## 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 Gooom 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.

## 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.

## Ultra HD over Fiber Optics Rayfin-UHDF

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

## 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.

**HDE Camera** 

HDE + Depth

HDC Camera

UHDF Camera

BPC Camera

**BPC Unit** 



## Rayfin-Mk2-HDE-6000-DBH13-LO

Mech: BL Production: JMH PM: CC

> 0.1 0.0 400 450 500 550 600 650

WaveLength [nm]

Updated: 2021-11-25

Sensor & Lens		Live Video		MCBH5F	MCBH5F	DBH13M + DLSA-M	#
Sensor	Type 1/2.3" CMOS 12-bit	Live Video Standards	Ethernet - RTSP H.264	[AUXo Port]	[AUX1 Port]	[IP video, control and download]	1
Image Size	12.3MP - 4056 x 3040		(Optional Composite)	GND	GND	GND	1
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200	Live Video Resolution	1080/30p/25p	PWR	PWR	Iso GND (Shield)	2
Lens	4.52mm f/2.0	Live Male e Laters av	(480/30p/25p)			(NC on system end)	
Zoom	12.3MP sensor zoom (5x optical	Live Video Latency	225ms ± 50ms	AUXo Out	AUX1 Out	PWR	3
	equivalent)	Electrical		AUXo RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
Focus Range	15cm to infinity	Voltage	16.5 - 32.5 Vdc	AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
Internal Recording Syst	em	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)			(Blue) DC+ [GigE]	6
Image Format	JPEG and RAW	Control	Ethernet, Serial RS-485	Cabling notes:		(W/hite/Blue) DC- [GigE]	7
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Transmission	<b>No LED:</b> 60m (GigE), 80m (10/100)	- SubC bulkheads ar	e wired to Ethernet B		,
Recording Resolution	HD and 4K UHD		<b>2x LED</b> : 20m (GigE), 40m (10/100)	standard.	mited to 14 per pin The		°
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Protection	Short circuit, under/over voltage,	camera automaticall	y limits power to the	(White/Orange) DA+ [10/100]	9
			ESD, over-temperature	LEDs.		(Green) DB- [10/100]	10
Recording Format	H.265 and H.264 - MP4	Mechanical		- In-line cable part n	umber for Ethernet	(White/Green) DB+ [10/100]	11
Media Transfer	Live over Ethernet	Materials	Sapphire, Grade 5 Titanium	bulkhead: DIL13F + D	LSA-F		12
Clock Sources	Internal and NTP Server	Weight	1.6kg in water, 3.2kg in air			Composite SD Video (optional)	13
Data Logging	NMEA 0183/2000 format @ 1Hz	Temperature	-20°C to +30°C (In Water)				
Integrated Sensors	Tilt and Roll.	Depth Rating	6000m				
LiquidOptics	(Optional Depth & Temp)		Length = 241.56n	าทา		Spectral Sensitivity	
Diagonal FOV	81° min.				Aux o		
Horizontal FOV	71° min.	nisher ter		and the second			1
Vertical FOV	57° min.				l e e		
Distortion	Less than 3.4%	ont Dia 101		, in the second s	8gn	4004 600 400 400 400 400 400 400	

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

Mech: BL Production: JMH PM: CC

> 0.0 400 450 500 550 600 650

WaveLength [nm]

