

**OCEAN
PRESENCE**
Technologies

Underwater IP Camera System

OPT-06 User's Manual

Version 1.0



OceanCamTM

Model OPT-06

Ocean Presence Technologies ©2007-2008

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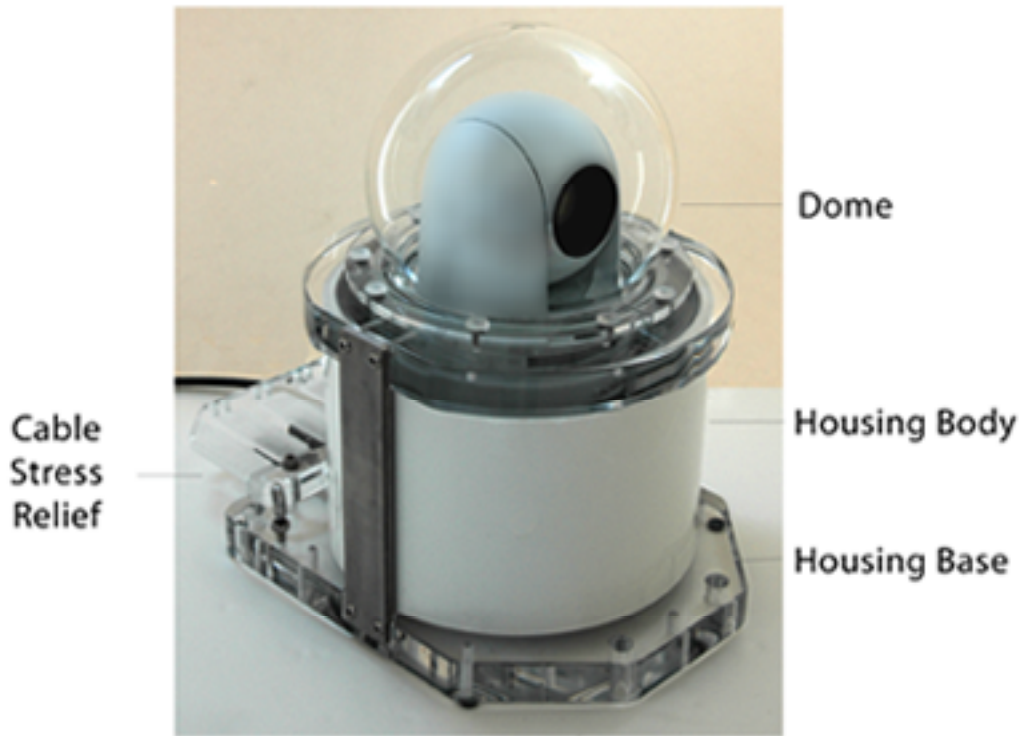
or E-mail to: info@oceanpresence.com

***or Write to:
Ocean Presence Technologies
326 Pacheco Ave.
Santa Cruz, CA 95062***

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1.0 SHIPPED COMPONENTS



PoE Cable



Power Supply



Shipping Container



Install & Network Software



Spares Kit



User Manuals

Available Accessories



Underwater Lighting



Wireless Networking



Power/Wireless Float



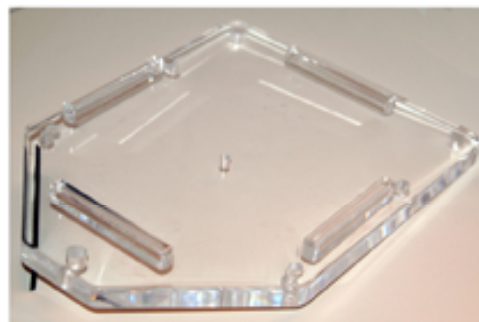
Waterproof
Power/Ethernet
box



Joystick Control



Digital Video Recorder



Weight Tray

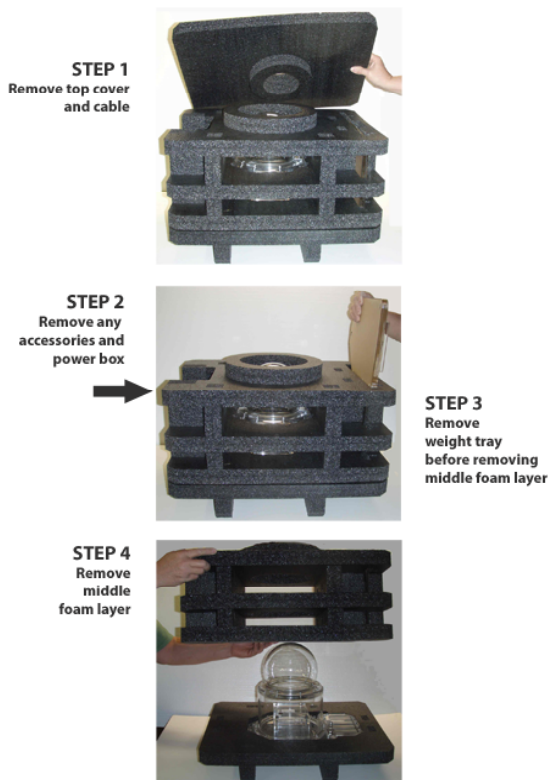
2.0 QUICK START

The OceanCam Underwater IP camera system (UWIP) has been designed to simplify installation and deployment. It involves three simple steps:

- 1) Unpacking the Camera
- 2) Configuring the Network
- 3) Deployment Testing

2.1 UNPACKING INSTRUCTIONS

The OceanCam is shipped in a specially designed packing box. The camera is packed with protective foam and is ready to use out of the box. The box and packing materials should be retained in the event that shipping is required.



2.2 CONFIGURING THE NETWORK

The OceanCam is ready to be used out of the box. It employs a PTZ camera that is network ready. Configuration software is included in the Installation CD and should be downloaded and installed into a Windows computer. (Firefox, Safari and other browsers are not supported)

The IP Setup program is used to configure the camera. It has been initially set to detect

the IP address automatically. (See included User Manual for detailed installation and operations.)

The standard system includes a power supply and an underwater Power-over-Ethernet (PoE) cable. The PoE connector should be attached to the housing and the cable stress relief sleeve lightly tightened.



To connect to the network, attach the other end of the PoE cable to the OUT port of the power supply. A standard Ethernet cable can then be attached from the IN port of the power supply to a router, computer or Internet modem.



