









Featuring the new Imenco Subvis Orca Camera with HD Ethernet 1080p / 60fps low latency video streaming. Move into the world of fully digital subsea video.

Sub**VIS** | ORCA

Subsea Electronics





INNOVATION STARTS HERE

Sub**VIS** | ORCA

SUBSEA VISUAL INTELLIGENCE SYSTEM

For the first time, live subsea, video can be digitally transmitted via Ethernet without significant latency.





Imenco is a major EPCcontractor to the maritime industry. We design, develop, and manufacture a wide range of systems and products such as Diving Systems, Helicopter Refuelling Systems, Lifting and Handling products, Subsea Cameras and Subsea Tools including Subsea Lights and Lasers. Our customers benefit from over thirty years' experience in the industry, adding value and providing smart solutions.

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Introduction

For more than 25 years Imenco has been a dedicated, leading supplier of video, image and lighting products to the offshore-, research- and subsea markets. The foundation of our success and growth is the quality and passion of our employees combined with a genuine interest in new technology.

At Imenco we understand the daily challenges our clients face when operating in extreme environments. We recognize the need for reliable products, simple ordering processes, and equipment delivered quickly.

We are excited to announce our new platform for subsea cameras (SubVIS) based on embedding a computer into the camera, making it ready for advanced image enhancement and Computer Vision. Orca is the first camera based on the SubVIS platform and it is now available for sale. Orca is the latin name of the Killer Whale – one of the most intelligent creatures in the ocean. This symbolizes the change from the analogue and HD-SDI cameras used in the market today.

If you would like more information or detailed specification on any of our products, visit **www.imenco.com** or contact one of our offices worldwide.

Standard Definition (SD)

		Description	Aluminium (msw)	Duplex (msw)	Titanium (msw)	Resolution (TVL)	View angle in water (deg)	Optical zoom	Diameter (mm)	Length (mm)	Weight in water (Kg)	Voltage
	PESTA	Reef Shark Very small size dive / tool / inspection camera		4,000		550	66	-	30	86	0.15	12
E	MINION	Mako Shark Very small size dive / tool / inspection camera		1,000		700	66	-	30	105	0.24	12
FIXED FOCAL LENGTH	CHEALIN	Greytip Shark Small size dive / tool / inspection camera		6,000		700	66	-	36	110	0.40	24
æ	(p)	Silvertip Shark Fixed focus camera with LED lights		4,000		700	82	-	50	117	0.40	24
	BYCKONA	Basking Shark Low light ROV camera		4,000		570	82	-	70	155	1.40	24
	NAMES AND ADDRESS OF THE PERSON OF THE PERSO	Blacktip Shark Small size 10x zoom camera		3,000		470	45	10x	58	138	0.90	24
ZOOM	0	Whitetip T4 Shark Small size 10x zoom camera with LED lights			4,000	470	45	10x	58	143	0.50	24
OZ	HAMMEDEA ,	Hammerhead Shark Main ROV colour zoom camera	1,000	4,000		530	71	18x	100	240	3.50	24
		Lizard Shark ROV Pan / tilt inspection camera		1,000		470	45	10x	90	296	5.80	24

Reef Shark

The very small and lightweight Reef Shark camera is ideal as a divers helmet camera or as a tool camera for all types of inspection purposes. The camera utilizes a quality camera module and is fitted in a duplex steel housing, all at a very moderate cost.



TECHNICAL SPECIFICATIONS

Video output	Composite SD
Resolution (TVL)	550
Sensitivity (lux)	0.05
View angle in water diagonally (deg)	66
View angle in water horizontally (deg)	53
Optical zoom	-
Housing material	Duplex
Depth Rating (msw)	4,000
Front port	Acrylic
Standard connector	МСВН6М
Diameter (mm)	30
Length (mm)	86
Weight in water (Kg)	0.15
Power	12V / 0.7W

Mako Shark

The Mako Shark subsea camera is housed in a duplex stainless steel housing, where the design criteria has been to combine small size, max angle of view and high image quality. Mako Shark camera is perfect as a tool or inspection camera due to its size and weight, and can also be used as diver's helmet camera.



