Comparison Of Camera:-

S.No	Model Name	Build Quality	Cost	Underwater	Depth	Additional Sensors	Video Quality	Image Quality	Stability	Other Features	Video Streaming	Turbidity Resistance	Customizable Lens	Audio Quality	Manufactured Country	Power Consumption	Bandwidth	Interface/Connection	Monocular/Stereo	In-Built Depth/ Measurement Sensor
1	Go Pro Hero 9 Black	Durable Magnesium	47k	Yes	60m	gyroscope, accelerometer, gps, elevation	5K@30fps and 4K@60fps	20 MP , HDR, RAW	Excellent	HyperSmooth 3.0 stabilization	Yes	Yes	No	less effective underwater	Norway	5-6W	100-150Mbps	USB-C,Wifi, Bluetooth, Micro-HDMI	Monocular	No
2	SeaLife DC2000	Rugged Aluminium	2 Lakhs	Yes	60m	depth gauge, thermometer	4K@30fps, 1080p@60fps	20 MP, RAW	Yes	White balance	No	Good	Yes	Mono audio	USA	4W	25-50Mbps	USB,HDMI	Monocular	No
3	Olympus Tough TG-6	Shockproof, crushproof, freezeproof	62k	Yes	15m	depth gauge, compass, gps, temperature	4K@30fps, 120fps 1080p slow-motion	12 MP BSI CMOS, RAW	Only in 1080p	Nil	No	Yes	Yes	Mono audio	Japan	4.5W	24-50Mbps	USB,HDMI, GPS-enabled	Monocular	Yes
4	Canon PowerShot G7 X Mark III	Metal compact body	63k	Yes, with housing	60m	None	4K@30fps, 1080p@120 fps	20 MP	Optical Stabilization	Strong in low-light conditions	Yes	Yes	No	Built in stereo mic	Japan	4.5-6W	100Mbps	USB-C,Wifi, HDMI	Monocular	No
5	Sony RX100 VII	Metal Build	1.20 Lakhs	Yes, with housing	40m-60m	Gyro,auto focus	4K@30fps, 1080p@120 fps	20 MP, RAW	Optical Stabilization + Active Stabilization	performs well in lower visibility	Yes	Yes	No	Stereo Mic	Japan	4.5W	14Mbps	USB-C, HDMI	Monocular	No
6	Panasonic Lumix LX100 II	Magnesium Alloy Build	1.15 Lakhs	Yes, with housing	40m-60m	Ambient Light, Gyroscope, Micro Four Thirds sensor(High Clarity)	4K@30fps, 1080p@60fps	17 MP	Optical Stabilization	Leica Lens, Good in Low Light	No	Yes	No	Stereo Mic	Japan	5.5W	25Mbps	USB-C, HDMI	Monocular	No
7	DJI Osmo Action 4	Metal Frame with IP68 Waterproofing	30k	Yes	60m	Accelerometer, Gyro, Compass, Light Sensor	4K@120fps, HDR	20 MP	Excellent	Waterproof Mic, Rocksteady 3.0 + HorizonBalancing	Yes	Yes	No	Stereo Mic	China	6W	30Mbps	USB-C, Wifi	Monocular	No
8	Sony Alpha A6600	Magnesium Alloy Build	70k	Yes, with housing	60m	Eye-AF, Gyro Stablization, Orientation Sensor	4K@30fps, 1080p@120 fps	24.2 MP	Yes	High ISO	Yes	Yes	Yes	No	Japan	5W	22Mbps	USB-C, HDMI	Monocular	No
9	Go Pro Hero 11	Durable and Waterproof Body	26k	Yes	60m	GPS,Gyro, Accelerometer, Compass	5.3K@60fps, 4K@120fps	27 MP, HDR	Yes	Electronic Stabilization	Yes	Yes	Yes	Excellent	USA	4W	12Mbps	USB-C, Wifi, Bluetooth	Monocular	No
10	Akaso EK7000	Plastic Build	10k	Yes, with housing	30m	Basic Gyro	4K@25fps, 1080p@60fps	12 MP	Yes	Wifi control	No	Yes, with lights	No	Poor	China	8W	40Mbps	Micro HDMI, USB	Monocular	No