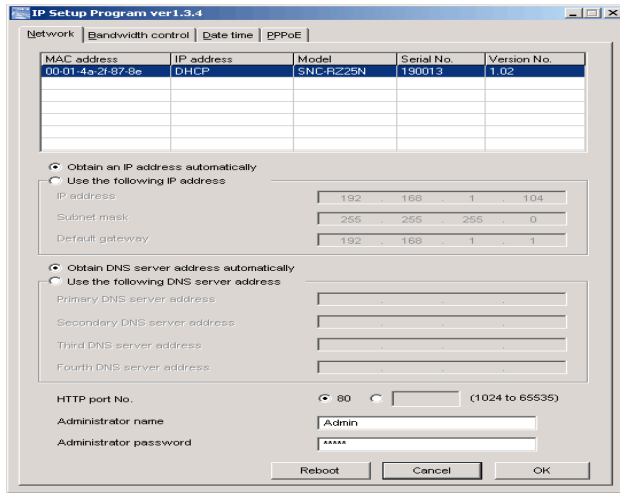
A router can be used to initially configure the camera. To connect directly to a computer, a commercially available network crossover cable or coupler (not supplied) may be required.

Once all network cables have been attached, you can apply power to the system.

The camera will initially display the network light for a few seconds and then the power light will be displayed. This begins the camera "booting" process taking about one minute. During this time, the camera will cycle to the "home" position.

After a few seconds, the network light will illuminate, indicating that the network connection was successful. (If this network light is not green, see section 4.2.7 for more detailed instructions or troubleshooting guide in Appendix A).

The camera will become visible on the network as indicated by appearing in the IP Setup program.



Double-clicking on this camera will launch the “home” page in a browser window. Only a Windows operating system can be used to administer the program, although other operating systems can be used to view and control the camera.

The appearance of the “blue” home page is indication that the camera is ready to be operated (See Section 2.5 Using the Camera).



2.3 DEPLOYMENT TESTING

The camera can be deployed while the network is operational. This will allow the monitoring of any leakage.

DO NOT PLUG IN OR REMOVE THE HOUSING PoE CONNECTOR WHILE UNDERWATER WHEN THE POWER IS ON!

Weights can be added to adjust the buoyancy. Attach 5-6 pound weights to each side of the housing using the metal bar and plastic cable ties.

It is advisable to test the system in fresh water prior to saltwater deployment. If this is not possible, lower the camera into the water with the camera pointing vertical and the network active.

If a perfect o-ring seal has not been obtained, fogging or condensation will soon appear on the inside of the top of the dome.

A submergence test can also be performed without power applied. Lower the system to a depth of 10 feet and then remove it for visible inspection for leaks. If possible, test the system again at a depth of 30 feet for 15 minutes.

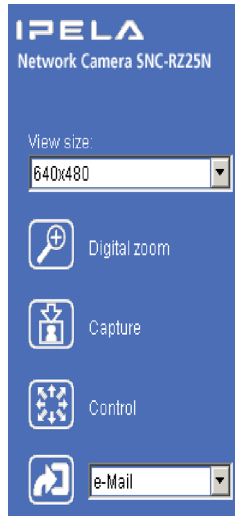
IF ANY MOISTURE IS SEEN ON THE TOP OF THE DOME, REMOVE THE SYSTEM FROM THE WATER IMMEDIATELY!

If moisture is seen on the top inside of the dome, either the O-ring was not properly sealed or additional moisture removal may be required. If a dry system cannot be obtained, please contact the manufacturer for assistance.

2.4 USING THE CAMERA

The system uses a standard Microsoft Internet Explorer browser to display and control the camera. If you do not have access to this system, see Section 4.2.3 for other browser options.

From the Home page, select "Enter" to access the camera. Depending on the operating system and type of video compression, an ActiveX or Java viewer can be selected. First time ActiveX users will be required to approve the installation of the viewer on their system.



To access the camera controls, first click on the "control icon." A navigation window and zoom bar will appear below the viewing window. Clicking anywhere in this 360-degree panorama will move the camera. You can zoom in or out with the zoom bar.



Clicking on the control icon again will display a remote control. You can also use this remote to move the camera and zoom. If you get lost, click on the "circle" in the middle of the remote, and you will be returned to its "home position."



Another way to move the camera is by simply clicking anywhere within the viewing window. Click on something to look at or to move the camera in a particular direction.

By holding down the mouse, drawing a box and then letting up, the camera will center and zoom in on the area selected. If you get lost or over-zoom the camera, select the home position from the remote.

To save a jpeg image, click on the capture icon. To send the current image, click E-mail.

That is all there is to it. Enjoy the exciting world of telepresence.

3.0 SYSTEM DESCRIPTION

The OceanCam consists of five major subsystems:

- 1) Camera
- 2) Housing
- 3) Power
- 4) Network
- 5) Lighting

3.1 CAMERA SYSTEM

The OceanCam employs a PTZ (pan-tilt-zoom) camera that has been designed for 24x7 operations. The camera has a rotation range of 340-degrees and can tilt from slightly below the horizon to vertical. Both optical and digital zoom is available although, digital zoom is generally disabled to obtain the sharpest underwater images.



3.2 HOUSING

The OceanCam housing has been specially designed and manufactured for select IP cameras. Model OPT-06 has been designed to a working depth of 200 feet. Other models are available for greater working depths.

The system employs a single underwater-pluggable connector for power and data communications.

The housing uses a specially designed greater than hemi-sphere glass dome that allows for greater clarity and a harder surface capable of being cleaned underwater.

The housing features cable stress relief. Use of pairs of circular o-ring insure a more reliable seal. The cylinder is free of attached components and can be completely removed exposing the camera and components.

The housing has been specially designed to protect the electronics from small amounts of water in the unlikely event of an improperly seated o-ring.

3.3 POWER & NETWORK SUBSYSTEMS

Power-over-Ethernet (PoE) has the ability to carry both data and power over a single Cat5 cable. The underwater PoE connector can be attached or removed underwater. A stress relief sleeve is also used.



The system may employ a PoE power supply (PoE injector). A standard Ethernet Cat5 network cable connects to a local area

network (router) and then to the Internet. For testing purposes, a F-F connector and crossover cable may be needed when connecting directly to a computer without going through a network router.

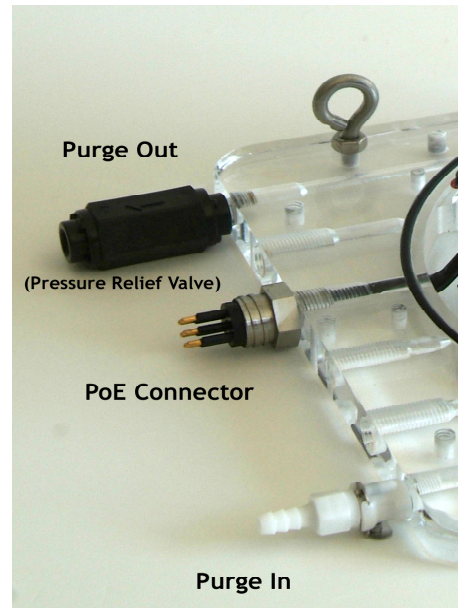


A 110/240 VAC power supply is used to deliver 48 VDC to the camera through the PoE cable. A power converter/regulator inside the housing converts to 12 VDC used by the camera. The camera can also be powered from 48 VDC batteries.