Video output	Composite SD
Resolution (TVL)	700
Sensitivity (lux)	0.1
View angle in water diagonally (deg)	66
View angle in water horizontally (deg)	53
Optical zoom	-
Housing material	Duplex
Depth Rating (msw)	1,000
Front port	Acrylic
Standard connector	МСВН6М
Diameter (mm)	30
Length (mm)	105
Weight in water (Kg)	0.24
Power	12V / 0.7W

Greytip Shark

The Greytip Shark subsea camera is ideal as a tool camera for use in narrow spaces, preferred by ROV and dive operators. A high resolution colour camera module is built into the small duplex steel housing, enabling the Greytip Shark to withstand pressures down to 6,000MSW. This makes it ideal as a manipulator camera.



Video output	Composite SD
Resolution (TVL)	700
Sensitivity (lux)	0.1
View angle in water diagonally (deg)	66
View angle in water horizontally (deg)	53
Optical zoom	-
Housing material	Duplex
Depth Rating (msw)	6,000
Front port	Acrylic
Standard connector	5507 - 1508
Diameter (mm)	36
Length (mm)	110
Weight in water (Kg)	0.40
Power	24V / 2.4W



Basking Shark

WIDE ANGLE

TECHNICAL SPECIFICATIONS

The Basking Low Light wide angle monochrome camera is perfect for use on work class ROV's and smaller observation vehicles where low light or murky conditions affect the working environment.



Video output	Composite SD
Resolution (TVL)	570
Sensitivity (lux)	0.0001
View angle in water diagonally (deg)	82
View angle in water horizontally (deg)	66
Optical zoom	-
Housing material	Duplex
Depth Rating (msw)	4,000
Front port	Acrylic
Standard connector	5506 - 1508
Diameter (mm)	70
Length (mm)	155
Weight in water (Kg)	1.40
Power	24V / 3.2W

Silvertip Shark

WIDE ANGLE

The Silvertip Shark colour video subsea camera is ideal when scene illumination is an imperative. This is a small, user friendly camera with four high intensity LEDs, high image quality and more than 80° angle of view. The camera is fitted in Duplex Stainless Steel housing, capable of depths down to 4,000MSW.



Video output	Composite SD
Resolution (TVL)	700
Sensitivity (lux)	0.1
View angle in water diagonally (deg)	82
View angle in water horizontally (deg)	66
Optical zoom	-
Housing material	Duplex
Depth Rating (msw)	4,000
Front port	Acrylic
Standard connector	5507 - 1508
Diameter (mm)	50
Length (mm)	117
Weight in water (Kg)	0.40
Power	24V / 8.4W

Blacktip Shark



The Blacktip is an ideal inspection colour zoom camera for any ROV work that require close-up inspection with high quality video images, often mounted on a P/T unit. With the 10x optical zoom, it is a preferred "eye" for difficult ROV work.

BLACKTIPA LENS: 4.2 – 24MM / F1.8- 2.9

TECHNICAL SPECIFICATIONS

Video output	Composite SD
Resolution (TVL)	470
Sensitivity (lux)	1.5
View angle in water diagonally (deg)	45
View angle in water horizontally (deg)	36
Optical zoom	10x
Housing material	Duplex
Depth Rating (msw)	3,000
Front port	Acrylic
Standard connector	5506 - 1508
Diameter (mm)	58
Length (mm)	138
Weight in water (Kg)	0.90
Power	24V / 4.8W

Whitetip T4 Shark



The Whitetip Shark camera is deal for any ROV work and often used as a tool camera for close up inspections where illumination is required. The camera has 10x optical zoom and 4 dimmable LED lights, and is mounted into a titanium housing rated down to 4000msw.

