

Committed to excellence



Intel® RealSense™ Stereo Depth



PRODUCT OVERVIEW

V2.0

intel.
REALSENSE™
BEYOND SENSE





Intel® RealSense™ Stereo Depth Technology

Bringing 3D vision to devices and machines that only see 2D today

Stereo Depth Cameras enable devices to see, understand, interact with, and learn from their environment. The onboard Intel® RealSense™ Vision Processor D4 performs all the depth calculations on the camera, allowing for low power, platform agnostic devices. Stereo image sensing technologies work both indoors and outdoors in a wide variety of lighting conditions and can also be used in multiple camera configurations without the need for custom calibration.

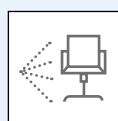
Experience the world in 3D with the Intel® RealSense™ products, available from stock at Rutronik. Based on Stereo image sensing technology, the Intel® RealSense™ Cameras provide a solution for a wide range of different applications. Supported by Intel's open-source SDKs, it's fast and easy to build your future vision solution.



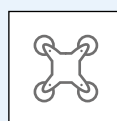
Discover endless possibilities of cutting edge Intel® RealSense™ technology. Adding computer vision to your project, whatever it is, will elevate it to the next level. Here are some application examples accelerated by Intel® RealSense™ solutions.



Robotics



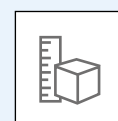
3D Scanning



Drones



People Tracking



Object Measurement

Depth Cameras

Intel® RealSense™ D400 Series



Designed for easy setup and portability, Intel® RealSense™ D400 series cameras feature high depth resolution and include active infrared (IR) stereo with standard or wide field of view. For high-precision applications, choose the D415 with rolling shutter. If your application is fast-moving or outdoors, select either the D435 or D435i camera which feature a global shutter. The D435f targets the growing market of autonomous mobile robots.

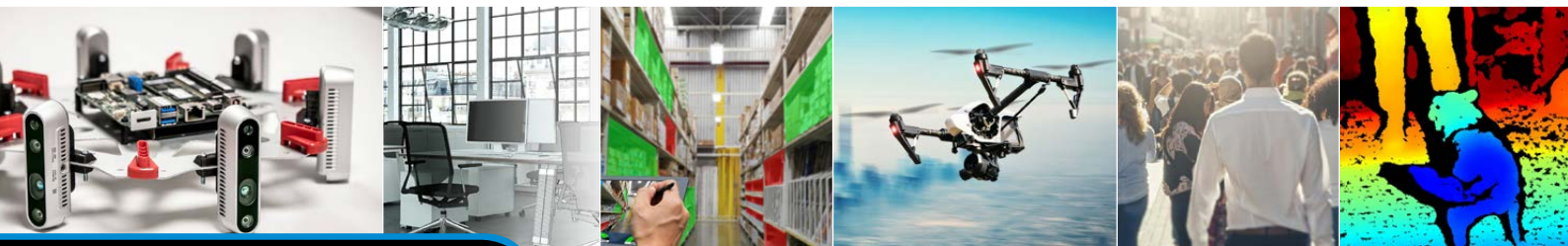
For longer range applications, the D455 features wide field of view and global shutter on the depth and RGB sensors, whereas the D457 is a GMSL/FAKRA high bandwidth stereo camera. For close-range computer vision needs, the D405 short-range stereo camera provides sub-millimeter accuracy.

Type	D405	D415	D435 (i) (f) (if)	D455 / D457
Typical Use Cases	Pick & Place Defect Detection	Collision avoidance / Recognition and Interaction / Scanning		
Value	Shortest Range	Mid-Range Value	Mid-Range WFOV/Flexibility (IMU or IR Pass Filter optional)	Longest Range / Matched Depth & RGB FOV
Ideal Range	7 cm to 50 cm	0.5 m to 3 m	0.3 m to 3 m	0.6 m to 6 m
Depth Accuracy ²	1.4% at 20 cm	2% at 2 m		2% at 4 m
Min Z @ Max Resolution	Sub-mm @ 7 cm	Min Z ~45 cm	Min Z ~28 cm	Min Z ~52 cm
Depth Technology	Stereoscopic	Active IR Stereo	Active IR Stereo	Active IR Stereo
Max Depth Resolution	1280 x 720 @ 30fps 640 x 360 @ 90fps	1280 x 720 @ 30fps / 840x480 @90 fps		
Depth FOV ¹ HD / Shutter	87° x 58° Global	65° x 40° Rolling	87° x 58° Global	
RGB FOV ¹ / Shutter	1 MP 87° x 58° Global via Left Depth Imager	2 MP 69° x 42° Rolling	2 MP 69° x 42° Rolling	1 MP 90° x 65° Global
Dimensions (WxHxD mm)	42 x 42 x 22	99 x 23 x 20	90 x 25 x 25	124 x 29 x 26
Main Components	D401 Depth Module D4 Vision Processor V4	D415 Depth Module D4 Vision Processor	D430 Depth Module D4 Vision Processor	D450 Depth Module D4 Vision Processor V3/V5
IMU		No	Optional (D435i & D435if)	Yes
Depth Filter	IR Cut	No	Optional (D435i & D435if)	No
Connectors	USB3 Micro-B	USB-C 3.1 Gen 1		USB-C 3.1 Gen 1 / GMSL/FAKRA
Use Environment	Indoor / Outdoor			

