

Shadowgraph

Telecentric Imaging System

Wassoc's Shadowgraph is a compact subsea imaging system utilizing telecentric optics to capture in situ silhouette images of zooplankton (or other small targets) as they flow through a defined volume. The defined imaging volume makes it easy to measure and quantify targets, while the far-red collimated backlight minimizes species avoidance. Integral UV lights and hard-coat anodized components mitigate biofouling and corrosion on long deployments.



Features

-  Compact Design
-  1000 Meter Rated
-  Custom Configuration

How It Works

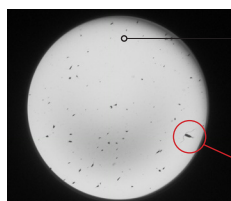
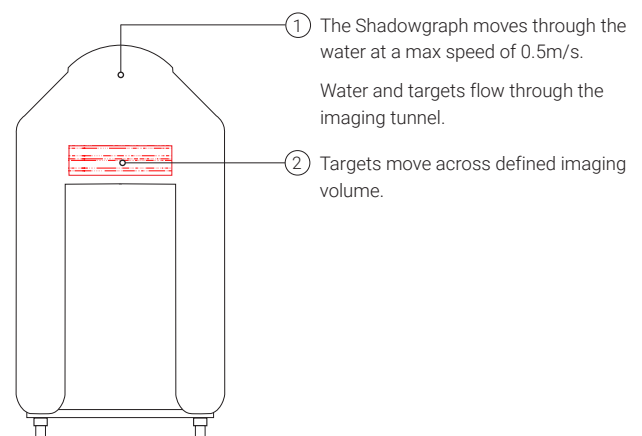


Image of zooplankton captured by Shadowgraph in Resurrection Bay, Alaska.

Photo courtesy of University of Alaska Fairbanks.

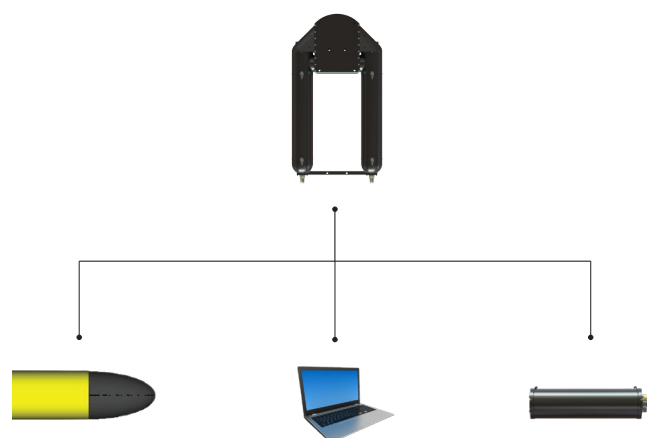
- ③ Silhouette images are acquired at 2Hz. Defined image circle of $\varnothing 1.75''$ allows for accurate measurements of targets.



* Detailed view of target.

Multiple Configurations

The Shadowgraph is optimized for integration onto a subsea glider. However, due to its size, RS-232 communication protocol, and low power requirements, the Shadowgraph can be integrated onto virtually any subsea asset.



AUV/ROV Integration

Ready for integration onto a Teledyne Slocum G3 Glider, or equivalent.

Best for: Validation of acoustic data.

PC Serial Terminal

Operable via PC and DC Power Supply.

Best for: Lab settings, fixed installations, etc.

Programmable Controller

Optional programmable controller and battery.

Best for: Attachment to tow bodies or other subsea equipment.

Specifications

Mechanical

Housing Material	Anodized Aluminum, SS, Delrin
Dimensions (L x W x H), in [cm]	21 [53.5] x 11.75 [30] x 2.75 [7]
Weight (air/water), lbs [kg]	9.5 [4.3] / 0.8 [0.4]
Connector	SUBCONN MCIL8M

Environmental

Depth Rating	1000m
Operating Temp	-10 to +50°C
Biofouling Mitigation	UVC LED Array
Corrosion Mitigation	Aluminum Alloy Sacrificial Anodes

Electrical

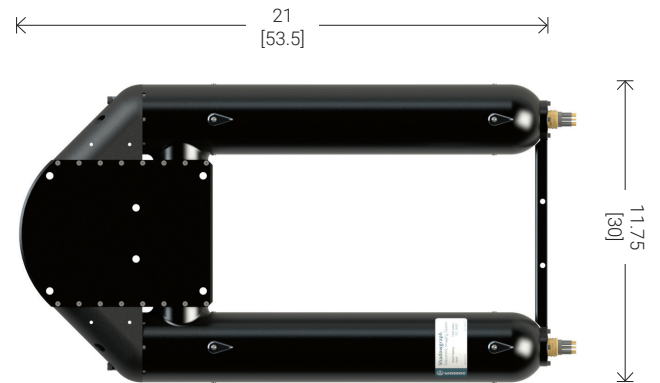
Power Supply	5.3–36 VDC
Power Consumption	~2W (max)
SSD Capacity	1TB

Optical

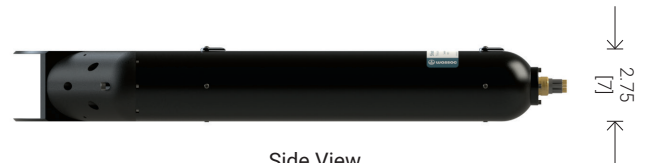
Image Sensor	12.3MP, 1/2.3 Backlit CMOS, Rolling Shutter
Color	Bayer RGB 12 Bit/channel (monochrome available)
Pixel Size	Square, 1.55µm
Active Pixels	4056 x 3040
Min Shutter Speed	104µs
Imaging Rate	up to 2Hz (Full Sensor)
Compression	jpeg, png, or raw dng
Back Light	620nm (multiple options)
Resolving Power	≥100µ
Imaged Volume, cu. in [cc]	13.6 [224]
Image Circle, in [cm]	Ø1.75 [4.5]
Tunnel Width, in [cm]	5.67 [14.4]

System

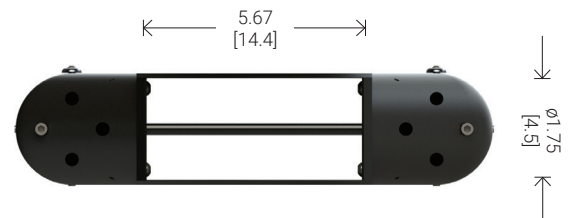
Comms	RS-232, WLAN
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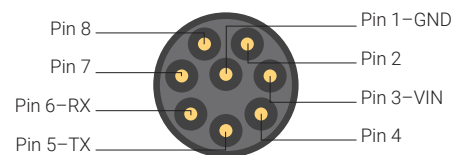
*Not to Scale
in [cm]



Side View
*Not to Scale
in [cm]



Front View
(imaged volume dimensions)
*Not to Scale
in [cm]



Connector Detail
*Not to Scale