TITANIUM HOUSING



4 HIGH INTENSITY DIMMABLE LEDS

Video output	Composite SD
Resolution (TVL)	470
Sensitivity (lux)	1.5
View angle in water diagonally (deg)	45
View angle in water horizontally (deg)	36
Optical zoom	10x
Light output (lumen)	500
Housing material	Titanium
Depth Rating (msw)	4,000
Front port	Sapphire
Standard connector	5507 - 1508
Diameter (mm)	58
Length (mm)	143
Weight in water (Kg)	0.50
Power	24V / 11.6W

Hammerhead Shark



TECHNICAL SPECIFICATIONS

The Hammerhead is a wide angle colour zoom camera used as main camera on work class ROVs. Praised by major operated world wide for being a reliable and professional wide angle zoom camera. The Hammerhead Shark has a 71º view angle in sea water and 18x optical zoom, enabling high quality video images and good control options by using a RS232 control unit.



Video output	Composite SD
Resolution (TVL)	530
Sensitivity (lux)	0.7
View angle in water diagonally (deg)	71
View angle in water horizontally (deg)	57
Optical zoom	18x
Housing material	Aluminium / Duplex
Depth Rating (msw)	1000 / 4000
Front port	Acrylic
Standard connector	5506 - 1508
Diameter (mm)	100
Length (mm)	240
Weight in water (Kg)	3.50
Power	24V / 6.3W

Lizard Shark





Imenco's Lizard Shark is a small sized Pan / Tilt camera rated to 1,500msw. The 10x optical zoom and built-in dimmable LEDs makes this a unique subsea camera for the ROV market. With a diameter of only 90mm, the Lizard Shark enables efficient access to difficult areas that before might have been unavailable with other conventional equipment. The camera is supplied with bespoke control software with RS232 control. Range of accessories available.



Video output	Composite SD
Resolution (TVL)	470
Sensitivity (lux)	1.5
View angle in water diagonally (deg)	45
View angle in water horizontally (deg)	36
Optical zoom	10x
Light output (lumen)	600
Housing material	Duplex
Depth Rating (msw)	1,000
Front port	Acrylic
Standard connector	5506 - 1508
Diameter (mm)	90
Length (mm)	296
Weight in water (Kg)	5.80
Power	24V / 16.5W

High Definition (HD)

		Description	Aluminium (msw)	Duplex (msw)	Titanium (msw)	Resolution (TVL)	View angle in water (deg)	Optical zoom	Diameter (mm)	Length (mm)	Weight in water (Kg)	Voltage
	3	Thresher Shark HD-SDi wide angle camera	-	-	6,000	1080p @30	114	3x	76	176	1.70	24
ZOOM	Nu.	Bull Shark HD Zoom ROV main camera	-	4,000	-	1080p @60	54	20x	100	240	3.00	24
		Spinner II Shark HD-SDi ROV main camera	-	-	4,000 / 6,000	1080p @60	73	30x	140 / 117	227	1.20	24

Thresher Shark









The Imenco Thresher Shark HD SDI Wide Angle Subsea Camera is primarily designed for ROV operations. The camera provides highly detailed video images for inspection tasks with its high quality wide angle dome front. The Imenco Thresher Shark housing is constructed in titanium with a scratch- and impact resistant glass dome, depth rated to 6,000msw. High Definition video: All major HD and SD video resolutions are supported e.g. 1080p/30, 1080i/60, 720 p/60, 720p/50.



Video output	HD SDI
Resolution	1080p@30fps / 720p@60fps
Sensitivity (lux)	1.0
View angle in water diagonally (deg)	114
View angle in water horizontally (deg)	99
Optical zoom	3x
Housing material	Titanium
Depth Rating (msw)	6,000
Front port	BK7 Dome
Standard connector	Argus SAIV 04-03 Coax BCR
Diameter (mm)	76
Length (mm)	176
Weight in water (Kg)	1.70
Power	24V / 12.0W

Bull Shark







The Imenco Bull Shark HD-SDI subsea zoom camera is the right choice when quality is essential, This high definition subsea camera with good zoom capability gives high quality images with excellent resolution for demanding documentation of ROV work. Image quality is superb and is tested to be superior to most competitors. Can be supplied with fiber HD-SDI output.



