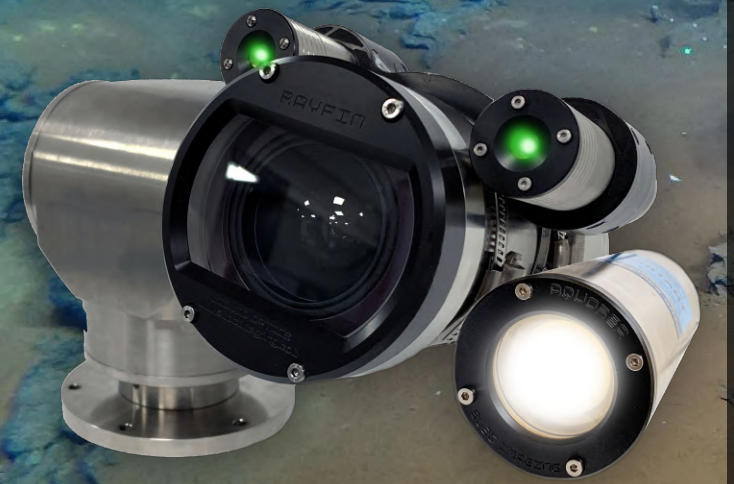
SubC Imaging

Rayfin Mk2



Built-in Storage
Record and store over 10 hours of 4K video, 40+ hours of HD video and thousands of digital stills. And, as a data-logger, the Rayfin Benthic has built-in depth, tilt and roll sensors, and can store NMEA sensor data.

High-Quality Optics
Capture the sharpest images in the harshest environments thanks to the scratch-resistant sapphire lens paired with water-corrected LiquidOpticsTM.

Real-time and Intuitive
Conveniently view and download your footage in real-time while effortlessly controlling your camera, lights and lasers from a topside PC.

Compatible with all subsea systems
Get the most out of your asset. From marine science observatories to offshore energy ROVs, the Rayfin's versatility provides high-quality footage no matter the application.

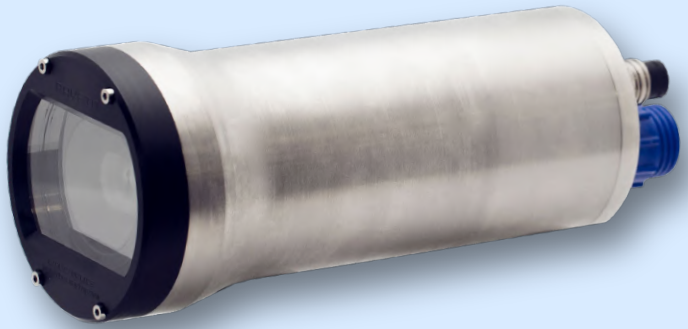
Easy Integration
Located on the back of the camera, auxiliary ports allow you to easily plug in lights, lasers, and other sensors, to enhance the quality of your footage.

Time Lapse and Automation
Save time during longer-term projects, and automate workflows to reduce repetition by using autonomous scripting to capture time lapse videos and digital stills.

Rayfin Mk2 Camera Models

Rayfin Mk2 Benthic Models

6000m Depth Rating



HD over Ethernet

Rayfin-HDE

Live video, control and media are transferred over 10/100 and Gigabit Ethernet. Composite video and serial control for older system compatibility.

HDE Camera | HDE + Depth

HD over Coax

Rayfin-HDC

Uncompressed HD video transferred over HD-SDI, Live video and stills are also transferred over Ethernet connection. Serial control included.

HDC Camera

Ultra HD over Fiber Optics

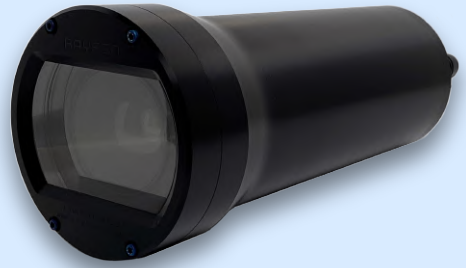
Rayfin-UHDF

4K over fiber optics. Ethernet, HD video and comms for uncompromised live video quality. Serial control included.