Depth/Temperature

Updated: 2021-11-25

Sensor & Lens		Live Video		MCBH5F	MCBH5F	DBH13M + DLSA-M	#
Sensor	Type 1/2.3" CMOS 12-bit	Live Video Standards	Ethernet - RTSP H.264	[AUXo Port]	[AUX1 Port]	[IP video, control and download]	
Image Size	12.3MP - 4056 x 3040		(Optional Composite)	GND	GND	GND	1
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200	Live Video Resolution	n 1080/30p/25p p	I PW/R	PWR	Iso GND (Shield)	2
Lens	4.52mm f/2.0		(480/30p/25p)			(NC on system end)	-
Zoom	12.3MP sensor zoom (5x optical equivalent)	Live Video Latency	225ms ± 50ms		ALIX1 Out		-
Focus Range	15cm to infinity	Electrical			AOXIOU		3
Internal Recording Syste	em	Voltage	165 - 325 Vdc	AUXo RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
Image Format	JPEG and RAW		75 (idlo) 8 (recording) 125 (pools)	AUXo RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Power (w)	7.5 (lute) - 8 (lecoluling) - 13.5 (peak)		•	(Blue) DC+ [GigE]	6
Recording Resolution	HD and 4K UHD	Control	Ethernet, Serial RS-485	Cabling notes:		(White/Blue) DC- [GigE]	7
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Transmission	<b>No LED:</b> 60m (GigE), 80m (10/100)	- SubC bulkheads ar	e wired to Ethernet B		
Recording Format	H.265 and H.264 - MP4		<b>2x LED:</b> 20m (GigE), 40m (10/100)	standard.		(Orange) DA- [10/100]	8
Media Transfer	Live over Ethernet	Protection	Short circuit, under/over voltage,	- 13 pin bulkhead is limited to 4A per pin. The camera automatically limits power to the		(White/Orange) DA+ [10/100]	9
Clock Sources	Internal and NTP Server		ESD, over-temperature			(Green) DB- [10/100]	10
Data Logging	NMEA 0183/2000 format @ 1Hz	Mechanical		- In-line cable part n	umber for Ethernet	(White/Green) DB+ [10/100]	11
Integrated Sensors	Depth, Water-temperature, Tilt and Roll	Materials	Sapphire, Grade 5 Titanium	bulkhead: DIL13F + D	LSA-F		12
LiquidOptics		Weight	1.6kg in water, 3.2kg in air			Composite SD Video (optional)	13
Diagonal FOV	81° min.	Temperature	-20°C to +30°C (In Water)				
Horizontal FOV	71° min.	Depth Rating	6000m				
Vertical FOV	57° min.						
Distortion	Less than 3.4%		l enath = 24156m	h		Spectral Sensitivity	
Depth and Temperature Sensor							
Pressure Accuracy	600 BAR ±0.15 %FS				Aux1		
Temperature Accuracy	0-50C ±0.15 %FS	E E	State of Sta				~
Stability	±0.15 %FS	11m IIm IIm	d a martine and a martine a			20.4 A	
TEB	±0.7 %FS			<b>H</b>		ž0.3 ž0.2	
		Fror		and the			

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

Mech: BL Production: JMH PM: CC

> 0.1 0.0 400 450 500 550 600 650

WaveLength [nm]

Updated: 2021-11-25

Sensor & Lens		Live Video	MCBH5F		MCBH5F	CRE Titanium	DBH13M + DLSA-M	#	
Sensor	Type 1/2.3" CMOS 12-bit	Live Video Standards	HD over Coax (HD-SDI)	[AUXo Port]	[AUX1 Port]	FRM06MCX05002001	[IP video, control and		
Image Size	12.3MP - 4056 x 3040		Ethernet - RTSP H.264			[HD over Coax]	download	1	
Max. Exposure	Shutter Speed 1/65000, ISO 3200	Live Video Resolution	1080/30p/25p	GND	GND	GND	GND	1	
Settings		Live Video Latency	85ms ± 25ms				lee GND (Shield)	-	
Lens	4.52mm f/2.0	Electrical		I WIX			(NC on system end)	-	
Zoom	12.3MP sensor zoom (5x optical	Voltage	16.5 - 32.5 Vdc	AUXo Out	AUX1 Out	N/C	PWR	3	
	equivalent)	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)	AUX0 RS-485 B(-)	AUX1 RS-485 B(-)	N/C	(Brown) DD- [GiaE]	4	
Focus Range	15cm to infinity	Control	Ethernet, Serial RS-485	AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	AUX1 RS-485 B(-)	(White/Brown) DD+ [GigE]	5	
Internal Recording Sys	rding System Transm		No LED: 60m (GigE), 80m (10/100)			(Blue) DC+ [GigE]	6		
Image Format	JPEG and RAW		<b>2x LED:</b> 20m (GigE), 40m (10/100)					-	
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Protection	Short circuit, under/over voltage, ESD,			3G-SDI COax Cole			
Recording Resolution	HD and 4K UHD		over-temperature	Gi		GND Coax Shield	(Orange) DA- [10/100]	8	
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Mechanical		Cabling notes: - SubC bulkheads are wired to Ethernet B standard. - 13 pin bulkhead is limited to 4A per pin. The camera			(White/Orange) DA+ [10/100]	9	
Recording Format	H.265 and H.264 - MP4	Materials	Sapphire, Grade 5 Titanium				(Green) DB- [10/100]	10	
Media Transfer	Live over Ethernet	Weight	1.6kg in water, 3.2kg in air	automatically limit	s power to the LEDs	5.	()\{/hite/Green) DB+	11	
Clock Sources	Internal and NTP Server	Temperature	-20°C to +30°C (In Water)	- In-line cable part	number for Etherne	et bulkhead: DIL13F	[10/100]		
Data Logging	NMEA 0183/2000 format @ 1Hz	Depth Rating	6000m	DESAN					
Integrated Sensors	Tilt and Roll								
LiquidOptics			Lenath = 241.56	imm			Spectral Sensitivity		
Diagonal FOV	81° min.				Aux 0	Aux 1			
Horizontal FOV	71° min.		0.7	$\mathbf{X}$					
Vertical FOV	57° min.								
Distortion	Less than 3.4%	100 III		S Diameter					
		Lo	0		Bac		0.1 0.0 400 450 500 550 600 6	50 700	