TECHNICAL SPECIFICATIONS

Video output	HD SDI
Resolution	1080p@60fps
Sensitivity (lux)	1.7
View angle in water diagonally (deg)	54
View angle in water horizontally (deg)	47
Optical zoom	20x
Housing material	Duplex
Depth Rating (msw)	4,000
Front port	Fused Silica
Standard connector	Seacon minl-5515 6#20-FCR
Diameter (mm)	100
Length (mm)	240
Weight in water (Kg)	3.00
Power	24V / 15.6W

Spinner II Shark









TECHNICAL SPECIFICATIONS

Video output	HD SDI
Resolution	1080p@60fps
Sensitivity (lux)	1.4
View angle in water diagonally (deg)	73
View angle in water horizontally (deg)	64
Optical zoom	30x
Housing material	Titanium
Depth Rating (msw)	4,000 / 6,000
Front port	Fused Silica Water Corrected
Standard connector	Seacon minl FCRL
Diameter (mm)	140 / 117
Length (mm)	227
Weight in water (Kg)	1.20
Power	24V / 12.0W

The Imenco Spinner II Shark Wide Angle HD SDI zoom camera is a high quality subsea camera designed primarily for ROV operations. It has a specially designed wide angle lens system for premium optical quality, 30x optical zoom and its titanium housing is rated to 4,000msw. Can be supplied with various connector options for fiber output.



Tiger Shark (DIGITAL STILLS CAMERA)

The Tiger Shark stills image subsea camera is a very high quality and user friendly camera controlled by software or hand control. The Tiger Shark subsea camera is perfect for ROV use or as a high resolution stand-alone camera for research purposes. Integrated flash and Ethernet control with downloading capabilities. Timer function can also be added.

The Lantern Shark subsea Flash is made to extend the use of the Tiger Digital Stills camera, and will facilitate high quality images at distances up to 7 – 10 meters. It is connected directly to the Tiger Shark subsea camera's flash connector, and light output is controlled by the camera.

The Lantern Shark is produced in 3 different versions: Aluminium housing for 1,000MSW. Duplex Stainless Steel housing for 3,000MSW and Titanium housing for 6,000MSW.

VERY HIGH OUTPUT



TIGER TECHNICAL SPECIFICATIONS

Image format	JPEG				
Image transfer	Ethernet Composite SD 49 39 4x Internal / External				
Video output	Composite SD				
View angle in water diagonally (deg)	49				
View angle in water horizontally (deg)	39				
Optical zoom	4x				
Flash	Composite SD 49 39 4x Internal / External See table See table Acrylic 5506 - 1508 + MCBH4F				
Housing material	See table				
Depth Rating (msw)	See table				
Front port	Acrylic				
Standard connector	Internal / External See table See table Acrylic				
Diameter (mm)	83				
Length (mm)	170				
Weight in water (Kg)	See table				
Power	24VDC 10-29W				

DEPTH RATING DOWN TO 6,000 MSW



INTERNAL FLASH

ETHERNET DOWNLOAD

LANTERN TECHNICAL SPECIFICATIONS

Light output	160W/s
Flash repeat rate	2 sec
Colour temperature (K)	4 800
Housing material	See table
Depth Rating (msw)	See table
Front port	Acrylic
Standard connector	МСВН4М
Diameter (mm)	100
Length (mm)	175
Weight in water (Kg)	See table
Power	24VDC 25W

FUNCTIONS

- High resolution 14 MP
- Control and download via ethernet
- · Live view video from the camera
- Software controlled
- Timer function available
- Can be used in stand alone system (with battery pack)

TIGER & LANTERN SHARK DEPTH DATA

Material	Depth Rating (msw)	Weight in	in water (Kg)
viateriai	Depth Rating (msw)	Tiger	Lantern
Aluminium	1,000	0.4	0.6
Duplex	3,000	1.9	3.0
Titanium	6,000	2.2	2.2

Orca (IP CAMERA)











TECHNICAL DATA

For the first time, live subsea video can be digitally transmitted via Ethernet without significant latency. The SubVIS platform is based on embedding a computer into the camera, making it ready for advanced image enhancement and Computer Vision. We have effectively made a dedicated computer especially designed for low latency video processing, based on Smart Phone technology. Full digital video transmission opens up an array of applications in the control room.

