

stellarHD Technical Specifications

Physical Specifications

Property	Value
Depth Rating	1000 meters
Safety Margin	50%
Ingress Protection Rating	IP69K+ equivalent
Mass in Air	120 grams
Mass in Water	50 grams
Material	Naval-grade, Corrosion Resistant Aluminum - Black, Abrasion-Resistant, Hard-Anodized Coating
Front Port	Scratch-Resistant Sapphire with internal AR Coating
Operating Temperature	-20°C to 85°C
Max Cable Length*	5m (USB 2.0)

*Cameras ship with a ~1m cable by default. For longer cables, contact sales@dwe.ai.

Lens Specifications

Specification	Fisheye	Aquagon
Type	Fisheye	Low-Distortion
Focus Type	Fixed Focus	Fixed Focus
Focal Length	2.65mm	3.0mm
Lens Aperture	f/1.9	f/1.6
Minimum Focus Distance	20-30cm	25cm
Lens Element Count	-	7 with 2 aspherical, 2 extra-low dispersion
Lens Coatings	-	DGS™ MULTI-COATING

Specification	Fisheye	Aquagon
Distortion	-	<-1.5%
Back Focal Length	-	2.05mm
IR Filter	650nm	650nm
Horizontal FOV (In Air)	138°	-
Vertical FOV (In Air)	70°	-
Diagonal FOV (In Air)	168°	-
Horizontal FOV (In Water)	~82°	78°
Vertical FOV (In Water)	-	67°
Diagonal FOV (In Water)	-	93°

Image Sensor Specifications

Property	Color	Monochrome
Image Sensor	1/2.9" Omnivision OmniPixel 3-GS™ CMOS	--
Sensor Color	RGB	Monochrome
Sensor Type	Front-Side Illuminated	--
Pixel Size	3 μm (H) × 3 μm (V)	--
Electronic Shutter Type	Global Shutter	--
Max Resolution	1600x1200	--
Max Framerate	60fps with MJPEG	--
Color Channels	3	2
Bits Per Channel	8 bits	--
Compression Formats	YUY2, MJPEG	--
Connection	USB 2.0 High Speed / UVC Compliant / V4L2 Compatible	--

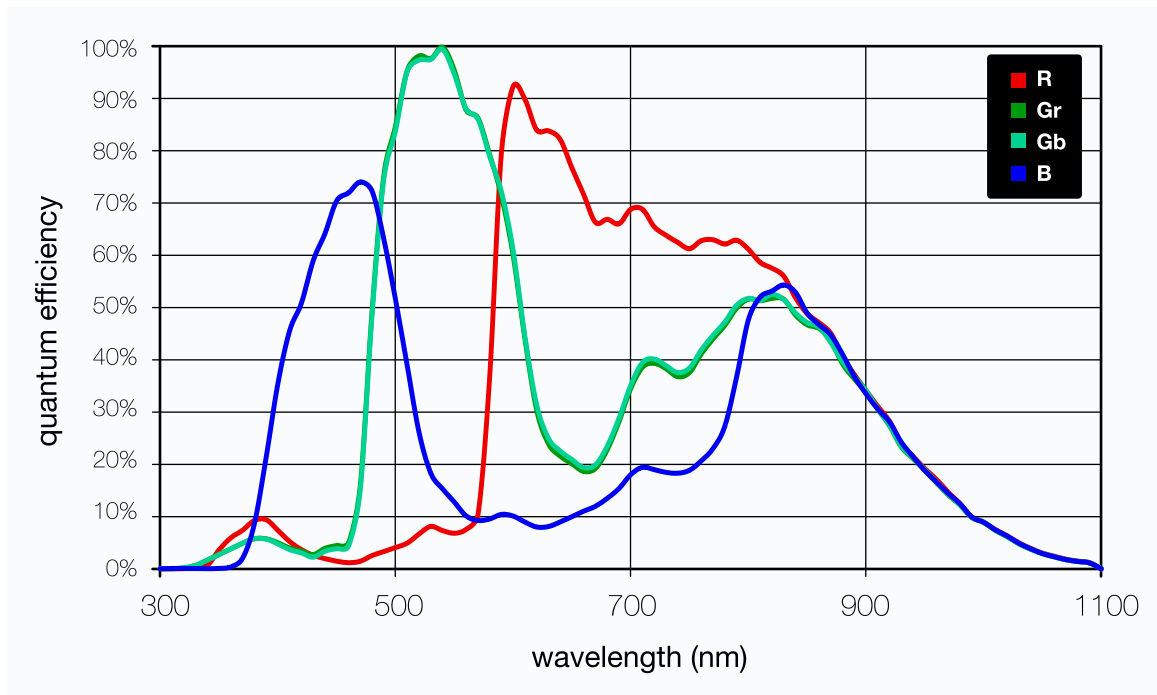


Image Compression Specifications

	MJPEG	YUY2
Chroma Subsampling	4:2:2	4:2:2

Supported Resolutions and Framrates

Resolution	MJPEG	YUY2
1600x1200	15, 30, 40, 50, 60 fps	5 fps
1280x720	15, 30, 40, 50, 60 fps	5 fps
800x600	15, 30, 40, 50, 60 fps	-
640x480	15, 30, 40, 50, 60 fps	5 fps
320x240	-	15, 30 fps

Frame-Sync Specifications

Leader-Follower Notes

Connect two cameras and configure your camera at any resolution, **but only at 60 FPS framerate.**

Follower-Only Signal Specification

FPS	Frequency Range	Duty Cycle	Rising Edge	Logic Level
60FPS / 59.94 NTSC	60Hz ± 0.1	30%	50ns or less	3.3V
50FPS	50Hz ± 0.1	30%	50ns or less	3.3V
40FPS	40Hz ± 0.1	30%	50ns or less	3.3V
30FPS	30Hz ± 0.1	30%	50ns or less	3.3V
15FPS	15Hz ± 0.1	30%	50ns or less	3.3V

Synchronization Guide

Guide to synchronizing multiple stellarHD cameras.