DO NOT PLUG IN OR REMOVE THE HOUSING PoE CONNECTOR WHILE UNDERWATER WHEN THE POWER IS ON!

3.4 MOISTURE PURGING SYSTEM

To ensure the best operation of the camera, moisture inside the housing needs to be removed. The use of silica drying bags is now being used instead of the gas purging system. An optional moisture purging system is available for very high humidity environments.



The housing may provide for an intake and exit to exchange the moist air with either dried air or nitrogen (N₂). The purge out contains a pressure relief valve that prevents too large of a pressure inside the housing. This works effectively if the supply pressure is not too great.

3.5 BUOYANCY CONTROL

The optional weight tray may be used to correct for positive buoyancy in test applications or where temporary placement is done. With 10-16 pounds of weight, the camera is negative buoyant and rests reasonably well in low surge conditions.



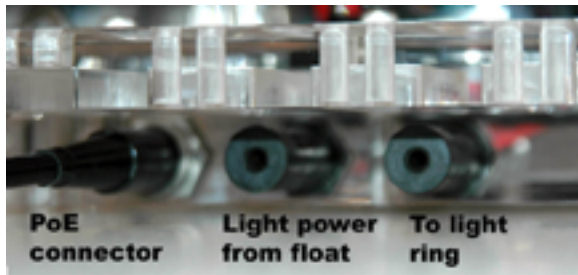
The weight tray should not be used for permanent placement or in high surge. Standard lead dive weights can be used instead of the weight tray. Attach weights to the metal bars on either side of the housing.

3.6 UNDERWATER LIGHTING

The optional underwater lighting system employs banks of 10 LEDs (light emitting diodes). They are mounts on a collar and then to the cylinder of the housing.



The lights are powered from a separate 48 VDC underwater cable. Plug the lights in to the furthest right connector and the power to the connector to its left.



The light banks can be mounted top-to-bottom (as shown above) or side-by-side using the swivel mounts or directly to the lighting collar. The light bank with the power cable needs to be positioned as to reach the connector at the rear of the housing.

When wiring single connector power cables to 48 VDC batteries, be careful to maintain proper polarity.



DO NOT PLUG IN OR REMOVE THE LIGHTING POWER CONNECTORS WHILE UNDERWATER WHEN THE POWER IS ON!

4.0 OPERATIONS

4.1 HARDWARE ASSEMBLY

The camera system is shipped completely assembled and ready for operation. The PoE injector is also ready for use.

Attach the PoE cable to the camera using the underwater connector. Lightly tighten the stress relief sleeve. Additional plastic cable ties can also be used.

Attach the other end of the PoE cable to the power injector. An optional waterproof power/wireless box may have already been wired to the PoE cable.

Attach the Ethernet cable to the network consisting of a router, wireless network adapter, computer or direct Internet modem.

Connecting to a computer may require a crossover cable (not supplied).

Once both network connectors are attached, plug the power into a 110/240 VAC source. Once power is supplied to the camera, it will “boot” and move to the “home” position.

The system provides for the removal of moisture from inside the housing with the use of silica bags. The housing exerts approximately 10-16 pounds of positive buoyancy. An optional weight tray may be used to help offset this buoyancy. Weights can be attached to either side of the housing using the vertical metal bars.

Once the underwater PoE network cable has been attached, you can apply power to the system. The camera will initially display the network light for a few seconds and then the power light will be displayed.

This begins the camera “booting” process taking about one minute. During this time, the camera will cycle to the “home” position. After a few seconds, the network light will

illuminate, indicating that the network connection was successful.

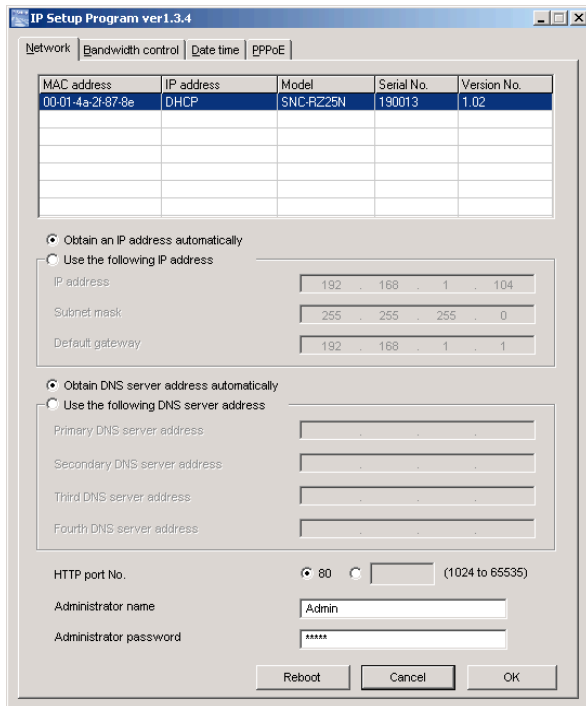
4.2 CAMERA/NETWORK SOFTWARE

The camera comes with a full set of features including: Pan-Tilt-Zoom remote operations, Internet server, image capture, E-mail and FTP image transmission, two-way audio, motion detection, user security, executive control camera management and many more.

4.2.1 Software Installation

The camera will operate using one of several different Web browsers. The Sony IP Setup Program only works on Windows computers.

The IP Setup Program is first downloaded to a Windows PC using the install disc. The disk also contains a user manual on the camera's operation and other valuable tools.



Once the software has been downloaded and installed, open the IP Setup Program. Under the "Network" tab will appear a table that contains the MAC address, IP address, model, serial number and version number of each camera on the network. If the camera is properly connected, this information will be displayed.

Each camera will appear on a separate line. Generally, the IP Address will be set to DHCP indicating that the software has automatically detected the camera.

An empty table indicates that the camera is not properly connected or not turned on. Check that the two lights on the camera are on. (For further assistance see Troubleshooting Section 7.1.2.)

At this point, the camera can be accessed either by selecting the camera in the IP Setup Program or by entering the IP Address into a browser window.

Depending on the operating system and type of video compression, an ActiveX or Java viewer can be selected. First time ActiveX users will be required to approve the installation of the viewer.



Press "Enter" to access the camera. (See the Sony Operations Manual for the use of the various control features.)

4.2.2 Assigning IP Address

To connect the camera to a network, you will need to assign a new IP camera address that is compatible with your network.