Similar to the Smart Phone technology, an important part of Imenco's philosophy is to ensure an open architecture to allow third parties to fully integrate these cameras into their control systems and to write software applications to increase the popularity and usefulness of the platform. This will allow you the freedom to tailor the package to suit your own specific demands, as well as integrating own video analysis function algorithms, image enhancement etc. on top of the core software.

The system opens up for the use of image Metadata, which represents great advantages. One of the most innovative and exciting features that will be developed on this system, is that subsea devices can be made to automatically communicate with each other. This allows for example the camera to tell the lights to reduce its intensity and deliver optimum level of light.

The first camera based on the SubVIS technology is called Orca. This is the Latin name of the Killer Whale - one of the most intelligent creatures in the ocean. This symbolises the change from the analogue and HD-SDI cameras used in the market today. The camera is designed as a ROV main camera and has been equipped with an excellent water correction lens system for high image quality.

Imenco will keep on developing software applications as well as new camera models in the SubVIS range.

Ethernet: 10/100/1000Mbit TP

Ethernet video streaming protocols: RTSP/RTP, UDP, Unicast/Multicast

Ethernet control protocol: HTTP

Video compression: H.264 AVC

Video resolution: 480p@30/60, 576p@25/50, 720p@50/60, 1080p@25/30/50/60

Optical: Ivanoff-Rebikoff water correction lens

Latency: ~100mS

Built in 9-axis sensor:

- 3-axis gvroscope
- · 3-axis accelerometer
- · 3-axis magnetometer

Internal Interfaces: RS232 & RS485

PURPOSE BUILT EMBEDDED COMPUTER

TITANIUM **DEPTH RATING: 4,000 MSW**

BESPOKE WIDE ANGLE LENS SYSTEM

FUNCTIONS

- HD Ethernet 1080p@60fps low latency video streaming
- Camera with an Imenco designed powerful Embedded Computer
- Ready for advanced image enhancement
- Software client with OSD and recording
- Standard video streaming protocols RTSP / RTP
- HTTP commands for configuration and control

Video output	RTSP / RTP H.264 video stream
Resolution	1080p@60fps
Sensitivity	1.0
Lens system	Fused Silica Water Corrected
View angle in water diagonally (deg)	75
View angle in water horizontally (deg)	65
Optical Zoom	12x
Housing material	Titanium
Depth rating (msw)	4,000
Standard connector	Subconn DBH13M
Diameter (mm)	140 / 117
Length (mm)	227
Weight in water (Kg)	1.2
Power	24 VDC (18 - 75) / 17 W



Subsea Lasers

Description	Aluminium (msw)	Duplex (msw)	Titanium (msw)	Laser output (mW)	Lens angle (deg)	Fan Angle in water (deg)	Diameter (mm)	Length (mm)	Weight in water (Kg)	Voltage
Dusky Shark 30mW Green Line Laser	3,000	-	-	30	60	45	35	195	0.30	24
Silky Shark 50mW Green Line Laser	-	-	6,000	50	90 (75/60)	68 (56/45)	69	248	1.10	24
Angel Shark T6 150mW Green Line Laser	-	-	6,000	150	60	45	69	248	1.30	24

Dusky Shark

The Dusky Laser is a price competitive green line subsea laser primarily for subsea pipeline inspections. It can also be used as a size indicating device. The wavelength of the green light ensure good visibility due to reduced absorption of green light in water.



Laser output (mW)	30
Lens angle (deg)	60
Fan angle in water (deg)	45
Regulation	-
Housing material	Hard anodised Aluminium
Depth Rating (msw)	3,000
Front port	Sapphire
Standard connector	МСВНЗМ
Diameter (mm)	35
Length (mm)	195
Weight in water (Kg)	0.30
Power	24VDC / 2W

Silky Shark

The Silky Shark Subsea Laser is the newest laser from Imenco. It has an output of 50mW, a very uniform sharp line and a fan angle of 90° and a lens angle of 90° in air. Available with various lasers patterns.