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## 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

WaveLength [nm]

Sensor & Lens		Live Video		MCBH5F	MCBH5F	Optolink (Ti)	DBH13M + DLSA-M	#	
Sensor	Type 1/2.3" CMOS 12-bit	Video Standards	4K over Fiber	[AUXo Port]	[AUX1 Port]	(Singlemode	[IP video, control and		
Image Size	12.3MP - 4056 x 3040		Ethernet - RTSP H.264		0.10	0000m)	download		
Max. Exposure	Shutter Speed 1/65000, ISO 3200	Video Resolution	4K/30p/25p, 1080/30p/25p	GND	GND	Solid molded	GND	1	
Settings		Video Latency	85ms ± 25ms	PWR	PWR	PBOF.	Iso GND (Shield) (NC on system end)	2	
Lens	4.52mm f/2.0	Tx Power Fiber	20+ dB	AUXo Out	ALIX1 Out		P\X/P	2	
Zoom	12.3MP sensor zoom (5x optical	Electrical			6G-SDI video				
	equivalent)	Voltage	16.5 - 32.5 Vdc			SMPTE ST-2001		4	
Focus Range	15cm to infinity	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)	AUX0 RS-465 A(+)	AUX1 RS-405 A(+)		(White/Brown/DD+[GigE]	5	
Internal Recording Sys	stem	Control	Ethernet, Serial RS-485	Important notes:	are wired to Etherr	et B standard	(Blue) DC+ [GigE]	6	
Image Format	JPEG and RAW	Transmission	<b>No LED:</b> 60m (GigE), 80m (10/100)	- 13 pin bulkhead i	s limited to 4A per	oin. The camera	(White/Blue) DC- [GigE]	7	
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)		<b>2x LED</b> : 20m (GigE), 40m (10/100)	automatically limit	s power to the LED	S.	(Orange) DA- [10/100]	8	
Recording Resolution	HD and 4K UHD	Protection	Short circuit, under/over voltage, ESD, over-temperature	- In-line cable part DIL13F + DLSA-F	t number for Ethern	(White/Orange) DA+ [10/100]	9		
Recording Capacity	40nr (HD) / 10.5nr (4K) - 512GB	Mechanical					(Green) DB- [10/100]	10	
Recording Format	H.265 and H.264 - MP4	Materials	Sapphire, Grade 5 Titanium	Includes topside	conversion box: H[	MI 2.0b output	(White/Green) DB+	11	
Media Transfer	Live over Ethernet	Weight	1.6kg in water, 3.2kg in air	Selections Requir	ed:		[10/100]		
Clock Sources	Internal and NTP Server	Temperature	-20°C to +30°C (In Water)	Wavelength (nm) -	= Stock 1270, 1330n	m or non-stock	AUX1 RS-485 B(-)	12	
Data Logging	NMEA 0183/2000 format @ 1Hz	Depth Rating	6000m	CWDM bands			AUX1 RS-485 A(+)	13	
Integrated Sensors	Tilt and Roll			J [					
LiquidOptics			Length = 241.56	omm	<u>.</u>		Spectral Sensitivity		
Diagonal FOV	81° min.	L 🛉 🔊				Aux 1			
Horizontal FOV	71° min.	m m		~					
Vertical FOV	57° min.	Dian D1m	BEAK		Biarr Bmr	20	80.3 20.4 20.2		
Distortion	Less than 3.4%	ont E							
			0.		ă		0.0 400 450 500 550 600	650 700	

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## Rayfin-Mk2-BPC-500-MCBH2-LO

