

EyeRIS enables the quantitative visualization of 3D objects, surfaces, particle distributions, and fluid motion in the deep sea. *EyeRIS* uses an industrial-grade lightfield camera and an array of lights to image a volume of several liters positioned 65 cm in front of the instrument. By mounting the instrument on a remotely operated vehicle (ROV) via a manipulator arm, fine positioning of the instrument can be achieved by an ROV pilot, while the light array can be folded via hydraulic control for stowing. A dedicated desktop computer is used for instrument / lighting control, recording of the video feed, and live output of refocused / depth map images.

General

Weight	In Air: 65 lbs / 29.5 kg In Water: 35 lbs / 17.2 kg
Dimensions	Folded: 18 in (46 cm) OD x 36 in (92 cm) long Expanded: 32 in (82 cm) OD x 31 in (79 cm) long
Operating Temp	2-25°C
Max Depth	4000 m

Imaging

Camera	Raytrix R26 with F2.8 MLA
Lens	Canon EF 70-200 F2.8
Imaged Volume	65 cm from view port @ 70 mm: 15 x 15 x 5 cm @ 200 mm: 5 x 5 x 2 cm
Output Data	26 MP raw video @ 60fps, 1280x1280 pixel live processed output video @ 60 fps

Illumination

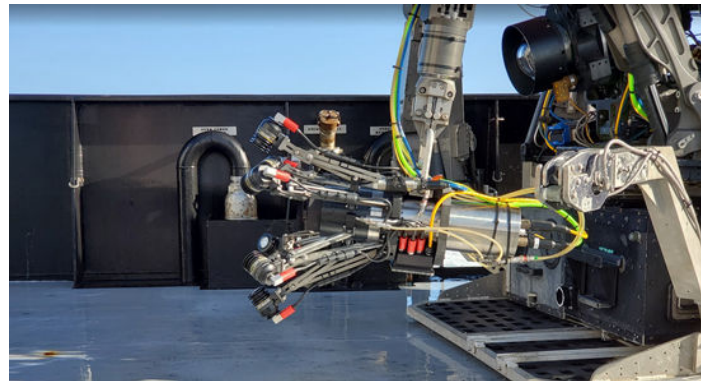
Lights	Up to 6 DSPL Sealite with 660 nm Cree LEDs
Max Optical Output	50W optical (limited by internal PSU)
Beam Angle	35°

Subsea interfaces

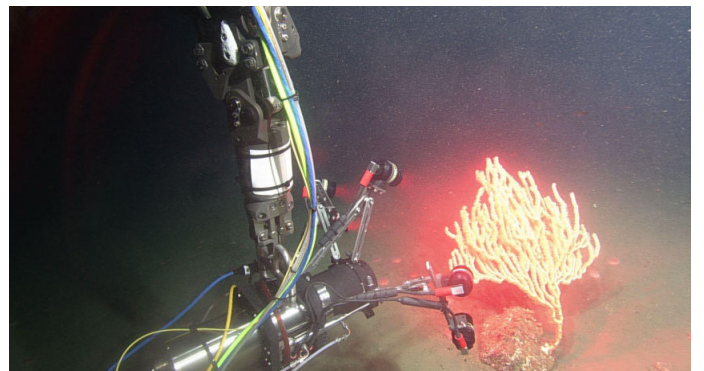
Electrical / Communications	HV (85-264 VAC / 120-390 VDC) 10m long MINK10/L (HV plus 100 Mb ethernet) 10m long Linden ST patch cord
Mechanical	T-handle bolted to manip 3x Hydraulic hoses: two for light array, one for pressure comp