11	Olympus Tough TG-7	Rugged, Crushproof, shockproof, freeeproof, waterproof.	55k	Yes	15m	GPS, Compass, Thermometer, Barometer.	4K@30fps, 1080p@120 fps	12 MP, Macro, Microscope	Yes, only in video	White Balance, Wifi	No	Yes	Yes	Mono audio	Vietnam	3W	10Mbps	USB	Monocular	Yes
12	Sony A7R IV	Magnesium Alloy Build	2.65 Lakhs	Yes, with housing	60m	Gyro, Orientation, Face/eye Tracking	4K@30fps	61 MP	Yes	Real time Eye	Yes	Yes	Yes	Stereo Mic	Japan	25W	80Mbps	USB-C, HDMI	Monocular	No
13	GoPro Max	Rugged Waterproof	65k	Yes, with housing	30m	GPS, Accelerometer, Gyroscope, Compass	5.6K@30fps 360° video, 1440p	16.6 MP, 360°	Yes	360 Degree Digital Stabilization	Yes	Yes	No	Best in 360 degree	USA	20W	75Mbps	USB-C, Wifi	Monocular	No
14	Chimaera	Industrial Grade	Unknown	Yes	4000m	IMU, Light Control, Depth	Full HD, SDI	Wide Angle	Yes	Mechanical Stability	Yes	Yes	Yes	No	USA	18W	60Mbps	Ethernet, Serial	Monocular	Yes
15	Sculpin Compact	Compact Titanium/ Stainless Steel	90k	Yes	4000m	IMU, Light Control	HD, SDI, 1080p	Sharp and Clean	Yes	Mechanical Stability	Yes	Yes	Yes	No	USA	4.5W	18Mbps	Ethernet	Monocular	Yes
16	Sixgill	Stainless Steel- or Titanium Build	Unknown	Yes	3000-4000m	IMU, Depth, Temperature	HD, SDI, 1080p	Wide Angle	Excellent	LED light integration	Yes	Yes	Yes	No	Canada	5W	20Mbps	Ethernet	Monocular	Yes
17	Bravo Wrist Camera - RB 1057	Lightweight	Unknown	Yes	10-15m	No	Average	720p or 1080p	No	No	No	No	No	Very Basic	China	15W	100Mbps	USB	Monocular	No
18	Reach Robotics Micro IP Cam - RAC 1000	Compact and Rugged	Unknown	Yes	300m	IMU, Temperature	720-1080p	Good and Wide angle	Yes	Compact Size	Yes	Yes	No	No	USA	8W	35Mbps	Ethernet	Monocular	No
19	Pygmy Shark HD-SDI Wide Angle Camera	Titanium Subsea and Compact	25Lakhs	Yes	4000m	Heater	1080 HD, SDI	Sharp and Wide Angle	Yes	Water-corrected Lens	Yes	Yes	Yes	No	USA	10W	55Mbps	Ethernet	Stereo	No
20	Lizard Shark HD – Pan / Tilt HD Zoom Cam	Subsea Grade Housing	34Lakhs	Yes	4000m	IMU, Lens Heater	1080p, Optical Zoom	Excellent	Yes	Position feedback	Yes	Yes	Yes	No	USA	7W	48Mbps	Ethernet	Stereo	Yes
21	OE14 522HDIP HD Ethernet Pan & Tilt Zoom	Titanium Alloy	25 Lakh above	Yes	4500m	Wiper, Smart IR, STARVIS Sensor	1080P,720P, hd	3MP	Yes	Optical Zoom	Yes	Yes	No	No	Norway	15W	50Mbps	Ethernet, IP-Based	Monocular	Yes
22	OE14-504 HD Wide-Angle Color Zoom	Titanium	25 Lakh above	Yes	4500m	IR, PoE+Sensor	1080p, HD	12 MP	Yes	Optical Zoom	Yes	Yes	No	No	Norway	12W	35Mbps	Ethernet	Monocular	No
23	Night Shark Ultra Low-Light Monochrome	Titanium	35 Lakh Above	Yes	6000m	DNR,DWDR, Dead-Pixel Correction	Composite	F1.4	Yes	3D Noise Reduction	Composite	Yes	No	No	USA/Norway	10W	20Mbps	Analog, Ethernet	Monocular	No
24	RZC-1-4000	Titanium	20 - 35 Lakh	Yes	4000m	Heater	HD,SDI,470 TVL	Excellent	Yes	Remote Access	Yes	Yes	No	No	USA or UK	18W	65Mbps	Giga Ethernet, HD-SDI	Stereo	Yes