UHDF Camera

Rayfin Mk2 Coastal

500m Depth Rating



Boost Power Comms

Rayfin-BPC

Boosted Power and Ethernet over 2 wires, This technology enables signals over up to 410m of cable. Used for tow and drop camera systems to reduce the cost of cabling dramatically.

BPC Camera | BPC Unit

Rayfin-Mk2-HDE-6000-DBH13-LO

Ethernet HD video and comms, serial comms - optional SD video

Mech: BL
Production: JMH
PM: CC

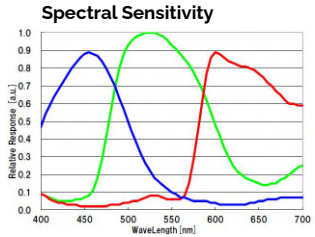
Updated: 2021-11-25

Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll. ***(Optional Depth & Temp)***
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

Live Video	
Live Video Standards	Ethernet - RTSP H.264 ***(Optional Composite)***
Live Video Resolution	1080/30p/25p *(480/30p/25p)*
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F [AUX0 Port]	MCBH5F [AUX1 Port]	DBH13M + DLSA-M [IP video, control and download]	#
GND	GND	GND	1
PWR	PWR	Iso GND (Shield) (NC on system end)	2
AUX0 Out	AUX1 Out	PWR	3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
		(Blue) DC+ [GigE]	6
		(White/Blue) DC- [GigE]	7
		(Orange) DA- [10/100]	8
		(White/Orange) DA+ [10/100]	9
		(Green) DB- [10/100]	10
		(White/Green) DB+ [10/100]	11
			12
		Composite SD Video (optional)	13

Cabling notes:
- SubC bulkheads are wired to Ethernet B standard.
- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the LEDs.
- In-line cable part number for Ethernet bulkhead: DIL13F + DLSA-F



Email team@subcimaging.com for more info

Rayfin-Mk2-HDE-6000-DBH13-LO-DT

Ethernet HD video and comms, serial comms w/ Built-in Depth and Temperature - optional SD video

Mech: BL
Production: JMH
PM: CC

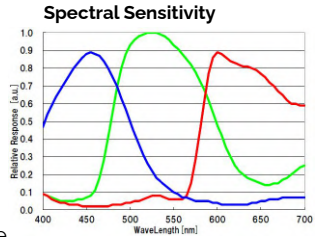
Updated: 2021-11-25

Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	***Depth, Water-temperature***, Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%
Depth and Temperature Sensor	
Pressure Accuracy	600 BAR ±0.15 %FS
Temperature Accuracy	0-50C ±0.15 %FS
Stability	±0.15 %FS
TEB	±0.7 %FS

Live Video	
Live Video Standards	Ethernet - RTSP H.264 ***(Optional Composite)***
Live Video Resolution	1080/30p/25p *(480/30p/25p)*
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F [AUX0 Port]	MCBH5F [AUX1 Port]	DBH13M + DLSA-M [IP video, control and download]	#
GND	GND	GND	1
PWR	PWR	Iso GND (Shield) (NC on system end)	2
AUX0 Out	AUX1 Out	PWR	3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
		(Blue) DC+ [GigE]	6
		(White/Blue) DC- [GigE]	7
		(Orange) DA- [10/100]	8
		(White/Orange) DA+ [10/100]	9
		(Green) DB- [10/100]	10
		(White/Green) DB+ [10/100]	11
			12
		Composite SD Video (optional)	13

Cabling notes:
- SubC bulkheads are wired to Ethernet B standard.
- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the LEDs.
- In-line cable part number for Ethernet bulkhead: DIL13F + DLSA-F



