

exploreHD Challenger Technical Specifications

Physical Specifications

Property	Value
Depth Rating	11,000 meters
Safety Margin	50%
Ingress Protection Rating	IP69K+ equivalent
Mass in Air	346 grams
Mass in Water	246 grams
Material	Titanium with Diamond-Like Carbon (DLC) Protective Coating
Front Port	Scratch-Resistant Sapphire with internal AR Coating
Operating Temperature	-20°C to 85°C
Max Cable Length*	5m (USB 2.0)

**To request a cable with your camera, contact sales@dwe.ai.*

Lens Specifications

Specification	Aquagon
Type	Low-Distortion
Focus Type	Fixed Focus
Focal Length	3.0mm
Lens Aperture	f/1.6
Minimum Focus Distance	25cm
Lens Element Count	7 with 2 aspherical, 2 extra-low dispersion

Specification	Aquagon
Lens Coatings	DGS™ MULTI-COATING
Distortion	<-1.5%.
Back Focal Length	2.05mm
IR Filter	650nm
Horizontal FOV (In Water)	87°
Vertical FOV (In Water)	56°
Diagonal FOV (In Water)	95°

Image Sensor Specifications

Property	Value
Image Sensor	1/2.8" Sony Exmor™ STARVIS CMOS
Sensor Color	RGB
Sensor Type	Back-Side Illuminated
Pixel Size	2.9 μm (H) × 2.9 μm (V)
Electronic Shutter Type	Rolling Shutter
Max Resolution	1920x1080
Max Framerate	30fps with H.264/MJPEG
Color Channels	3
Bits Per Channel	8 bits
Compression Formats	H.264 (Baseline), MJPEG, YUY2
Connection	USB 2.0 High Speed / UVC Compliant / V4L2 Compatible
Spectral Sensitivity	See Graph Below

