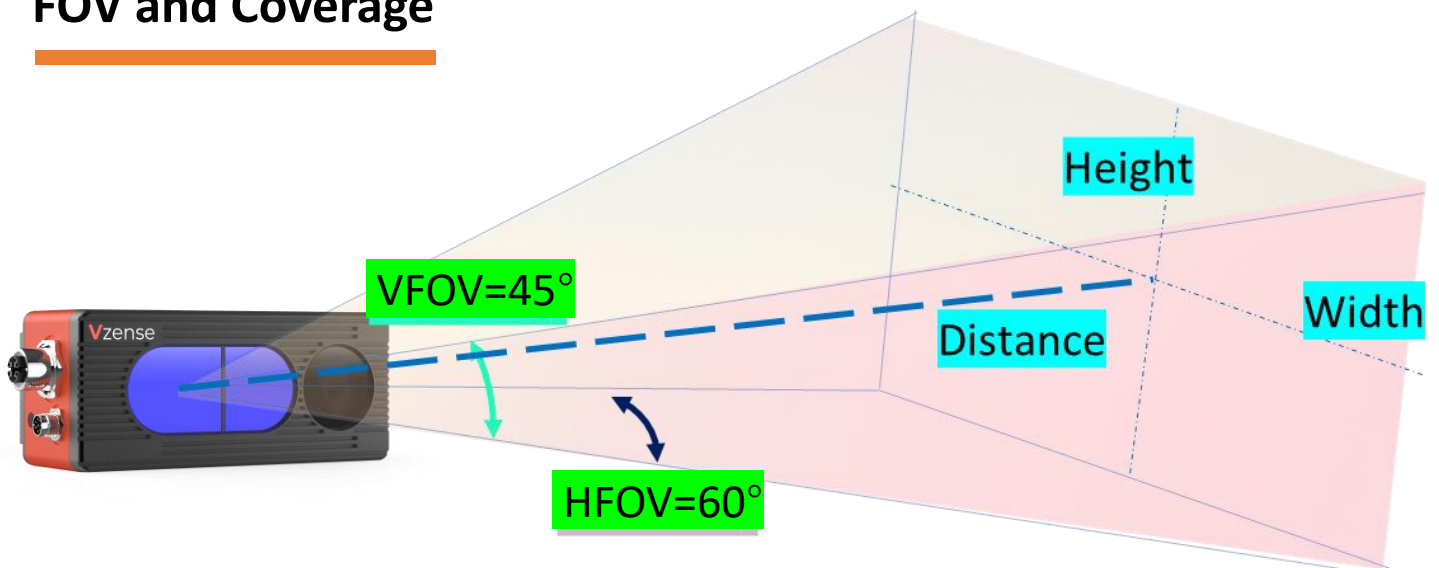
Calculated detectable area from 1, 2, 3, 4 meters away

ToF FOV 70°(H)*50°(V)

Distance (meter)	Width (meter)	Height (meter)
1	1.4	0.93
2	2.8	1.86
3	4.2	2.8
4	5.6	3.73

* the coverage is still limited by the distance

FOV and Coverage



$$Width = \tan\left(\frac{HFOV}{2}\right) * Distance * 2$$

$$Height = \tan\left(\frac{VFOV}{2}\right) * Distance * 2$$

Calculated detectable area from 1, 2, 3, 4 meters away

ToF FOV 60°(H)*45°(V)

Distance (meter)	Width (meter)	Height (meter)
1	1.15	0.83
2	2.31	1.66
3	3.46	2.48
4	4.62	3.31

* the coverage is still limited by the distance

What's included in the SDK:

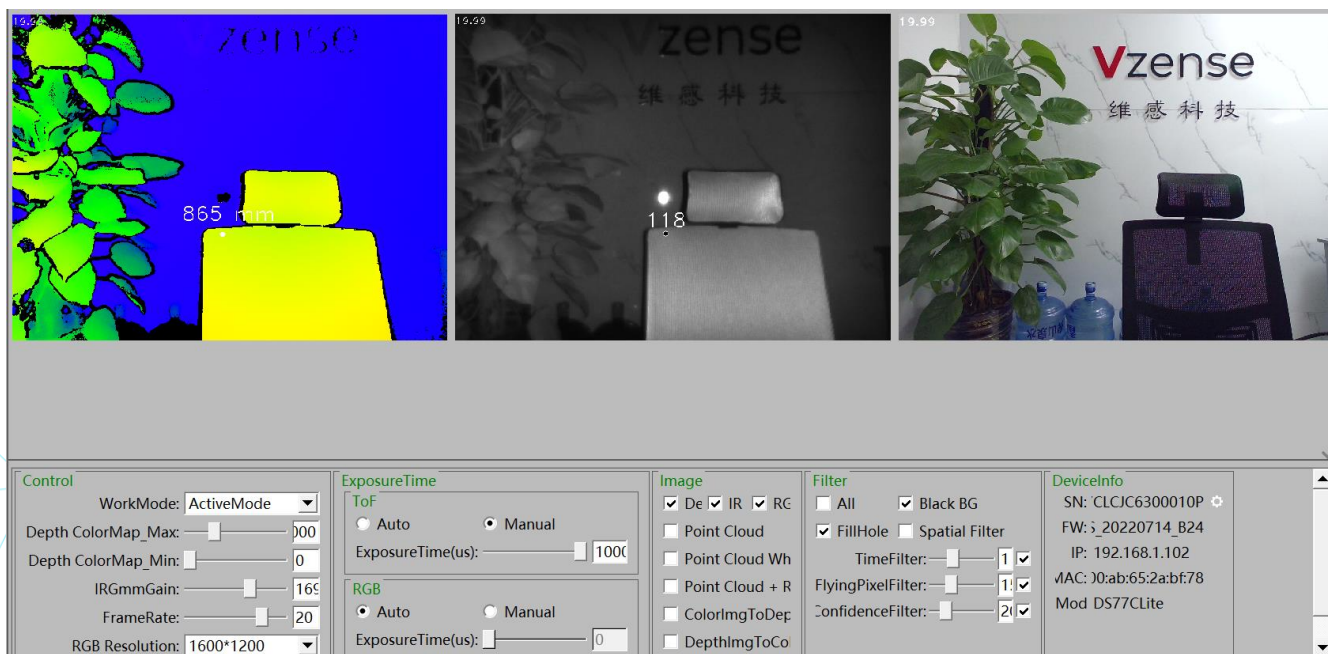
<u>NebulaGUITool</u>	With this application, users can quickly access DS series camera either in Windows or in Ubuntu platform to view the stream of depth/IR, visualize point clouds, configure camera settings, upgrade firmware, etc. For models with RGB, users can also simultaneously access stream of RGB, IR, depth, mapped RGB and mapped depth.
Suite for OS and platforms	Different OS and platforms is supported like Windows, Ubuntu16/18/20, Arm Linux. The development suite includes dynamic libraries, C/C++ code samples, OPENCV samples, prebuilt bins.
Wrappers	<u>Python</u> API, as well as integration with the following 3rd-party technologies: <u>ROS1</u> , <u>ROS2</u> , <u>C#</u> and more(Halcon, GenICam, etc.) to come.
Code Samples	Code samples are included in every listed supported OS, platforms, and wrappers. These examples demonstrate how to easily use the SDK to include code snippets that access the camera into your applications. Check some of the <u>C/C++ examples</u> including point cloud capture and save, parameters setting and trigger mode setting, etc.