Email **team@subcimaging.com** for more info

Rayfin-Mk2-HDC-6000-CRE75-DBH13-LO

HD-SDI video over Coax, Ethernet HD video and comms, serial comms

Mech: BL
Production: JMH
PM: CC

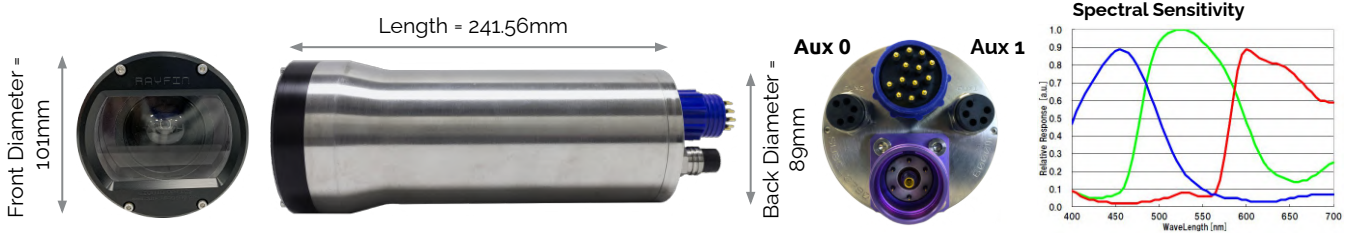
Updated: 2021-11-25

Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

Live Video	
Live Video Standards	HD over Coax (HD-SDI) Ethernet - RTSP H.264
Live Video Resolution	1080/30p/25p
Live Video Latency	85ms ± 25ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F [AUX0 Port]	MCBH5F [AUX1 Port]	CRE Titanium FRM06MCX05002001 [HD over Coax]	DBH13M + DLSA-M [IP video, control and download]	#
GND	GND	GND	GND	1
PWR	PWR	PWR	Iso GND (Shield) (NC on system end)	2
AUX0 Out	AUX1 Out	N/C	PWR	3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)	N/C	(Brown) DD- [GigE]	4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	AUX1 RS-485 B(-)	(White/Brown) DD+ [GigE]	5
		AUX1 RS-485 A(+)	(Blue) DC+ [GigE]	6
		3G-SDI *Coax Core	(White/Blue) DC- [GigE]	7
		GND *Coax Shield	(Orange) DA- [10/100]	8
			(White/Orange) DA+ [10/100]	9
			(Green) DB- [10/100]	10
			(White/Green) DB+ [10/100]	11

Cabling notes:
- SubC bulkheads are wired to Ethernet B standard.
- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the LEDs.
- In-line cable part number for Ethernet bulkhead: DIL13F + DLSA-F



Email **team@subcimaging.com** for more info

Rayfin-Mk2-UHDF-6000-Optolink-DBH13-LO-#nm

6G-SDI over SingleMode Fiber Optics, Ethernet HD video and comms, serial comms

Mech: BL
Production: JMH
PM: CC

Updated: 2021-11-25

Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

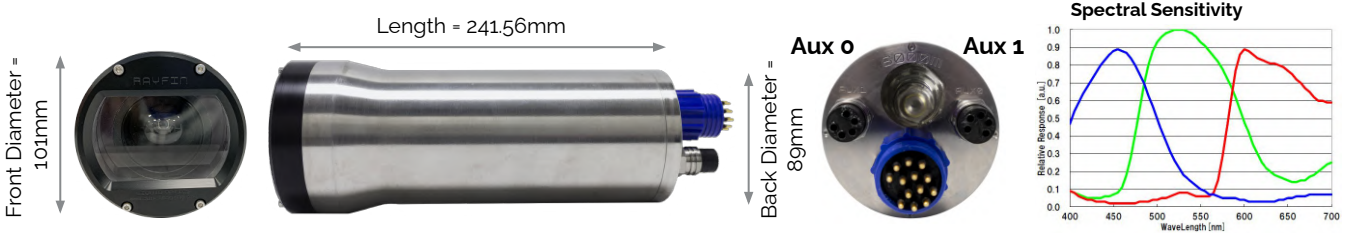
Live Video	
Video Standards	4K over Fiber Ethernet - RTSP H.264
Video Resolution	4K/30p/25p, 1080/30p/25p
Video Latency	85ms ± 25ms
Tx Power Fiber	20+ dB
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F [AUX0 Port]	MCBH5F [AUX1 Port]	Optolink (Ti) (Singlemode 6000m)	DBH13M + DLSA-M [IP video, control and download]	#
GND	GND	Solid molded cable only. No PBOF. 6G-SDI video SMPTE ST-2081	GND	1
PWR	PWR		Iso GND (Shield) (NC on system end)	2
AUX0 Out	AUX1 Out		PWR	3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)		(Brown) DD- [GigE]	4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)		(White/Brown) DD+ [GigE]	5
			(Blue) DC+ [GigE]	6
			(White/Blue) DC- [GigE]	7
			(Orange) DA- [10/100]	8
			(White/Orange) DA+ [10/100]	9
			(Green) DB- [10/100]	10
			(White/Green) DB+ [10/100]	11
			AUX1 RS-485 B(-)	12
			AUX1 RS-485 A(+)	13