¹ measured +/-3° of stated value ² measured as out of the factory

D405 (Retail) 82635DSD405	D415 (Retail) 82635ASRCDVKHV	D435 (Retail) 82635AWGDVKPRQ	D435i (Retail) 82635D435IDK5P	D435f (Retail) 82635D435FDK	D435if (Retail) 82635D435IF	D455 (Retail) 82635DSD455	D457 (Retail) 82635DSD457
D405 (Bulk) 82635DSD405MP	D415 (Bulk) 82635ASRCDVKMP	D435 (Bulk) 82635AWGDVKPMP	D435i (Bulk) 82635D435IDKMP	D435f (Bulk) 82635D435FDKMP	D435if (Bulk) 82635D435IFMP	D455 (Bulk) 82635DSD455MP	D457 (Bulk) 82635DSD457MP

Retail: Package contains camera, USB cable and Tripod | **Bulk:** Package contains only the camera



Depth Modules & Processors

Intel® RealSense™ D400 Series



For the integration of Intel® RealSense™ technology into higher volume products, depth modules can offer the best compromise between price and flexibility. Multiple different configurations are offered to better suit your needs and product requirements. Designed for easy system integration, all modules feature an imaging sub-system with stereo sensors. When paired with an Intel® RealSense™ Vision Processor, depth data can be output via USB to any platform.

Type	D401	D415	D430	D450
Use Environment	Indoor/Outdoor			
Image Sensor Technology	Global Shutter			
Depth FOV (H x V)	84° x 58°	65° x 40°	87° x 58°	87° x 58°
Depth Resolution	1280x720			
Depth Frame Rate	Up to 90 fps			
RGB Sensor Technology	Global Shutter	- / Rolling Shutter	-	Global Shutter
RGB Frame Rate & Resol.	1280 x 720 at 30 fps	1920 x 1080 at 30 fps	-	1280 x 800 at 30 fps
Interface	50-pin Board to Board Connector			
Dimensions (L x D x H)	42 x 42 x 23 mm	99 x 20 x 23 mm	90 x 25 x 25 mm	124 x 26 x 29 mm

Also available: Phased-out Depth Modules [D410](#) and [D420](#)

Ordering Information

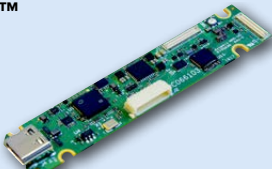
Intel® RealSense™
Depth Modules

D401	D415	D430	D450
(Bulk) 82635DSD401	(Bulk) 82635DSASRCPRQ	(Bulk) 82635DSAWGPRQ	(Bulk) 82635DSD450


Recommended Accessories

D415 & D430 - Intel® RealSense™ Vision Processor D4 Board
82635DSASMDLPRQ


D450 - Intel® RealSense™ Vision Proc. D4 Board V3
82635DSASICBDIF




D450 - Intel® RealSense™ Vision Processor D4 Board V5 (GMSL/FAKRA)
82635DSD457ASIC



Intel® RealSense™ D400 Interposer Rigid
82635DSITR50P



D405 - Intel® RealSense™ Vision Processor D4 Board V4
82635DSASICBDV4



Intel RealSense SDK 2.0

- Intel® OpenVINO™ integration
- Fast and easy data integration tool
- Open Source cross platform library

More information

<https://www.intelrealsense.com/sdk-2/>

intel
REALSENSE™ with **OpenVINO™**

Operating Systems

- Windows
- Linux
- mac OS
- Android

Programming Languages

- Python
- C/C++
- C#/.NET
- Node.js

Frameworks and Wrappers

- ROS
- OpenNI
- PCL
- LabVIEW
- OpenCV
- MATLAB
- UnrealEngine4
- Unity