25	RLC-1-4000	Titanium	20-35 Lakh	Yes	4000m	Low-Light Optimizer	HD,SDI, Monochrome	570 TVL	Yes	Wide Angle	Yes	Yes	No	No	USA or UK	16W	60Mbps	Giga Ethernet, Serial	Stereo	Yes
26	RDC-325/P/E	Black Delrin Housing	17 Lakhs	Yes	4000m	Light	480i PAL/NTC	HD	Yes	Wide Angle	Yes	Yes	No	No	USA or UK	8W	25Mbps	Ethernet	Monocular	Yes
27	SMART RDC-325/SS/E	316 Stainless, Compact Subsea rated	12-17 Lakhs	Yes	4000m	Light, Scratchproof	PAL	HD	Yes	Plug-N-Play, Dive Plug	Yes	Yes	No	No	USA or UK	9W	28Mbps	Ethernet, Smart Interface	Monocular	Yes
28	RDC 400/P/E	Black Delrin Housing	12-17 Lakhs	Yes	4000m	No	PAL/NTSC	HD	Yes	O-Ring Seal Housing	Composite	Good	No	No	USA or UK	11W	40Mbps	Ethernet	Stereo	Yes
29	RDC-400/SS/E	Stainless steel, sapphire port, subsea rated	12-17 Lakhs	Yes	4000m	No	PAL	HD	Yes	Corrosion Resistance	Composite	Yes	No	No	USA or UK	12W	42Mbps	Ethernet, Serial	Stereo	Yes
30	Intel RealSense D435i	Industry Grade Plastic	25k-35k	No	10m	IMU, Gyro, Accelerometer	Up to 1080p	Moderate	Yes	RGB + Depth + IMU	Yes	No	No	No	USA	1.5W-2W	20-90Mbps	USB 3.1	Stereo	Yes
31	Intel RealSense L515	Solid Plastic	45-60k	No	9m	IMU, RGB, LiDAR	1080P RGB	Good	Yes	LiDAR based Depth Sensing	Yes	No	No	No	USA	2.5W	90 Mbps	USB 3.1	Stereo	Yes
32	ZED 2i (Stereolabs)	Rugged Aluminium	75k-1.20 Lakhs	No	20m	IMU,Barometer, Magnetometer	2K Stereo	Excellent	Yes	AI SDK, Object Tracking	Yes	Yes	No	No	France	3.5W	30-60Mbps	USB -C	Stereo	Yes
33	Microsoft Azure Kinect DK	Premium metal/Plastic	35k-45k	No	5m	IMU	4K RGB	Great	Yes	Skeleton Tracking	Yes	No	No	Yes	China, USA	4.5W	70-150Mbps	USB 3.0	Stereo	Yes

34	OAK-D (Luxonis)	Sturdy CNC metal Casing	20k-35k	No	10m	IMU, AI Chip (Myriad X)	4K RGB	Very Sharp	Yes	on device neural processing	Yes	No	Yes	No	USA	5-6W	200Mbps	USB C	RGB	Yes
35	Canon EOS R5	Magnesium Alloy Build	3.2-3.8 Lakhs	No	Nil	GPS	8K30, 4K120	45MP	Yes	Dual Pixelo AF,IBIS, Raw Video	Yes	Yes	Yes	Yes	Japan	7W	80 Mbps	GigaBit Ethernet	Stereo	No
36	Fujifilm X-T5	Magnesium Alloy Build	1.6-2Lakhs	No	Nil	Accelerometer	6.2L at 30p, 4K60	40MP	Yes	RAW recording, Film Simulation	Yes	Yes	Yes	Yes	Japan	3-4W	40Mbps	USB 3.1	RGB	No
37	Luxonis OAK-D	Rugged CNC Metal Enclosure	20K-35K	Yes	10m	IMU, Myriad X AI Accelerator	4K RGB, 720p	Good	Yes	Runs AI models Onboard	Yes	Yes	Yes	No	Japan	15W	100Mbps	Ethernet	Stereo	Yes
38	e-con Systems DepthVista Series	Industrial Compact Material	20k-30k	No	2-4m	IR,RGB	720-1080p	Decent	Yes	Custom SDK	Yes	No	Yes	No	India	12W	50Mbps	Ethernet	Monocular	Yes
39	Voyis Discovery Stereo Camera	Military Grade Underwater	15-25Lakhs	Yes	300-4000m	IMU,Edge Compute	Full Hd	Excellent	Extreme	3D-Modelling, SLAM	Yes	Yes	No	No	Canada	15W	80-160Mbps	USB 3.0/ GigE	Stereo	Yes