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.

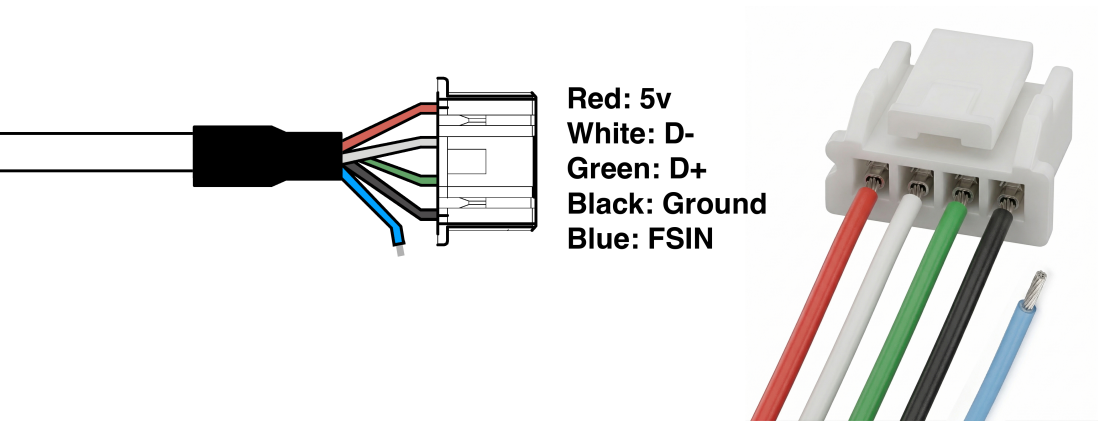
While we provide helpful optional utilities like our Camera Tester and dweOS, **these are strictly optional**. You can plug the camera into your system and immediately view the feed using standard built-in camera applications (like Windows Camera, OBS, etc).

Electrical Specifications

Property	MJPEG / YUY2 Mode
Voltage	5V
Current	190mA
Current (Max)	200mA
Operating Wattage	0.95W
Wattage (Min)	0.0033W
Wattage (Max)	1W

Connector Pinout

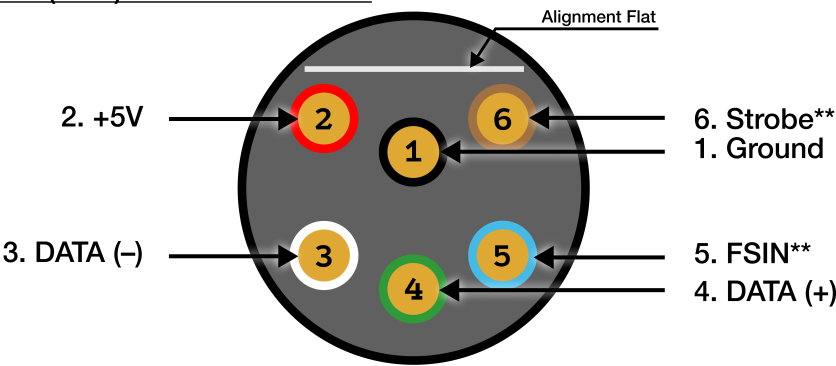
Standard



Color	Function	Wire Gauge (AWG)
Red	5V	24
White	D- (Data Negative)	28
Green	D+ (Data Positive)	28
Black	Ground	24
Blue	FSIN (Frame-Sync)	28

Cobalt 6-Pin

Cobalt 6-Pin* (USB) Cable - COB-1461



**Cable connector pinouts (looking at mating face of connector)*

***Only Applicable for products with those pins*

Cobalt (6 Pin) USB Cable	COB-1461
1	Black : Ground
2	Red : +5V
3	White : DATA -
4	Green : DATA +
5	Blue : FSIN (Frame-Sync)
6	Brown : NC

CAD Files

Wetlink

Standard Lens

Download
stellarHD (WetLink) STEP File

Download
stellarHD (WetLink) Technical Drawing (PDF)

Aquagon Lens

Download
stellarHD with Aquagon Lens (WetLink) STEP File

Download
stellarHD with Aquagon Lens (WetLink) Technical Drawing (PDF)

Cobalt

Standard Lens

Download
stellarHD (Cobalt) STEP File

Download
stellarHD (Cobalt) Technical Drawing (PDF)

Aquagon Lens

Download
stellarHD with Aquagon Lens (Cobalt) STEP File

Download
stellarHD with Aquagon Lens (Cobalt) Technical Drawing (PDF)

SubConn (1K)

Standard Lens

Download

stellarHD (SubConn) STEP File

Download

stellarHD (SubConn) Technical Drawing (PDF)

Aquagon Lens

Download

stellarHD with Aquagon Lens (SubConn) STEP File

Download

stellarHD with Aquagon Lens (SubConn) Technical Drawing (PDF)

Mounting Bracket

Download

stellarHD Mounting Bracket STEP File

Download

stellarHD Mounting Bracket Technical Drawing (PDF)

Updating Firmware

Guide

Follow this simple guide to updating firmware.