Important notes:
- SubC bulkheads are wired to Ethernet B standard.
- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the LEDs.
- In-line cable part number for Ethernet bulkhead: DIL13F + DLSA-F

Includes topside conversion box: HDMI 2.0b output

Selections Required:
Wavelength (nm) = Stock 1270, 1330nm or non-stock CWDM bands



Email **team@subcimaging.com** for more info

Rayfin-Mk2-BPC-500-MCBH2-LO

Water-corrected - HD IP video, data and comms over 2 wire

Mech: BL
Production: JMH
PM: CC

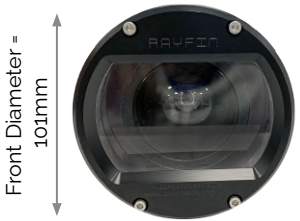
Updated: 2021-11-25

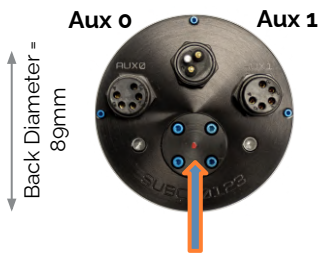
Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

Live Video	
Bitrate - Distance	(8MB/s - 200m), (6MB/s - 325m), (1.5MB/s - 500m)
Live Video Resolution	1080/720 @ 30p/25p
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	40 - 78 Vdc
Power (W)	11 (idle) - 12 (recording) - 18 (peak)
Control	SubC BPC Tech
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Anodized Aluminium
Weight	0.8kg in water, 2.4kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	500m
Depth and Temperature Sensor	
Pressure Accuracy	50 BAR ±0.15 %FS
Temperature Accuracy	0-50C ±0.15 %FS
Stability	±0.15 %FS
TEB	±0.7 %FS

MCBH5F [AUX0]	MCBH5F [AUX1]	MCBH2M [BPC]	#
GND	GND	GND + BPC	1
PWR Out 29.8Vdc	PWR Out 29.8Vdc	77VDC + BPC	2
AUX0 Out	AUX1 Out		3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)		4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)		5

SubC BPC Unit required





Email **team@subcimaging.com** for more info

BPC-Unit-77V

Boost-Power Communications is Ethernet and high voltage DC multiplexed into 2 wires