We constantly add new features to our SDK to expand the capabilities of your project. Click [NebulaSDK](#) to check detail or download.



A Glance of NebulaSDK



📁 AArch64	V1.1.20 Release
📁 Python	V1.1.20 Release; Fix bug in VZ_ConvertDepth...
📁 ROS/src/VzenseROS	V1.1.20: update Ubuntu18.04 for ROS and R...
📁 ROS2/src/VzenseROS	modify ROS with SDK V 1.1.16
📁 Ubuntu16.04	V1.1.20 Release
📁 Ubuntu18.04	V1.1.20: update Ubuntu18.04 for ROS and R...
📁 Windows	V1.1.20 Release; Fix bug in VZ_ConvertDepth...
📄 LICENSE	fix error
📄 README.md	update ver 1.1.0




NebulaGUITool





DS86 Accessories included

Part No.	Description	Picture
814000600027	-CAT5e Ethernet Cable -RJ45 to RJ45 -Cord Length: 3m	
814000300031	-M8 A CODE Multiple Functional Cable -Cord Length: 2m	




DS87 Accessories included

Part No.	Description	Picture
814000300025	-M12 X CODE CAT5e Ethernet Cable -Aviation Connector to RJ45 -Cord Length: 3m	
814000300031	-M8 A CODE Multiple Functional Cable -Cord Length: 2m	

DS77C Pro/DS77 Pro Accessories included





Part No.	Description	Picture
814000300025	-M12 X CODE CAT6a Ethernet cable -Aviation Connector to RJ45 -Cord Length: 3m	
814000300026	-M12 A CODE 8pin Multiple Functional cable -Cord Length: 2m	

DS77C Lite/DS77 Lite Accessories included

Part No.	Description	Picture
814000600027	-CAT5e Ethernet Cable -RJ45 to RJ45 -Cord Length: 3m	
814000300019	-DC 12~24V -Cord Length: 2m	
814000300014	-6pin Multiple Functional Cable -RS485, EXT IO -Cord Length: 1m	

Selectable Accessories

Lead Time: 2weeks

Item	Description	Picture	Price
1	-CAT6a Ethernet Cable -Aviation Connector to RJ45 -Cord Length: 5m		30usd
2	-CAT6a Ethernet Cable -Aviation Connector to RJ45 -Cord Length: 10m		45usd
3	-CAT6a Ethernet Cable -Aviation Connector to RJ45 -Cord Length: 20m		70usd
4	-CAT6a Ethernet Cable -Aviation Connector to RJ45 -Cord Length: 50m		95usd

Suggested PoE+ Injector

Supplier	Model
H3C	EWPAM2NPoE+
TP LINK	TL-PoE+170S

■ About Vzense

Vzense team has been engaged in research on 3D perception, computer vision, image processing, gesture, and face recognition since 2016. Currently, Vzense Technology has grown to be one of the leading companies in 3D Time-of-Flight technology and is certified with ISO 9001: 2015, ISO45001: 2018, and ISO14001: 2015.



■ Customized Service

Vzense not only provides reliable and ready-to-use ToF cameras but also specializes in full-system customization of ToF products to satisfy specific engineering challenges. Benefiting from our leading engineering capabilities, customers have more flexible design options in product size, measuring range, interface, FoV(field of view), OS and algorithm, etc.

■ Our Distributors

In order to provide customers with more convenient and high-quality services, Vzense Technology has agents and distributors all over the world. Please contact your local distributor or send email to info@vzense.com, we will arrange the delivery in time.

Global Partners

OZ ROBOTICS, Digi-Key

Germany Partners

MYBOTSHOP, ECKSTEIN, Notavis

Japan Partners

MICRO-TECHNICA, Tegara, DHT Corporation

Korea Partners

REALLY, FeelSoBene



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