Open the IP Setup Program and click on the camera to which you want to assign a new IP address in the list.

The network settings for the selected camera are displayed. Generally, the IP address and DNS settings are obtained automatically from a DHCP server.

Camera operations behind and through a firewall may require that static IP addresses be assigned. Consult your Network Administrator for the proper network settings.

To specify the IP address manually:

Select "Use the following IP address," and enter the IP address, Subnet mask and Default gateway in the relevant boxes.

Select "Use the following DNS server address" and type the Primary DNS server address and Secondary DNS server address in the relevant boxes. The "Third DNS" server address and "Fourth DNS" server addresses are not used for this camera.

Generally the HTTP port number is set to 80. To use another port number, type a number between 1024 and 65535 in the text box.

Type the Administrator name and password (both are initially set to "admin"). Click OK to save your changes.



"Setting OK" is displayed. Click OK again to confirm that the settings have been saved.

If at anytime you are experiencing a network connection problem, it may be necessary to connect using DHCP. The manually entered IP address will appear in the camera selection box in the IP Setup Program. This is the IP address that can be used to access the camera over the network.

NOTE: If a firewall is in use, there may be a need to configure two IP addresses (a private and public address). Check with your Network Administrator.

If the IP address is not set correctly, the Welcome page will not appear. In this case, try to set the IP address again or use DHCP.

When the IP address has been assigned to the camera, check that you can actually access the camera using the Web browser installed in your computer. First verify that your computer can connect to the Internet.

Use Internet Explorer as the Web browser whenever possible. Both ActiveX and Java viewers are available when Motion-JPEG is selected. Only ActiveX viewer is active when using MPEG4. This produces the best image quality.

Start the Web browser on the computer and type the IP address of the camera in the URL box.

Note: if you are using DHCP to obtain a camera IP address, that address may change if the computer or router is reset.

When the welcome page is displayed, click "Enter" and the main viewer will be displayed.

4.2.3 Use of Other Web Browsers

Other Web browsers such as Safari on Apple OSX can be used. These can only access the camera using the Java Applet Viewer. Currently, Java is only available in JPEG mode.

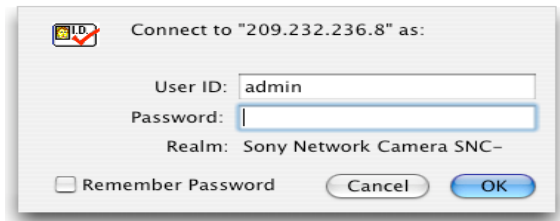
Administrative functions, the IP Setup Program and other Sony-provided software, can only be accessed from a Windows computer.

4.2.4 Configuring the System

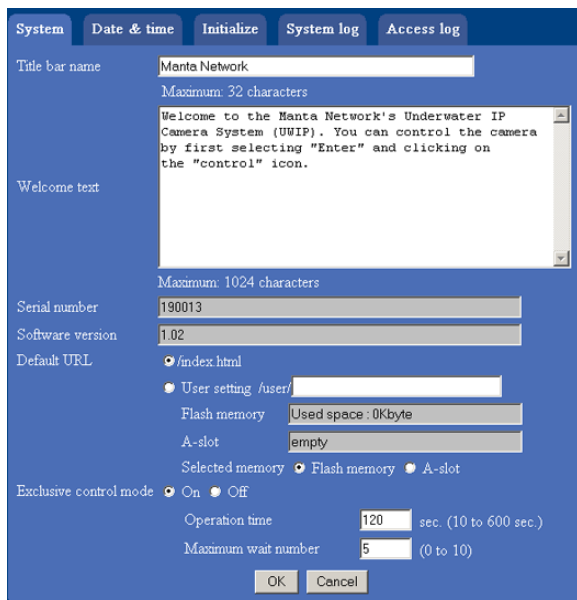
The camera has an extensive set of features that far exceeds those necessary for the underwater application. In the next few sections, only a small sample of these features are described. (See User Manual for a complete discussion.)

The "Settings" menu can be accessed from either the "Enter" screen or from the menu at the top of the "Viewing" window. Once selected, you will be prompted for an

administrator name and password. Both are initially set to "admin." You can change the password in the Settings menu and assign new administrators in the Users menu.



Enter a "Title Bar" name and welcome text. Click OK to save your changes. Date & Time can also be set from this menu.



The camera can be configured to use the "Exclusive Control" feature. This can be set to allow each user a defined amount of time to pan, tilt or zoom the camera. The remaining control time is shown in seconds.

A suitable setting is to allow a queue of 5 users each with 120 seconds of operation. This represents a reasonable amount of time to wait for access.

4.2.5 Configuring the Camera

The camera can be remotely administered to configure a wide range of operations. The "Camera" settings menu is divided into common functions, picture adjustments, day/night operations, MPEG4 settings and motion JPEG settings. (See Sony Users Manual for a complete discussion)

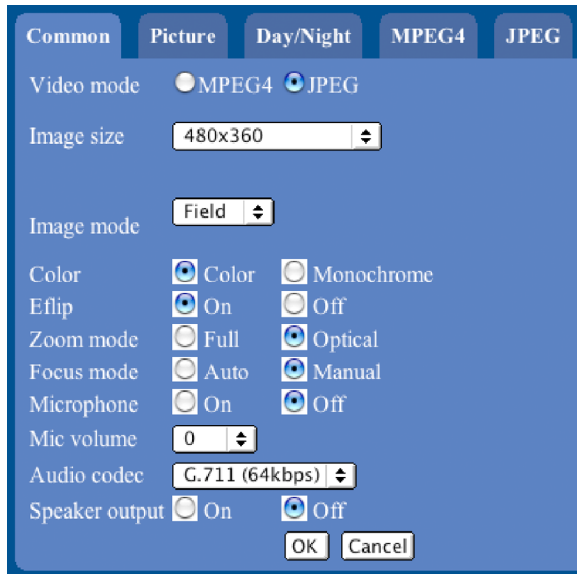
The Camera settings "Common" tab is used to select either MPEG4 or Motion-JPEG video transmission. The default images size can be set although the user can change the image size.

With adequate light, processing power and bandwidth, Motion-JPEG and MPEG4 both produce sharp images with smooth motion. When light is reduced, Motion-JPEG video retains a high quality image but reduces the bandwidth by dropping frames causing a rougher motion. Under similar conditions, MPEG4 maintains smooth motion but the video may become corrupted reducing image quality and introducing artifacts. This also may occur when bandwidth is restricted as in the case of dial-up connections.

Motion-JPEG generally requires between 4-16 times more hard disk storage than MPEG4 video in order to produce similar visual quality. MPEG4 requires more processing power than Motion-JPEG. As disk space is getting cheaper and easier to distribute and processors are getting faster, the importance of this consideration is decreasing as time passes.