Mech: BL
Production: JH
PM: CC

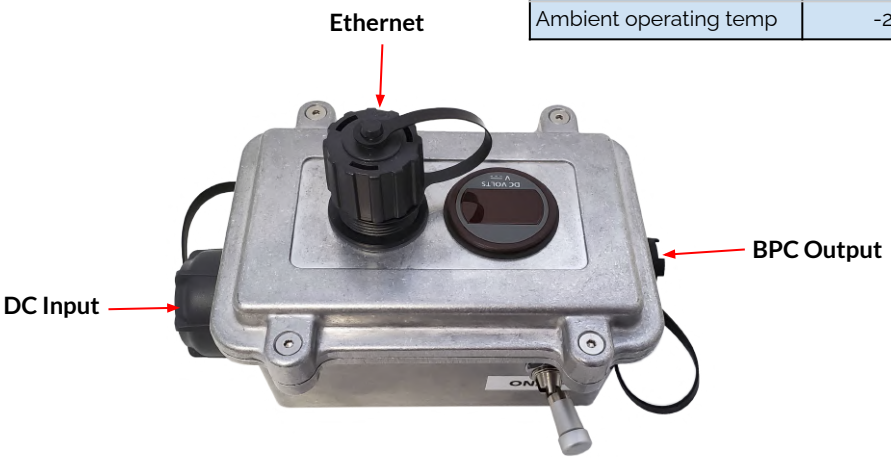
Updated: 2021-08-13

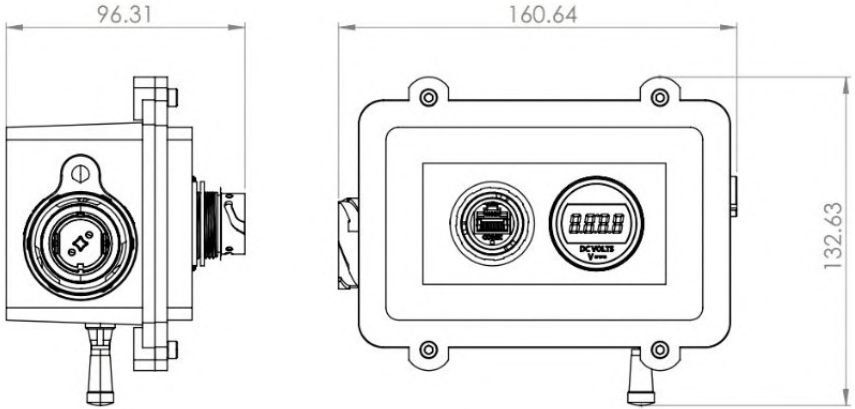
The 11-34VDC from the power system on the boat/dock is muxed with Ethernet and boosted to 77DC. Boost-Power Communication via the water-resistant DC BoostBox module, with IP67 rated connectors. The signals and power are sent over up to 470m of 2-wire twisted-pair cable to be demuxed inside of the camera for communications and power for all sensors.

Electrical	
Maximum Transfer Speed	up to 8MB/sec
Transmission Distance	470m over TWP
Protection	Short circuit, UV-OV, ESD, OT
Input Voltage	15V - 36V
Output Voltage	77VDC
Power(W)	228 (peak)
Mechanical	
Material	Aluminum
Weight	0.84Kg
Ambient operating temp	-20 to 30°C

Bulgin PXP7012/02P/ST Power Bulkhead	Bulgin PX0735/S BPC Output	Conec 17-10020 Ethernet Bulkhead	#
GND	GND + BPC	DA+ (White/Orange)	1
PWR In 15-36V	77VDC + BPC	DA- (Orange)	2
		DB+ (White/Green)	3
			4
			5
		DB- (Green)	6
			7
			8

Important notes:
- SubC Ethernet is wired to Ethernet B standard.