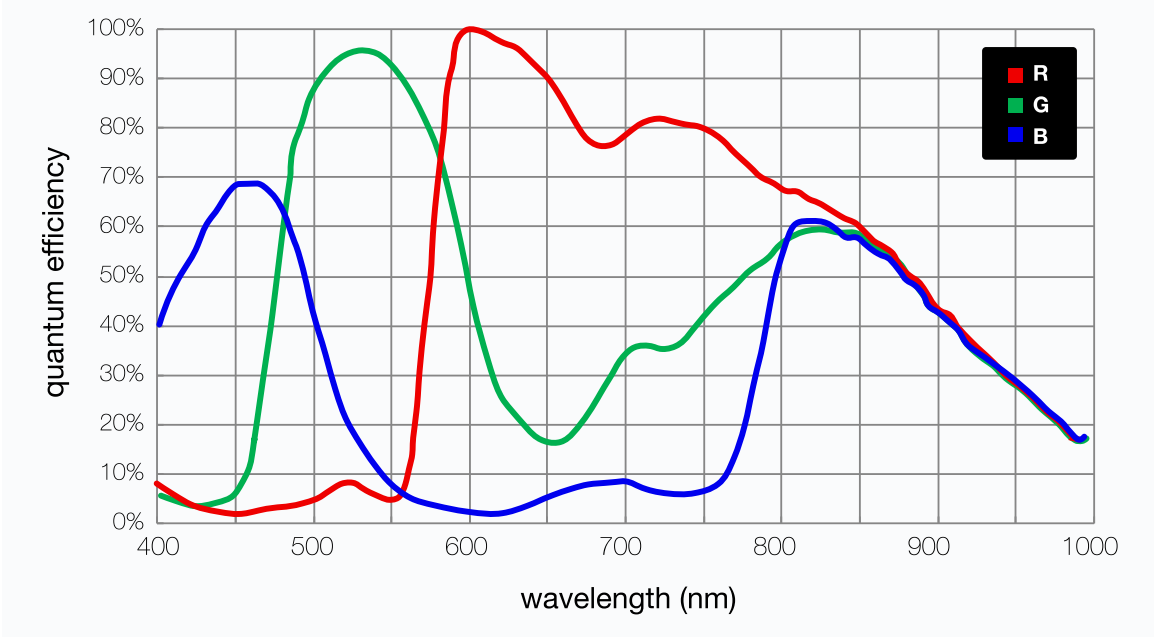


Image Compression Specifications

	H.264	MJPEG	YUY2
Type	Baseline	--	--
Chroma Subsampling	4:2:0	4:2:2	4:2:2

Supported Resolutions and Framerrates

Resolution	MJPEG & H.264	YUY2
1920x1080	10, 15, 20, 25, 30 fps	5 fps
1280x720	10, 15, 20, 25, 30 fps	5, 10 fps
800x600	10, 15, 20, 25, 30 fps	5, 10, 15 fps
640x480	10, 15, 20, 25, 30 fps	5, 10, 15, 20, 25, 30 fps
640x360	10, 15, 20, 25, 30 fps	5, 10, 15, 20, 25, 30 fps
352x288	10, 15, 20, 25, 30 fps	5, 10, 15, 20, 25, 30 fps
320x240	10, 15, 20, 25, 30 fps	5, 10, 15, 20, 25, 30 fps

Software Requirements

Property	Value
External Software	None Required (Plug-and-Play)
Protocol	UVC (USB Video Class) Compliant
Windows Support	Native Support - No drivers needed
macOS Support	Native Support - No drivers needed
Linux Support	Native Support - V4L2 compatible

Zero Software Required Because it is fully UVC compliant, it requires absolutely **no proprietary drivers, external software, or libraries** for retrieving images. While we provide helpful optional utilities like our Camera Tester and dweOS, **these are strictly optional**. You can plug the camera into your system and immediately view the feed using standard built-in camera applications (like Windows Camera, OBS, etc).

Bitrate Control Library

For specific advanced application using H.264 mode, you can manage the camera's bitrate via our open-sourced bitrate control code.

Bitrate Control Code
Bitrate Control README document.

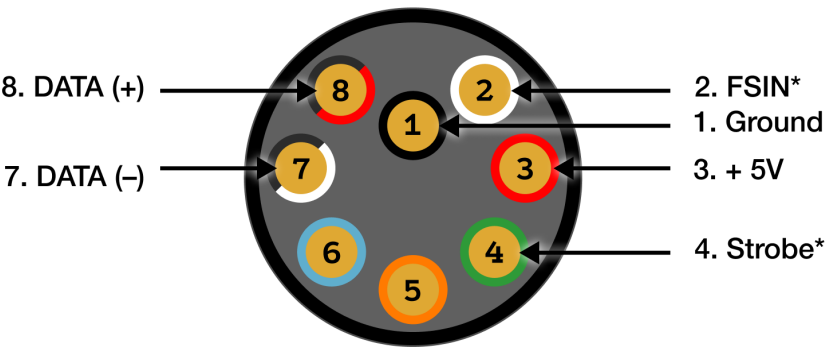
Electrical Specifications

Property	MJPEG Mode	H.264 Mode
Voltage	5V	5V
Current	250mA	300mA
Current (Max)	260mA	320mA
Operating Wattage	1.25W	1.5W
Wattage (Min)	0.004W	0.004W
Wattage (Max)	1.3W	1.6W

Connector Pinout

SubConn MCBH8M-Ti

SubConn MCBH8M (USB) BULKHEAD



Bulkhead connector pinouts (looking at mating face of connector) **Only Applicable for products with those pins*

SubConn MCBH8M (USB) Bulkhead

1	Black : Ground
2	White : NC
3	Red : +5V
4	Green : NC
5	Orange : NC
6	Blue : NC
7	White/black : DATA -
8	Red/black : DATA +

CAD Files

STEP File

exploreHD Challenger STEP File

Technical Drawing

exploreHD Challenger Technical Drawing (PDF)

Updating Firmware

Guide

Follow this simple guide to updating firmware.