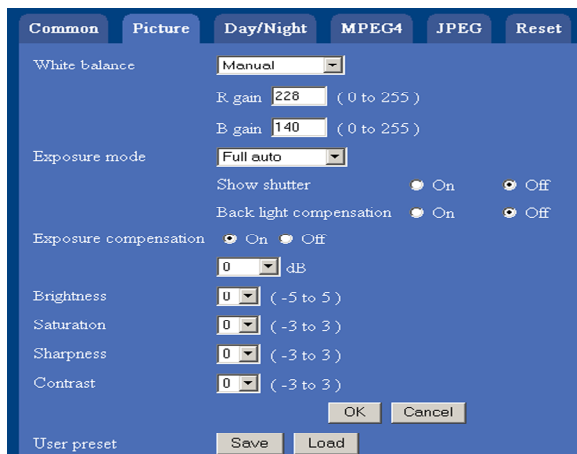
The settings shown represent a starting point to configure the camera.

The "Eflip" mode should be set to ON as the camera is in an upright position. The "Zoom Mode" should be set to optical as the image may become over-pixelated using digital zoom.

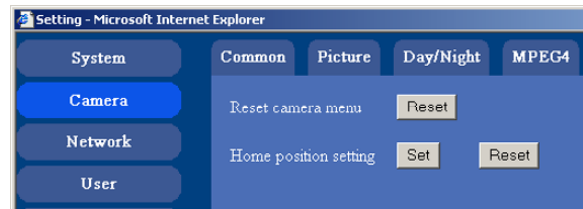


To set the Underwater White Balance select the "Picture" tabs. This allows the camera's color balance to be adjusted for underwater operation.

Water absorbs the color spectrum removing the "reds" first. The camera's white balance can be used to correct for this color imbalance. The settings shown below represent a starting point to configure the camera. Focusing the camera on a "white card" at the working depth produces the best color results. "One-touch" balance can be used to set the camera to the best color for the depth and lighting conditions.



The camera's initial position is known as its "home" position. It is the position that the camera returns to when the "circle" is selected in the remote control. This position can be set under the "Camera/Reset" tab.

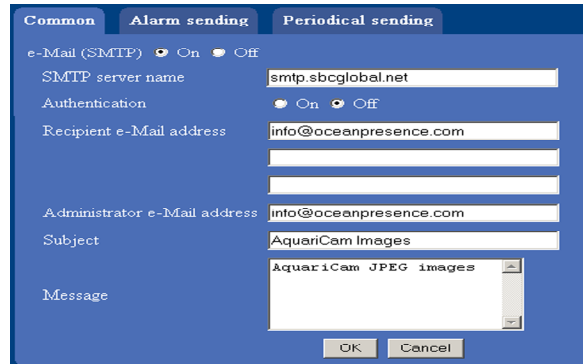


To set the Home Position, first move the camera to the desired position. Click on "Set." Be careful not to select the "Reset Camera Menu." The factory home position can be reset in this menu.

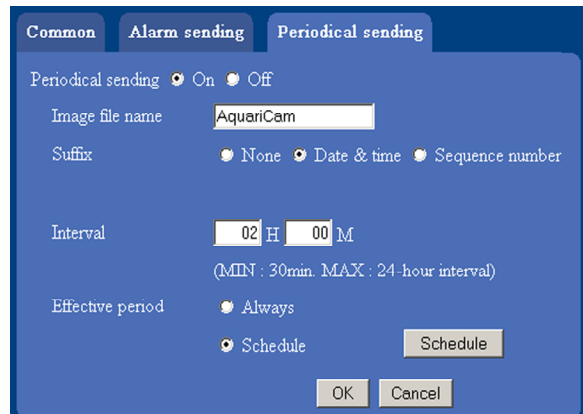
A camera tour can also be configured. The motion of the camera in terms of direction, speed and zoom can be set. Several camera directions and duration of the stay can be set.

4.2.6 Image Transmission

You can send a still image from the camera as an E-mail attachment or to an FTP server. The email is can be triggered by an external sensor, a built-in activity detection function or a manual trigger.



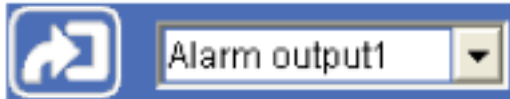
You can also send still images sequentially for a determined period before and after the trigger to an FTP server, or send them periodically.



4.3 OPERATING UNDERWATER LIGHTING

The lights can be remotely controlled over the network. This is done with the use of a special lighting controller board inside the housing that is attached to the camera.

Follow the cable installation directions and warning from Section 2.11. The alarm and triggers have been preconfigured to work with the lighting controller.



“Alarm output1” controls the ON/OFF feature of the lights. Two light intensity settings (low and high beam) can be set using the “Alarm output2” trigger. The operation of the lights can be controlled using the manual triggers or through timer schedules.

4.4 CONFIGURING WIRELESS NETWORK

Cameras can be attached to wireless network adapters to extend the camera's reach. A WiFi Power Box (OPT-WPB) combines a power supply and wireless network adapter in a compact waterproof box. It is available as an option.

The WiFi Power box(if supplied) is equipped with PoE and standard 110/240 VAC power input. The wireless connection is intended for distances of less than 600 feet, although longer distances are possible. Also available are long-range wireless transmitters capable of extending the reach to several tens of miles.

The wireless option simplifies cable installation, especially across walk areas. It can be combined with up to 300 feet of PoE cable to extend the camera's range.

The wireless network adapter (Ethernet bridge) is set to obtain IP addresses automatically using the DHCP server. Your network needs to be configured to accept DHCP settings. (See OPT-WPB installation instructions)

5.0 PRE-DEPLOYMENT TESTING

It is advisable to test the components of the system prior to open water deployment.

5.1 CAMERA/NETWORK TESTS

First attach the network cables and power. Apply power to the camera system. Cable ties may also be used to secure the cable.

The camera will power-up as indicated by the movement of the camera head to the upright position and then to its standard pre-set home position. Two green lights should be displayed.

Test the camera by initiating the network software (See Section 4.2.1 Software Installation). Start the IP Setup Program and select the camera. It should be set to either automatically acquiring the IP address (DHCP) or it will display the manually entered IP address.

The blue home page is first displayed. Upon clicking on "Enter," the viewing window should become active. Click on "Control" and test that the camera motion is operational. At this point, all systems are now operational and ready for the final pre-deployment check.

Additional procedures to be completed prior to open water deployment include purging the housing of moist air and attaching the weight tray, if used.

5.2 FINAL CHECK-OUT

The camera employs a PoE connection that can be removed and reattached underwater. The underwater portions of the connector should be protected from contamination as much as possible especially if they remain unconnected for long periods of time. Special cable plugs are provided for this purpose.