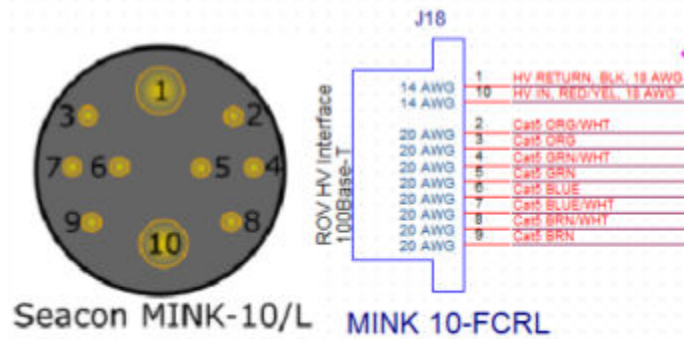
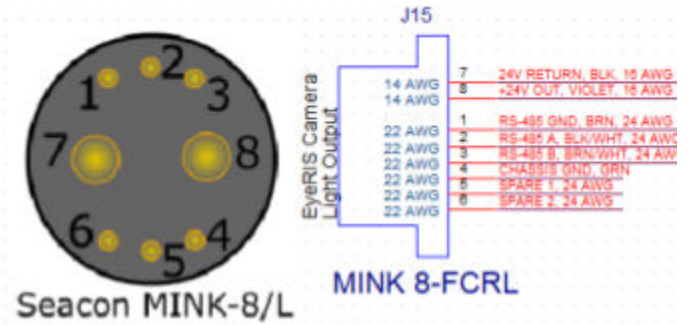
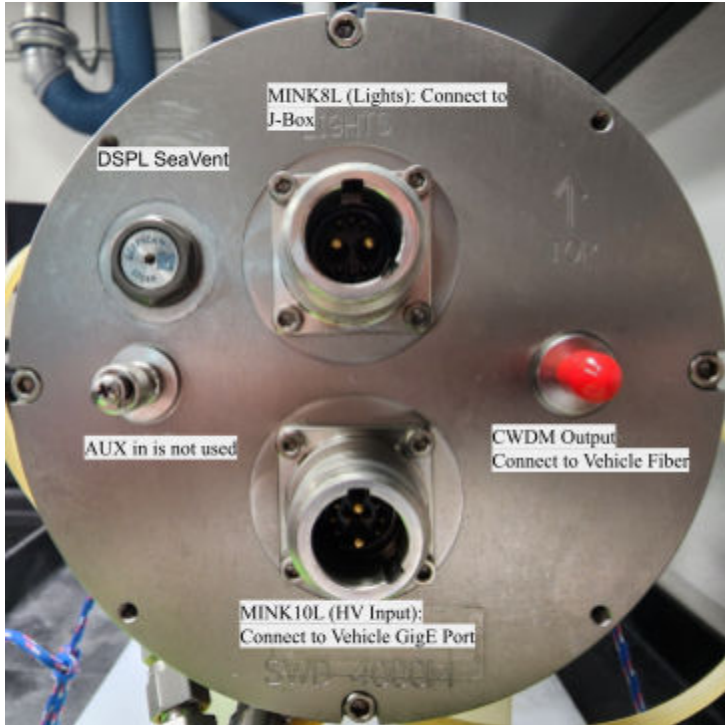
EyeRIS in the lab with the light array expanded. This is the benthic configuration, which eliminates one of the lights for better ground clearance.



EyeRIS mounted in ROV Ventana manipulator, with the light array folded (midwater configuration, 6 lights).



EyeRIS imaging coral branches at Sponge Ridge, California.



CWDM Output (Single Mode Fiber Green Tweed ST-DRY)

Wavelengths (nm)	1531, 1551, 1571, 1591, 1611
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HV INT (MINK10/L) High Voltage Power and 100 MB/s Ethernet

Pin Number	Function
1	HV Return
2	Cat5 Orange / White
3	Cat 5 Orange
4	Cat5 Green / White
5	Cat5 Green
6	Cat5 Blue / White
7	Cat5 Blue
8	Cat5 Brown / White
9	Cat5 Brown
10	HV Input 85-264 VAC, up to 390 VDC