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

Mech: BL Production: JMH PM: CC

0 0

Updated: 2021-11-25

Sensor & Lens		Live Video		MCBH5F [AUXo]	MCBH5F [AUX1]	MCBH2M [BPC]	#
Sensor	Type 1/2.3" CMOS 12-bit	Bitrate - Distance	(8MB/s - 200m), (6MB/s - 325m),	GND	GND	GND + BPC	1
Image Size	12.3MP - 4056 x 3040		( <b>1.5</b> MB/s - 500m)				
Max. Exposure	Shutter Speed 1/65000, ISO	Live Video Resolution	1080/720 @ 30p/25p	PWR Out 29.8Vac	PWR Out 29.8Vdc	77VDC + BPC	2
Settings	3200	Live Video Latency	225ms ± 50ms	AUXo Out	AUX1 Out		3
Lens	4.52mm f/2.0	Electrical			ALIX1 DS_485 B(_)		
Zoom	12.3MP sensor zoom (5x optical	Voltage	40 - 78 Vdc	AUXU K3-405 D(-)	AUXI K3-405 D(-)		4
	equivalent)	Power (W)	11 (idle) - 12 (recording) - 18 (peak)	AUXo RS-485 A(+)	AUX1 RS-485 A(+)		5
Focus Range	15cm to infinity	Control	SubC BPC Tech				
Internal Recording Sy	stem	Protection	Short circuit, under/over voltage, ESD,				
Image Format	JPEG and RAW		over-temperature				
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Mechanical		Lengt	h = 241.56mm		
Recording Resolution	HD and 4K UHD	Materials	Sapphire, Anodized Aluminium				A
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Weight	0.8kg in water, 2.4kg in air				
Recording Format	H.265 and H.264 - MP4	Temperature	-20°C to +30°C (In Water)				
Media Transfer	Live over Ethernet	Depth Rating	500m				N
Clock Sources	Internal and NTP Server	Depth and Temperature	Sensor			SubC BPC Unit req	Juired
Data Logging	NMEA 0183/2000 format @ 1Hz	Pressure Accuracy	50 BAR ±0.15 %FS				
Integrated Sensors	Tilt and Roll	Temperature Accuracy	0-50C ±0.15 %FS				
LiquidOptics		Stability	±0.15 %FS	1	0	Aux o Au	JX 1
Diagonal FOV	81° min.	ТЕВ	±0.7 %FS				
Horizontal FOV	71° min.			unet .			A
Vertical FOV	57° min.			01m			9
Distortion	Less than 3.4%			Jul 1			
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Depth/Temperature



## **BPC-Unit-77V**

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

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
Important notes:		4	
- Subc Ethernet is wred to	Ethemet B standard.		5
		DB- (Green)	6
			7
			8

Ethernet









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

Mech: BL Production: JMH PM: CC

00 550 WaveLength [nm]

Updated: 2021-11-25

Sensor & Lens		Live Video	e Video		MCBH5F	MCBH5F	MCBH3F	Impulse	#
Sensor	Type 1/2.3" CMOS 12-bit	Live Video	IP Ethernet	Aux o	Aux 1	Aux 2	Aux 3	MHDXL-12-FCR Ti	
Image Size	12.3MP - 4056 x 3040	Standards		Lamp/ Strobe	Lamp/Strobe	Pan-Titt Unit	Parallel Lasers	Ethernet	
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200	Live Video	1080/30p/25p	GND	GND	GND	GND	Power GND	1
Lens	4.52mm f/2.0	Resolution		Breaker PWRo	Breaker PWR1	Breaker PWR2	Breaker PWR3	(blu) DC+	2
Zoom	12.3MP sensor zoom (5x optical	Live Video Latency	225ms ± 50ms	Strobe Enable	Strobe Enable	Strobe Enable		Data GND	2
	equivalent)	Electrical				Strobe Enable			
Focus Range	15cm to infinity	Voltage	16.5 - 32.5 Vdc	AUXo	AUXo	AUX1		(grn) RX-/DB-	4
Internal Recording Syst	em	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)	RS-485 B(-)	RS-485 B(-)	RS-485 B(-)			
Image Format	JPEG and RAW	Control	Ethernet, Serial RS-485	AUXo	AUXo	AUX1		(org) TX-/DA-	5
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Transmission	<b>No LED</b> : 60m (GigE), 80m (10/100)	RS-485 A(+)	RS-485 A(+)	RS-485 A(+)			
Recording Resolution	HD and 4K UHD		<b>2x LED</b> : 20m (GigE), 40m (10/100)		(brn) DD-	6			
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Protection	Short circuit, under/over voltage,	Important notae			(wht/brn) DD+	7	
			ESD, over-temperature	- SubC bulkhea	(wht/org) TX+/DA+	8			
Recording Format	H.265 and H.264 - MP4	Mechanical		- Aux ports have	e a 2.5A limit with	built in Aux brea	aker panel.		
Media Transfer	Live over Ethernet	Materials	Sapphire, Grade 5 Titanium	Breakers can be	e toggled with co	ommand API.		(wht/grn) RX+/DB+	9
Clock Sources	Internal and NTP Server	Weight	1.6kg in water, 3.2kg in air						
Data Logging	NMEA 0183/2000 format @ 1Hz	Temperature	-20°C to +30°C (In Water)					24 VDC	10
Integrated Sensors	Tilt and Roll	Depth Rating	6000m					(wht/blu) DC-	11
LiquidOptics			Lenath = 241.	56mm			Spe	ectral Sensitivity	
Diagonal FOV	81° min.				→ 0	6000m	1 0.9	$\wedge$	
Horizontal FOV	71° min.	te le							
Vertical FOV	57° min.	a m		and the second se	$-\Lambda - \Lambda$	~			
Distortion	Less than 3.4%	t Dia			Bgm				
		Fron		-	Back			450 500 550 600 6	350 700