40	Carnegie Robotics Multisense (Stereo/ToF)	Military Grade Aluminium	8-12Lakhs	No	50m+	IMU, Laser Projector	2048x1088 at 30fps	Excellent	Yes	LidAR, SLAM	Yes	No	No	No	USA	25W	150Mbps	USB 3.0/ GigE	RGB	Yes

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Queries And Solutions:-

*1) Which Is the Cheapest Camera --> **Akaso EK7000***
*2) Which Is the Costliest Camera --> **Canon EOS R5***
*3) Which Is the Best Performance Camera --> **Voyis Discovery Stereo Camera***
*4) Which Is the Least Performance Camera --> **Bravo Wrist Camera - RB 1057***
*5) Which Camera has Good Performance and Under Budget Of 50K --> **DJI Osmo Action 4 (4K@120fps with HDR, 20 MP, Rocksteady 3.0 + HorizonBalancing, 60m, Waterproof mic, accelerometer, gyro, compass, light sensor).***
*6) Which Camera Has More In-Built Sensors Or Functions --> **Olympus Tough TG-7***
*7) Which Camera Has Best Review In Underwater --> **Voyis Discovery Stereo Camera***
*8) Which Camera Has Optimal Performance and Optimal Budget --> **GoPro Hero 11***
*9) Which Camera Can Be Used For Future Use --> **Voyis Discovery Stereo Camera***
*10) Which Camera is Widely Used For Research purposes or Real Time Applications --> **Voyis Discovery Stereo Camera, Carnegie Robotics Multisense (Stereo/ToF)***
*11) Which Camera Offers the Deepest Underwater Capability --> **Night Shark Ultra Low-Light Monochrome (6000m)***
*12) Which Camera Has the Lowest Power Consumption --> **Intel RealSense D435i (1.5W-2W)***
*13) Which Camera Provides the Highest Video Resolution --> **Canon EOS R5 (8K at 30fps)***
*14) Which Camera Has the Best Image Resolution --> **Sony A7R IV (61 MP)***
*15) Which Camera Is Best for Low-Light Conditions --> **Night Shark Ultra Low-Light Monochrome (3D Noise Reduction, Digital Noise Reduction, Digital Wide Dynamic Range, Dead-Pixel Correction)***
*16) Which Camera Offers the Best Stabilization for Video --> **Voyis Discovery Stereo Camera***
*17) Which Camera Has the Highest Bandwidth for Video Streaming --> **OAK-D (Luxonis) (highest bandwidth at 200Mbps)***
*18) Which Camera Is Best for 360-Degree Video Recording --> **GoPro Max (360-degree video recording, 5.6K@30fps 360° video and 360 Degree Digital Stabilization)***
*19) Which Camera Is Most Suitable for Professional ROV Applications --> **Chimaera (4000m, Mechanical Stability and industrial-grade build, IMU, light control, depth sensor, and Ethernet connectivity for reliable data transmission)***
*20) Which Camera Offers the Best Audio Quality for Underwater Use --> **GoPro Hero 11***
*21) Which Camera Is Most Cost-Effective for Shallow Water (Under 20m) Applications --> **Olympus Tough TG-7***
*22) Which Camera Has the Most Versatile Connectivity Options --> **GoPro Hero 11 (USB-C, WiFi, Bluetooth, and Micro-HDMI)***