Email **team@subcimaging.com** for more information

Rayfin-Mk2-HDE-GigE-6000-ImpMHDXL12FCR-LO-Outputs

Observatory - Ethernet HD video and comms, 4 aux ports

Mech: BL
Production: JMH
PM: CC

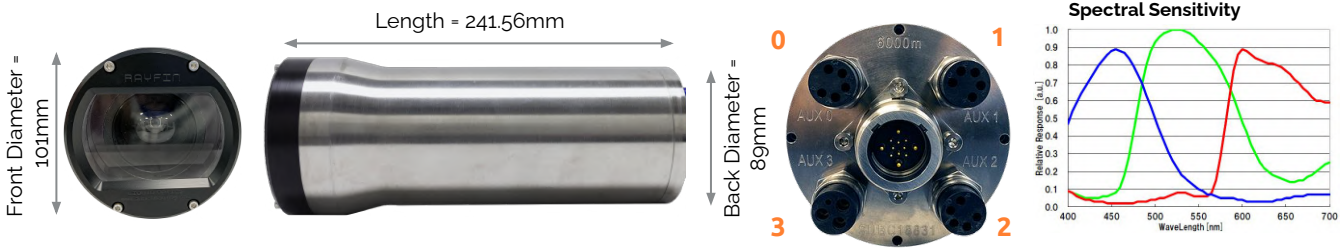
Updated: 2021-11-25

Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

Live Video	
Live Video Standards	IP Ethernet
Live Video Resolution	1080/30p/25p
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F Aux 0 Lamp/Strobe	MCBH5F Aux 1 Lamp/Strobe	MCBH5F Aux 2 Pan-Tilt Unit	MCBH3F Aux 3 Parallel Lasers	Impulse MHDXL-12-FCR Ti Ethernet	#
GND	GND	GND	GND	Power GND	1
Breaker PWR0	Breaker PWR1	Breaker PWR2	Breaker PWR3	(blu) DC+	2
Strobe Enable	Strobe Enable	Strobe Enable		Data GND	3
AUX0 RS-485 B(-)	AUX0 RS-485 B(-)	AUX1 RS-485 B(-)		(grn) RX-/DB-	4
AUX0 RS-485 A(+)	AUX0 RS-485 A(+)	AUX1 RS-485 A(+)		(org) TX-/DA-	5
				(brn) DD-	6
				(wht/brn) DD+	7
				(wht/org) TX+/DA+	8
				(wht/grn) RX+/DB+	9
				24 VDC	10
				(wht/blu) DC-	11

Important notes:
- SubC bulkheads are wired to Ethernet B standard.
- Aux ports have a 2.5A limit with built in Aux breaker panel. Breakers can be toggled with command API.



Email **team@subcimaging.com** for more info

Rayfin-Mk2-HDE-GigE-6000-MINK10-LO-Outputs

Observatory - Ethernet HD video and comms, 4 aux ports

Mech: BL
Production: JMH
PM: CC

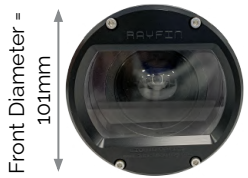
Updated: 2021-11-25

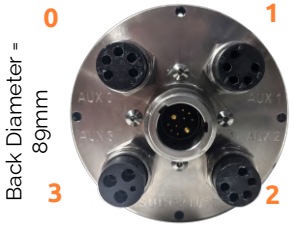
Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

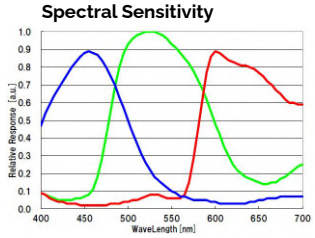
Live Video	
Live Video Standards	IP Ethernet
Live Video Resolution	1080/30p/25p
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F Aux 0 Lamp/Strobe	MCBH5F Aux 1 Lamp/Strobe	MCBH5F Aux 2 Pan-Tilt Unit	MCBH3F Aux 3 Parallel Lasers	Seacon MINK10FCRTI003 Ethernet	#
GND	GND	GND	GND	24 VDC	1
Breaker PWR0	Breaker PWR1	Breaker PWR2	Breaker PWR3	(wht/org) TX+/DA+	2
Strobe Enable	Strobe Enable	Strobe Enable		(wht/grn) RX+/DB+	3
AUX0 RS-485 B(-)	AUX0 RS-485 B(-)	AUX1 RS-485 B(-)		(org) TX-/DA-	4
AUX0 RS-485 A(+)	AUX0 RS-485 A(+)	AUX1 RS-485 A(+)		(wht/blu) DC-	5
				(wht/brn) DD+	6
				(grn) RX-/DB-	7
				(blu) DC+	8
				(brn) DD-	9
				GND	10

Important notes:
- SubC bulkheads are wired to Ethernet B standard.
- Aux ports have a 2.5A limit with built in Aux breaker panel. Breakers can be toggled with command API.







Email **team@subcimaging.com** for more info

Rayfin-Mk2-HDE-6000-DLPBH13M-LO

Ethernet HD video and comms, serial comms - optional SD video

Mech: BL
Production: JMH
PM: CC

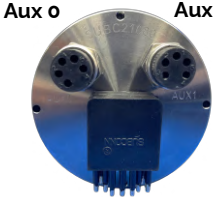
Updated: 2021-11-25

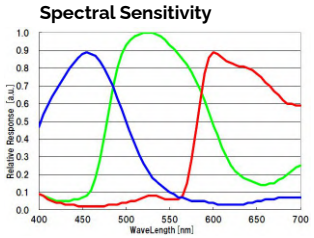
Sensor & Lens	
Sensor	Type 1/2.3" CMOS 12-bit
Image Size	12.3MP - 4056 x 3040
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200
Lens	4.52mm f/2.0
Zoom	12.3MP sensor zoom (5x optical equivalent)
Focus Range	15cm to infinity
Internal Recording System	
Image Format	JPEG and RAW
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)
Recording Resolution	HD and 4K UHD
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB
Recording Format	H.265 and H.264 - MP4
Media Transfer	Live over Ethernet
Clock Sources	Internal and NTP Server
Data Logging	NMEA 0183/2000 format @ 1Hz
Integrated Sensors	Tilt and Roll
LiquidOptics	
Diagonal FOV	81° min.
Horizontal FOV	71° min.
Vertical FOV	57° min.
Distortion	Less than 3.4%