Email team@subcimaging.com for more info



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

Mech: BL Production: JMH PM: CC

500 550 WaveLength [nm]

Updated: 2021-11-25

Sensor & Lens		Live Video		MCBH5F	MCBH5F	MCBH5F	MCBH3F	Seacon	#
Sensor	Type 1/2.3" CMOS 12-bit	Live Video	IP Ethernet	Aux o	Aux 1	Aux 2	Aux 3	MINK10FCRTI003	
Image Size	12.3MP - 4056 x 3040	Standards		Lamp/ Strope	Lamp/ Strobe	Pan-Titt Unit	Parallel Lasers	Ethernet	
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200	Live Video	1080/30p/25p	GND	GND	GND	GND		1
Lens	4.52mm f/2.0	Resolution			GIND	GIND	GIND	24 VDC	1
Zoom	12.3MP sensor zoom (5x optical	Live Video Latency	225ms ± 50ms	Breaker PWRo	Breaker PWR1	Breaker PWR2	Breaker PWR3	(wht/org) TX+/DA+	2
	equivalent)	Electrical							
Focus Range	15cm to infinity	Voltage	16.5 - 32.5 Vdc	Strobe Enable	Strobe Enable	Strobe Enable		(wht/grn) RX+/DB+	3
Internal Recording Syst	tem	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)						
Image Format	JPEG and RAW	Control	Ethernet, Serial RS-485	RS-485 B(-)	RS-485 B(-)	RS-485 B(-)		(org) TX-7 DA-	4
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Transmission	<b>No LED</b> : 60m (GigE), 80m (10/100)	AUXo	AUXo	AUX1		(wht/blu) DC-	5
Recording Resolution	HD and 4K UHD		<b>2x LED</b> : 20m (GigE), 40m (10/100)	RS-485 A(+)	RS-485 A(+)	RS-485 A(+)			ľ
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Protection	Short circuit, under/over voltage, ESD, over-temperature			(wht/brn) DD+	6		
Recording Format	H.265 and H.264 - MP4	Mechanical		Important note	es:			(grn) RX-/DB-	
Media Transfer	Live over Ethernet	Materials	Sapphire, Grade 5 Titanium	- SubC bulkhea	ads are wired to	Ethernet B stand	dard.	(blu) DC+	8
Clock Sources	Internal and NTP Server	Weight	1.6kg in water, 3.2kg in air	- Aux ports hav	e a 2.5A limit wit	th built in Aux br	eaker panel.	(brp) DD	
Data Logging	NMEA 0183/2000 format @ 1Hz	Temperature	-20°C to +30°C (In Water)	Breakers can b	e loggled with c	Command API.			9
Integrated Sensors	Tilt and Roll	Depth Rating	6000m					GND	10
LiquidOptics			l enath = 2/1	56mm			s	pectral Sensitivity	
Diagonal FOV	81° min.				→ 0		1.0	$\sim$	
Horizontal FOV	71° min.				de ↑ , 🛲	6°3) ~ 1	0.8		
Vertical FOV	57° min.		And a second second second second second second		n at	AUX	AUX 1 80.5		~
Distortion	Less than 3.4%	Dian			Diar Diar		20.4 \$0.4		
		Front		- 12 21	Back ↓ Back	0.	2 0.1 0.1 0.0 400	450 500 550 600	650 700



## Rayfin-Mk2-HDE-6000-DLPBH13M-LO

Mech: BL Production: JMH PM: CC

WaveLength [nm]