*23) Which Camera Is Best for High-Speed Video Recording --> **DJI Osmo Action 4 and GoPro Hero 11 (4K@120fps)***
*24) Which Camera Is Most Suitable for AI-Driven Applications --> **ZED 2i Stereolabs (AI SDK and Object Tracking, IMU, barometer, magnetometer, 2K stereo video, 20m)***
*25) Which Camera Offers the Best Build Quality for Harsh Environments --> **Voyis Discovery Stereo Camera and Pygmy Shark HD-SDI Wide Angle Camera***
*26) Which Camera Is Best for Macro Photography Underwater --> **Olympus Tough TG-7 (macro and microscope modes, 12 MP sensor, 15m depth rating)***
*27) Which Camera Has the Most Customizable Lens Options --> **The Sony A7R IV(Best), GoPro Hero 11, Olympus Tough TG-7, and several others (e.g., Pygmy Shark HD-SDI, Lizard Shark HD)***
*28) Which Camera Is Best for Long-Duration Underwater Missions --> **Olympus Tough TG-7 (low power consumption (3W), 15m depth rating, and robust feature set (GPS, compass, thermometer, barometer), ensuring efficiency and durability)***
*29) Which Camera Is Most Portable for Underwater Use --> **The DJI Osmo Action 4 (compact metal frame, IP68 waterproofing, 60m depth rating, and lightweight design)***
*30) Which Camera Is Best for Real-Time Depth Sensing --> **Intel RealSense D435i and Intel RealSense L515***

My Opinion:

*Based on Our Budget, I would choose **DJI Osmo Action 4** as it costs around **30k**. Its depth rating is **60m** and keeping inside the housing or ROV, depth won't be much of an issue. It has **IP68 Waterproofing** with a metal frame. It Supports **USB-C and Wi-Fi** so we can interface with Raspberry Pi for real-time video streaming and processing. It Bandwidth is **30 Mbps** and Power consumption is **6W**. Video Quality is **4K @120fps** and Image Quality is **20MP**. It also Features **Rocksteady 3.0 + HorizonBalancing** for Stability so we can get clear footage. It also has **Accelerometer, gyro, compass, and light sensor** inbuilt so it can complement our existing **IMU, DVL, and pressure sensor** in our ROV. It has **waterproof microphone** so supports stereo audio. We can also Go with Go Pro Hero 11 but DJI Osmo Action 4 overtakes it.*

*Based on having no budget constraint, I would choose the **Voyis Discovery Stereo Camera** as costs around **15-25 Lakhs**, depth rating of **300-4000m**, **military-grade build**. It supports **USB 3.0 and GigE** connectivity with a bandwidth of **80-160Mbps** for real-time video streaming and processing Its power consumption of **15W**, while the **stereo vision** delivers precise depth data for accurate localization, extreme stability, it includes an **IMU and edge compute capabilities**, complementing our existing IMU, DVL, and pressure sensor, enhancing sensor fusion for precise underwater navigation using algorithms like EKF or VSLAM.*