Check to see that the connections are firmly attached and the stress relief sleeve is lightly tightened. The camera system is now ready for deployment.

Three eyebolts are provided to assist in lowering the camera or removing it from the water. A lifting rope (not included) or a 3-leg handle can be easily fabricated using brass clips and nylon rope. Tie a knot with legs about 18 inches in length.

WARNING: DO NOT "BANG" THE GLASS DOME AGAINST THE BOAT OR OTHER HARD OBJECTS.

Lift bags can also be employed to assist in the handling of the camera system underwater, especially when heavy weight trays are used.

WARNING: DO NOT EXCEED THE DEPTH LIMITATION OF THE HOUSING. FAILURE TO HEED THIS WARNING MAY RESULT IN LEAKAGE AND POSSIBLY IMPLOSION AND SERIOUS INJURY.

6.0 CARE & MAINTENANCE

6.1 OPENING THE HOUSING

BE SURE TO SOAK AND RINSE THE HOUSING IN FRESH WATER AND THOROUGHLY DRY IT BEFORE OPENING.

Remove the top two screws from each of the two vertical metal bars. The dome assembly can then be released from the cylinder by gently placing your first finger under the lip of the dome and your thumb on top of the vertical bar. Work both sides until the dome assembly releases.

If the dome assembly does not separate easily, a vacuum may have developed inside the housing during air transport. The pressure can be equalized by slightly loosening one of the port connectors. Remember to retighten the loosened port to prevent flooding.

While the dome assembly and cylinder is off the housing base, be sure to protect the exposed O-ring mating surfaces from damage or contamination.

6.2 CLOSING THE HOUSING

INSPECT THE O-RINGS PRIOR TO CLOSING THE HOUSING.

The cylinder is first positioned over the base. The dome assembly is then aligned so that it fits over the camera. Press down using the lip and not the top of the dome. Screws can be inserted in any order but should be carefully threaded by hand.

The metal bars only serve to secure the dome assembly and cylinder to the housing base and do not affect the quality of the seal.

Once all four of the screws have been threaded to at least half their length, they can be lightly tightened using the Allen key provided.

DO NOT PRESS DOWN ON THE TOP OF THE DOME WHEN REATTACHING THE DOME ASSEMBLY TO THE HOUSING.

6.3 ABOVE WATER MAINTENANCE

The body of the housing is made of acrylic and PVC plastic, materials that are well suited for this application, but with certain limitations which must be observed.

CLEANING: DO NOT CLEAN ACRYLIC, PVC OR POLYCARBONATE PARTS WITH ANY SOLVENTS OTHER THAN SOAP AND WATER OR 70% ISOPROPYL ALCOHOL.

Keep the housing out of direct sunlight as much as possible. The materials are subject to crazing, a surface cracking phenomenon, which does not affect its strength. Crazing is caused by ultraviolet radiation, present in sunlight.

The closed clear housing acts as a greenhouse and will heat quickly if left in direct sunlight. Heat is hard on optical and electronic components, so when the housing is out of the water, keep it covered or shaded as much as possible.

Protect the housing from impact. The material will shatter if subjected to sufficient shock. Protect the housing from damage while the unit is not in use.

Rinse the outside surfaces with fresh water after use. Soaking in fresh water is also advisable. The plastic and stainless steel fittings are impervious to salt water, but will lose their luster if even small amounts of salt are allowed to accumulate.

6.4 O-RING GREASING TECHNIQUE

The housing is sealed with pairs of O-rings, which require meticulous care. To maintain a watertight seal, the O-ring and its mating surfaces must be clean, free of foreign material, and lubricated with silicone grease.

The following maintenance procedure should be performed:

Clean all old silicone grease from O-ring and mating surfaces using paper towels.

Inspect O-ring for foreign material (sand, seaweed, hair, etc.), cracks, cuts, soft spots, or deformities. Replace O-ring if damaged. Inspect mating surfaces for scratches, rough spots, dents, or cracks.

SILICA DRYING BAGS MUST BE REPLACED IF THE HOUSING IS OPENED FOR MAINTENANCE.

Apply thin, even coat of silicone grease to O-ring using fingers. Install the O-rings. Immediately wash your hands in a mild soap and dry before handling other components.

6.5 BELOW WATER MAINTENANCE

The camera system is designed for continuous underwater operation and can operate safely for months without removal. The placement and conditions underwater will dictate the frequency and extent of surface growth and contamination and will dictate how often the system may need to be removed for maintenance.

The glass dome can be rubbed with a nylon cloth to remove algae growth. Particulate matter that may settle on the dome can be dusted by hand. If the housing shows excessive accumulation of algae growth, it should be detached from the cables and brought to the surface for a more thorough cleaning.

WARNING: THE POWER SUPPLY MUST FIRST BE DISCONNECTED BEFORE THE UNDERWATER POWER CONNECTOR IS REMOVED. FAILURE TO DO SO WILL NOT

HARM THE CAMERA BUT MAY CAUSE DAMAGE TO THE POWER SUPPLY.

POWER CABLE REMOVAL WITH THE POWER ON WILL VOID WARRANTY.

6.6 PERIODIC MAINTENANCE

The OceanCam has been designed for continuous underwater operations and could operate in place for as much as six months. Generally, it is advisable to remove the camera every 2-3 months for a thorough cleaning.

A thin coating of silicone grease on the acrylic surfaces is somewhat effective in reducing algae growth.

The frequency of underwater maintenance will depend on other maintenance practices that may lead to a build up of sediment on the dome. The dome should be "dusted" as often as possible and at least at the conclusion of other cleaning activities.

7.0 APPENDIX

7.1 TROUBLESHOOTING GUIDE

7.1.1 Camera Power Light Off

If a green light is not seen on the front of the camera, check all power connectors. The power supply should be warm to the touch.

7.1.2 Camera Network Light Off

After the camera has booted, the power and network lights should both be ON. If the power light is ON and the network light is OFF, a network connection has not been established.

First check all network connections to see that they are well seated. Verify that the network is working. This can be done using the “ping” or “ipconfig” command in Windows.