Updated: 2021-11-25

Sensor & Lens		Live Video		MCBH5F	MCBH5F	DLPBH13M	#
Sensor	Type 1/2.3" CMOS 12-bit	Live Video Standards	Ethernet - RTSP H.264	[AUXo Port]	[AUX1 Port]	[IP video, control and download]	
Image Size	12.3MP - 4056 x 3040		(Optional Composite)	GND	GND	GND	1
Max. Exposure Settings	Shutter Speed 1/65000, ISO 3200	Live Video Resolution	1080/30p/25p	PWR	PWR	Iso GND (Shield)	2
Lens	4.52mm f/2.0	Live Video Leterov	(480/300/250)			(NC on system end)	
Zoom	12.3MP sensor zoom (5x optical	Live video Latency	225ms ± 50ms	AUXo Out	AUX1 Out		3
	equivalent)	Electrical		AUXo RS-485 B(-)	AUX1 RS-485 B(-)	(Brown) DD- [GigE]	4
Focus Range	15cm to infinity	Voltage	16.5 - 32.5 Vdc	AUX0 RS-485 A(+)	AUX1 RS-485 A(+)	(White/Brown) DD+ [GigE]	5
Internal Recording Syst	em	Power (W)	7.5 (idle) - 8 (recording) - 13.5 (peak)			(Blue) DC+ [GigE]	6
Image Format	JPEG and RAW	Control	Ethernet, Serial RS-485	Cabling notes:		(W/hite/Blue) DC- [GigE]	7
Still Rate	3Hz (JPEG) / 0.5Hz (RAW)	Transmission	<b>No LED:</b> 60m (GigE), 80m (10/100)	- SubC bulkheads are	e wired to Ethernet B		,
Recording Resolution	HD and 4K UHD		<b>2x LED:</b> 20m (GigE), 40m (10/100)	standard			•
Recording Capacity	40hr (HD) / 10.5hr (4K) - 512GB	Protection	Short circuit, under/over voltage,	camera automatically	y limits power to the	(White/Orange) DA+ [10/100]	9
			ESD, over-temperature	LEDs		(Green) DB- [10/100]	10
Recording Format	H.265 and H.264 - MP4	Mechanical				(White/Green) DB+ [10/100]	11
Media Transfer	Live over Ethernet	Materials	Sapphire, Grade 5 Titanium			PWR	12
Clock Sources	Internal and NTP Server	Weight	1.6kg in water, 3.2kg in air			Composite SD Video (optional)	13
Data Logging	NMEA 0183/2000 format @ 1Hz	Temperature	-20°C to +30°C (In Water)				
Integrated Sensors	Tilt and Roll	Depth Rating	6000m				
LiquidOptics			Length = 241.56	mm	A	Spectral Sensitivity	
Diagonal FOV	81° min.				Aux o		_
Horizontal FOV	71° min.				ater		
Vertical FOV	57° min.						
Distortion	Less than 3.4%	101 101					
		Fro	0		Bac		650 7

Email team@subcimaging.com for more info

## **Rayfin Benthic Packaging & QA**

#### 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**

#### 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**



	Footuros	Payfin Ponthic (link)	<b>Bayfin Coastal</b> (link)	$1C_{2} M k 6 (link)$		
	reatures	Kayiiii Bentine <u>(iiiik)</u>	Rayiiii Coastai <u>(iiiik)</u>			
Optics	LiquidOpticsTM (link)	v	V	<ul> <li></li> </ul>		
	HD over Ethernet (HDE)	<ul> <li>✓</li> </ul>				
	SubC Boost-Power Comms (BPC)		V			
Live Video Options	Composite Video (SD)	<ul> <li>✓</li> </ul>		<b>v</b>		
	HD-SDI over Coax (HDC)	<ul> <li>✓</li> </ul>		V		
	4K over singlemode fiber (UHDF)	V		<ul> <li></li> </ul>		
	Internal Recording	4K, HD (H.265	4K, HD (H.265, H.264)			
	Storage Capacity	512GB, Optic	512GB, Optional 1TB			
	Storage Capacity	With 512GB, 10+ hours of 4K video, 40+ hours of HD video and thousands of digital st				
	Digital Stills	12.3M	16MP			
	Zoom	12.3MP sensor zoom (5x	20x Optical			
Features	Field of View (diagonal)	81 degr	ees	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



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: SUBSEA DIGITAL STILLS



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: 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: TOW CAMERA

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:

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