TECHNICAL SPECIFICATIONS

Laser output (mW)	50				
Lens angle (deg)	90				
Fan angle in water (deg)	68				
Regulation	RS232 / TTL				
Housing material	Titanium				
Depth Rating (msw)	6,000				
Front port	Sapphire				
Standard connector	5506 - 1508				
Diameter (mm)	69				
Length (mm)	248				
Weight in water (Kg)	1.10				
Power	24VDC / 6W				

Angel Shark T6

The Angel Shark T6 subsea laser is the most powerful green line laser available on the market, primarily used for subsea pipeline inspections. By using two lasers in a fixed bracket, calibrated at a set distance, measurements can be picked out from subsea video.



	The state of the s
Laser output (mW)	150
Lens angle (deg)	60
Fan angle in water (deg)	45
Regulation	-
Housing material	Titanium
Depth Rating (msw)	6,000
Front port	Sapphire
Standard connector	5506 - 1508
Diameter (mm)	69
Length (mm)	248
Weight in water (Kg)	1.30
Power	24VDC / 8W

Subsea Lights

	Description	Aluminium (msw)	Duplex (msw)	Titanium (msw)	Light output (lumen)	Light fan angle in water (deg)	Dimensions (mm)	Weight in water (Kg)	Voltage
O	SeaLED 25 Small LED light	-	-	4,000	1,000	40	Ø30 x 86	0.20	24
	SeaLED 65 Multipurpose light	-	-	6,000	3,000	40	Ø65 x 162	0.30	24
	SeaLED 300 Flood light	3,000	-	-	15,000	40	108 x 196 x 61	1.30	110
	SeaLED 300 Flood light	3,000	-	-	15,000	40	60 x 80 x 500	1.30	110

SeaLED 25

The SeaLED 25 miniature high output subsea light for divers/small ROV/tools and inspection points. Fitted with the latest high quality LED producing an increased life span compared to the traditional Halogen and HID lights. The SeaLED 20 can be delivered with different colour temperatures and lens angles. The light output is easily regulated from 0-100%.



Light output (lumen)	1,000
Light Temperature (K)	3,200
Light fan angle in water (deg)	40 / 25
Regulation	Voltage
Housing material	Titanium
Depth Rating (msw)	4,000
Front port	Acrylic
Standard connector	МСВНЗМ
Dimensions (mm)	Ø30 x 86
Weight in water (Kg)	0.15
Power	24VDC / 11W

SeaLED 65

The SeaLED 65 is a high output multipurpose subsea light for ROV/tools and inspection points. Equipped with the latest high quality LED, producing an increased life span compared to the traditional Halogen and HID lights for temperatures of 3,200K and 40° lens beam angles. The light output is easily regulated from 0-100% by different regulation modes, including remote control option.



TECHNICAL SPECIFICATIONS

Light output (lumen)	3,000		
Light Temperature (K)	3,200		
Light fan angle in water (deg)	40 / 25		
Regulation	RS232, 0 - 10V DC or 24V step		
Housing material	Titanium		
Depth Rating (msw)	6,000		
Front port	Acrylic		
Standard connector	МСВНЗМ		
Dimensions (mm)	Ø65 x 162		
Weight in water (Kg)	0.24		
Power	24V DC and 120V AC / 44W		

SeaLED 300 & 300 L

The SeaLED 300 is a very high output subsea LED flood light panel for ROV and general purpose illumination. The SeaLED 300 can be delivered with different ens angles and the light output is easily regulated by various control protocols.



	300	300 L
Light output (lumen)	15,000	
Light Temperature (K)	3,200	
Light fan angle in water (deg)	40 / 25	
Regulation	RS232 / RS485, 0 - 10V DC or Triac	
Housing material	Hard anodised Aluminium	
Depth Rating (msw)	3,000	
Front port	Acrylic	
Standard connector	5507 - 1508	
Dimensions (mm)	108 x 196 x 61	60 x 80 x 500
Weight in water (Kg)	0.40	
Power	110VAC / 176 W	