Click on the Windows “Start” and click “Run.” Click OK for the Run:cmd prompt. This will open an operating system window in which you can enter either “ipconfig” or “ping” with the desired IP address.

```

C:\WINDOWS\System32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\sony>ping 192.168.1.101

Pinging 192.168.1.101 with 32 bytes of data:

Reply from 192.168.1.101: bytes=32 time<1ms TTL=128
Reply from 192.168.1.101: bytes=32 time<1ms TTL=128
Reply from 192.168.1.101: bytes=32 time<1ms TTL=128
Reply from 192.168.1.101: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\sony>ipconfig

Windows IP Configuration

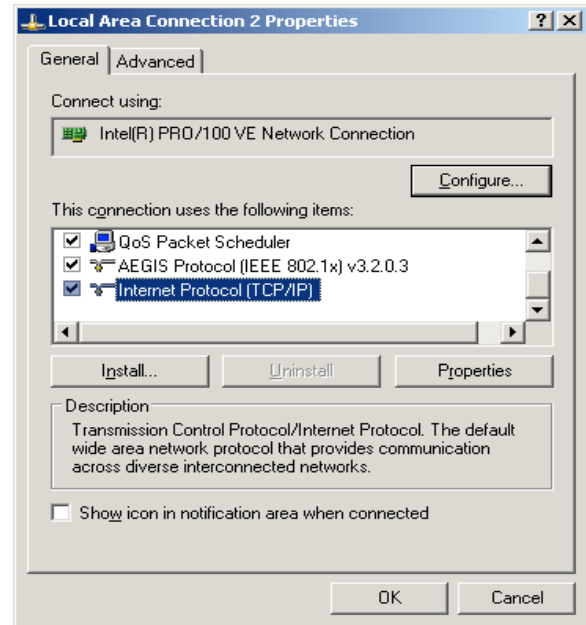
Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : 
    IP Address . . . . . : 192.168.1.101
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
    
```

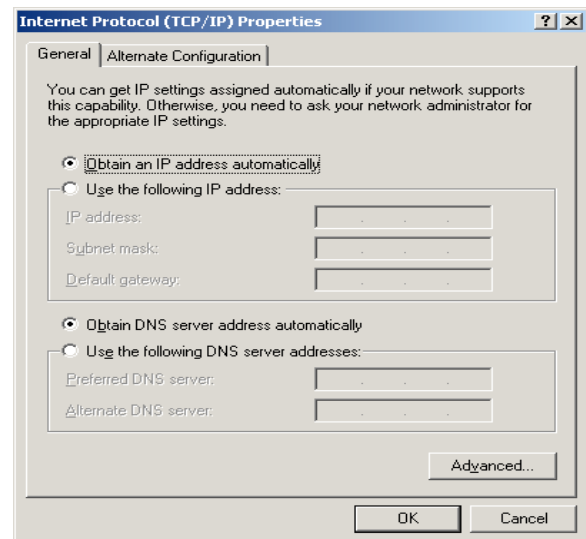
If the camera’s IP address is not shown, the Windows network configuration may not be properly set to accept DHCP automatic address assignments. Check the Windows Network Connections.

Open the “Network Connections” panel under Control Panels and display the

properties for the “Local Area Connection.” Check the properties of the Internet Protocol (TCP/IP) item.



Both the “Obtain an IP address” and Obtain an DNS server address” automatically should be selected.



If problems persist, contact your Network Administrator.

7.1.3 Camera Not in IP Setup

If Section 7.1.2 fails to resolve the network connection problem and the camera’s address is not shown in the IP Setup Program, the problem may not be with the network connection settings but with the camera.

Replace the RJ-45 Ethernet connector on the back of the camera with a crossover cable and connect the other end directly to a Windows computer. Power up the camera and allow it to complete the booting process.

NOTE: Resetting to factory setting is not advisable unless all other troubleshooting procedures have failed to resolve the problem.

If the network light is not illuminated, reset the camera by inserting a paper clip into the reset hole located at the upper right corner on the back panel of the camera. Hold the clip in for 5 seconds. This resets the camera to factory settings.

Power up the camera again and allow it to complete the booting process. The camera should now appear in the IP Setup Program.

If this procedure fails to correct the problem, contact the manufacturer for further assistance.

7.1.4 DSN Error/Server Not Found

Entering the camera's IP address into a Windows browser window produces the following error:



If the camera's IP address cannot be found on the network, a server error will be sent. First check that the IP address entered into the browser window is correct and that the computer is able to connect to the Internet.

If the camera is using a DHCP server assigned address, check the list of assigned addresses. Depending on the type of network and router, this can be done by requesting a DHCP active address list from the router.

For example, using a Linksys router, enter the router address into the browser, log on as administrator and select the "Status" tab.

Under the "local network" tab you will find a "DHCP Clients Table" button. This will generate a list of assigned addresses.

Client Host Name	IP Address	MAC Address	Expires
(null)	192.168.1.100	00:0A:27:7A:8C:F9	21:33:59
SONY	192.168.1.101	00:11:3F:2D:00:67	23:24:26
(null)	192.168.1.102	00:0A:95:C4:09:56	10:26:21
(null)	192.168.1.103	00:16:B6:AE:5C:66	23:47:31
(null)	192.168.1.106	00:01:4A:2F:87:8E	23:48:11

The camera will be one of these assigned addresses. If the camera is not any of the shown active DHCP addresses, a camera reset as described under Section 7.1.3 may need to be performed. If the camera is set to a static-IP address, it will not show up in the DHCP list.

7.2 DOME FIELD REPLACEMENT

THIS PROCEDURE SHOULD ONLY BE ATTEMPTED WHEN DIRECTED BY CUSTOMER SUPPORT.

The housing has been designed to allow the dome to be replaced without returning it to the manufacturer. To replace the dome in the field, follow the removal and installation instructions carefully.

7.2.1 Dome Removal

- 1) Use 1/8" Allen wrench to remove 9 10-32 x 3/4" flat head cap screws from the three-segmented acrylic parts that hold the dome in place. Remove these parts and set them aside.
- 2) Carefully lift the glass dome straight up from the cylinder rim.
- 3) Clean the bottom of the dome flange of silicone grease with paper towels and 70% isopropyl alcohol. Set the dome aside in a safe place.
- 4) Remove the dome O-ring and clean it with paper towels. You may use the corner of a credit card or a guitar pick to assist in getting the O-ring out of the groove.

- 5) Inspect the O-ring for cracks or other defects. Set it aside on a clean paper towel.
- 6) Use paper towels, 70% isopropyl alcohol, and Q-tips to clean the mating surface and o-ring groove.
- 7) Inspect the groove and mating surface for cracks, other defects, and debris.