Live Video	
Live Video Standards	Ethernet - RTSP H.264 ***(Optional Composite)***
Live Video Resolution	1080/30p/25p *(480/30p/25p)*
Live Video Latency	225ms ± 50ms
Electrical	
Voltage	16.5 - 32.5 Vdc
Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)
Control	Ethernet, Serial RS-485
Transmission	**No LED:** 60m (GigE), 80m (10/100) **2x LED:** 20m (GigE), 40m (10/100)
Protection	Short circuit, under/over voltage, ESD, over-temperature
Mechanical	
Materials	Sapphire, Grade 5 Titanium
Weight	1.6kg in water, 3.2kg in air
Temperature	-20°C to +30°C (In Water)
Depth Rating	6000m

MCBH5F [AUX0 Port]	MCBH5F [AUX1 Port]	DLPBH13M [IP video, control and download]	#
GND	GND	GND	1
PWR	PWR	Iso GND (Shield) (NC on system end)	2
AUX0 Out	AUX1 Out		3
AUX0 RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
		(Blue) DC+ [GigE]	6
		(White/Blue) DC- [GigE]	7
		(Orange) DA- [10/100]	8
		(White/Orange) DA+ [10/100]	9
		(Green) DB- [10/100]	10
		(White/Green) DB+ [10/100]	11
		PWR	12
		Composite SD Video (optional)	13

Cabling notes:
- SubC bulkheads are wired to Ethernet B standard
- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the LEDs





Email **team@subcimaging.com** for more info

Rayfin Benthic Packaging & QA

TW: ADR
Production: JMH
PM: CC

Updated:
2021-12-14

Included with your Rayfin shipment:

1. Rayfin Benthic 6000m Titanium camera
2. Component compartment:
   a. High-pressure dummy plugs for camera Aux0 & Aux1 bulkheads
   b. DBH13F test whip bench testing the camera and downloading offline
   c. AC cable (matching your region) and AC-DC power supply (24VDC)]
   d. Cat5e Ethernet cable
3. Optional Accessories:
   a. Aquorea LED(s)
   b. MantaRay or Skate Laser(s)
4. Accessory components:
   a. (with LED or Skate laser) 3m MCIL5M to MCIL5F cable for Aux ports
   b. (with MantaRay) 0.5m Y-splice laser cable to plug into camera
   c. (with MantaRay) 2x Titanium clamps for attachment to the camera
5. USB stick with:
   a. Windows 10 compatible Rayfin Control Software
   b. Product manuals, datasheets and QC documentation
6. Documentation: complete QA checklist, pressure-test certificates, packing list datasheets, and quick start guide (located under the lid foam)
7. Impact resistant shipping case with designed foam insert

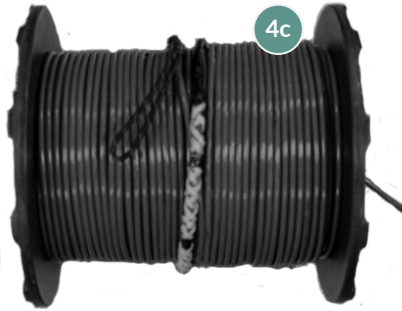
Rayfin Coastal Packaging & QA

Production: JMH
PM: CC

Updated:
2021-12-14

Included with your Rayfin shipment:

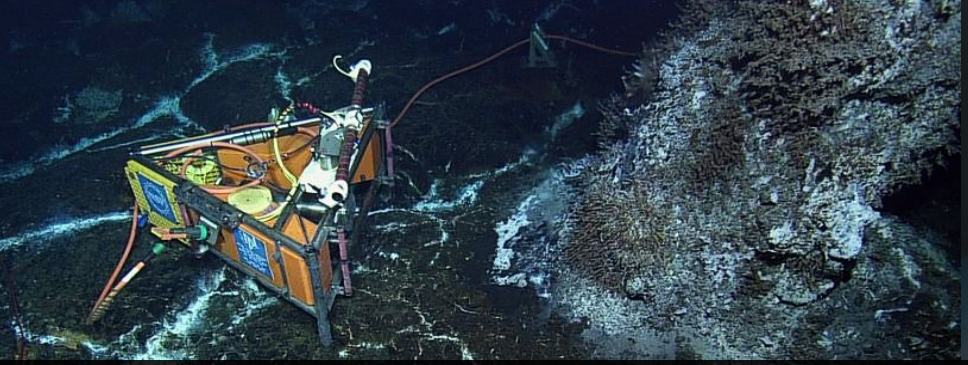
1. Rayfin Coastal 500m camera
2. Boost-Power Communication (BPC) Unit
3. Component compartment:
    a. High-pressure dummy plugs for camera Aux0 & Aux1 bulkheads
    b. MCIL2F BPC Test Cable for bench testing camera and downloading
    c. AC cable (matching your region) and AC-DC power supply (24VDC)
    d. IP67 Rated Ethernet cable
4. Optional Accessories:
    a. Aquorea LED(s)
    b. MantaRay or Skate Laser(s)
    c. Kevlar Tow Cable with Kellems grip
5. Accessory components:
    a. (with LED or Skate laser) 3m MCIL5M to MCIL5F cable for Aux ports
    b. (with MantaRay) 0.5m Y-splice laser cable to plug into camera
    c. (with MantaRay) 2x Titanium clamps for attachment to the camera
6. USB stick with:
    a. Windows 10 compatible Rayfin Control Software
    b. Product manuals, datasheets and QC documentation
7. Documentation: complete QA checklist, pressure-test certificates, packing list datasheets, and quick start guide (located under the lid)
8. Impact-resistant shipping case with designed foam insert



Camera Comparison Chart

Updated:
2022-03-08

	Features	Rayfin Benthic (link)	Rayfin Coastal (link)	1Cam Mk6 (link)
Optics	LiquidOpticsTM (link)	✔	✔	✔
Live Video Options	HD over Ethernet (HDE)	✔		
	SubC Boost-Power Comms (BPC)		✔	
	Composite Video (SD)	✔		✔
	HD-SDI over Coax (HDC)	✔		✔
	4K over singlemode fiber (UHDF)	✔		✔
Features	Internal Recording	4K, HD (H.265, H.264)		4K, HD (H.264)
	Storage Capacity	512GB, Optional 1TB		512GB
		With 512GB, 10+ hours of 4K video, 40+ hours of HD video and thousands of digital still		
	Digital Stills	12.3MP		16MP
	Zoom	12.3MP sensor zoom (5x optical equivalent)		20x Optical
	Field of View (diagonal)	81 degrees		78 degrees
	Depth Rating	6000m	500m	6000m
	Camera Control	Ethernet, RS-485	BPC Technology	RS232, RS485
	Media Download	Real-time over Ethernet		USB
	Built-in Sensors	Tilt and Roll. Optional Depth and Temperature	Tilt, Roll, Depth and Temperature	



System: OBSERVATORY

Web PDF

The observatory system is purposely made for marine researchers who are looking to collect optical data of offshore underwater locations over an extremely long duration.

System: AUTONOMOUS

Web PDF

The autonomous subsea imaging system is used to capture timelapse HD and 4K videos and high-resolution digital stills without real-time control.

System: SUBSEA DIGITAL STILLS

Web PDF

The Digital Stills system combines a Rayfin camera with LED strobes and parallel point or line lasers to collect high-quality subsea data and is easily deployed using an ROV.

System: TOW CAMERA

Web PDF

The Towed subsea camera system is optimally built for smaller vessels working in a shallow-water depth of under 470 meters looking to conduct coastal research, seafloor mapping and much more.

CONTACT SUBC IMAGING

As leaders in our field, our goal is to provide complete imaging solutions to subsea professionals. Our first step is always a simple conversation about the nature of your project and how our solutions can help you achieve success.

If you're interested in learning more about our products and services, please reach out to:

team@subcimaging.com

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