7.2.2 Dome Installation

- 1) Use a Q-tip to spread a thin coat of silicone grease into the o-ring groove. Use fingers to thoroughly but sparingly coat the entire surface of the o-ring with silicone grease.
- 2) Place the O-ring into the groove. Clean the remaining silicone grease from your fingers with paper towels and alcohol, wash them with soap and water.
- 3) Make sure there is no dust, fingerprints, or other debris on the inside surface of the dome, as these will image.
- 4) With very clean hands, pick up the dome, make sure there is no debris on the mating surface, and carefully place it on the O-ring.
- 5) Center the dome flange within the recessed area.
- 6) Place the three-segmented hold-downs over the rim of the dome. Note that the hole pattern in the cylinder top is not uniform, there are three groups of three holes that match the spacing of the hold-downs.
- 7) Insert the same flat head screws into these holes and gently hand tighten.
- 8) It is important to achieve a uniform pressure of these screws onto the hold-downs, and onto the flange of the dome, which presses uniformly on the o-ring. Tighten these screws

gently with the 1/8" Allen wrench in the following pattern: middle screw of each segment, then outer screws of opposite segments. Turn each screw no more than 1/4 turn in each repetition of this pattern. Repeat that pattern as necessary.

- 9) Final pressure is achieved when the dome is fastened tightly to the cylinder rim, and a dark continuous ring of the O-ring being flattened against the mating surfaces is observed. The areas of the O-ring that is not in contact with mating surfaces looks light gray, and the areas of the O-ring that are in contact look dark gray.

NOTE: HOLD-DOWN SEGMENTS ARE DESIGNED TO PRESS EVENLY ON THE GLASS FLANGE OF THE DOME. THE HOLD-DOWNS MAY OR MAY NOT TOUCH THE TOP SURFACE OF THE CYLINDER RIM WHEN FINAL PRESSURE IS ACHIEVED.

- 10) Make sure that the dark area is continuous and without interruptions on both top (against glass flange) and bottom (inside O-ring groove in cylinder rim).

If there are any gaps in the dark line, they will leak. Best remedy is to remove the dome and repeat all steps above, paying particular attention to inspection for cracks and debris.

NOTE: ONE HUMAN HAIR OR GRAIN OF FINE SAND ACROSS THE O-RING WILL INTRODUCE ENOUGH OF A GAP TO LEAK.

7.3 WARRANTY

The manufacturer inspects and tests each housing for watertight integrity before it is delivered.

The manufacturer will repair or replace at the manufacturer's option any housing that proves to be defective in construction or materials within one year of date of delivery.

The manufacturer is not liable for damage to equipment caused by leakage of water into the housing, nor is the manufacturer liable for loss of data or income there from as may result from such leakage. The manufacturer is not liable for any accidents during which this housing was in use.

This warranty is void in event of negligent handling of the housing including, but not limited to, dropping the housing, modifications to the housing by other than the manufacturer, improper care of the sealing components, exceeding the specified depth limitation or pressurizing the housing in excess of 5 psi.

There is no express or implied warranty, nor warranty of merchantability, except as stated by the manufacturer above. Camera and subcomponents carry warranties as expressed by their respective manufacturer.

The buyer understands that because of the nature of this product, housing use underwater involves certain risks and agrees to hold the manufacturer harmless, except as stated above.

WE HIGHLY RECOMMEND THAT FLOOD AND THEFT INSURANCE IS CARRIED AT A SUITABLE LEVEL FOR REPLACEMENT IF WARRANTED.

7.4 ACCESSORIES (OPTIONAL)

Optional accessory products that have been designed to work with the OceanCam include:

- Wireless Network Adapter
- Video Recording Software
- Software Developer Kit
- Network Crossover Cable & Connector
- Nylon Lifting Rope
- Joystick Connectors & Controllers
- Underwater Communications Equipment
- Anti-theft Locking System -- special anti-theft tamper-resistant locking system
- Dry Air/N2 Purge System – also available with a high-capacity drying tube

Contact Ocean Presence Technologies at info@oceanpresence.com for more information.

7.5 REPLACEMENT PARTS

Spare parts packages include one O-ring, one silicone grease package; spare screws, Allen wrenches and two fuses.

PART #	DESCRIPTION	PRICE
6021	Cylinder O-ring	7.10
6022	Dome O-ring	7.25
6006	Silicone grease, in small container	2.60
8003	Owner's Manual on CD	19.50
8004	*Spare parts package	9.20

All other parts are custom made, and may require return of the housing and instrument to the manufacturer for repair or replacement.

7.6 CAMERA SPECIFICATIONS

Camera Model	SNC-RZ25N
Image device	1/4type CCD imager (Exwave HAD Technology)
Number of effective pixels	380,000 pixels 440,000 pixels 768 (H) x 494 (V) 752 (H) x 582 (V)
Zoom ratio	18x optical zoom (216x with digital zoom)
Focal length	f=4.1 mm to 73.8 mm
Minimum object distance	300 mm (wide), 800 mm (tele)
Pan angle	170 to +170 degrees
Tilt angle	-90 to +30 degrees
Other functions	Day/Night (Auto/Manual), Image Flip function, Motion Detection, Unattended Object Detection, Anti-tampering, Image stabilizer, Position preset
Image size	640 x 480, 480 x 360, 384 x 288 (both JPEG and MPEG-4) 320 x 240, 256 x 192, 160 x 120
Compression	MPEG-4/JPEG (selectable)
Maximum frame rate	JPEG: 30 fps (320 x 240) JPEG :25 fps (320 x 240) 18 fps (640 x 480) 18 fps (640 x 480) MPEG-4:30 fps (320 x 240) MPEG-4:25 fps (320 x 240) 15 fps (640 x 480) 15 fps (640 x 480)
Audio compression	G.726 (40,32,24,16 Kb/s), G.711 (64 Kb/s) (Audio IN/OUT)
Network Protocols	IP(IPv4), ICMP, ARP, TCP/UDP, RTP/RTCP, SNMP (MIB-2) DHCP client, NTP client, DNS client, HTTP, FTP, SMTP client
I/O ports	Sensor in x2, Alarm out x2
Number of clients	10 (MPEG-4), 20 (JPEG)
Interface Ethernet	Ethernet 10Base-T/100Base-TX (RJ-45)
Serial interface	RS-232C (Transparency function or VISCA protocol)
Card slots	Compact Flash (for SNCA-CFW1 IEEE802.11b Wireless

External microphone input	Mini-jack, 2.4 V DC plug-in power, 4.7 K Ω
Audio line output	Mini-jack (mono), max. output level :0.9 Vrms Analog Video
Signal system	NTSC (Composite)
Horizontal resolution	More than 470 TV lines S/N ratio More than 50dB
Min. illumination	Color :0.7 lx (50IRE,F1.4:AGC on)
General Mass	1.3 kg (2 lb 14 oz)
Dimensions	W x H x D) 140 x 206 x 148 mm (5 5/8 x 8 1/8x 5 7/8 inches)
Body color	White
Power requirements	DC 12 V or AC 24V.
Power consumption	17 W max
Operating temperature	0 °C to + 40 °C (32 °F to 104 °F)
Storage temperature	-20 °C to + 60 °C (-4 °F to 140 °F)
Operating humidity	20% to 80% Non-condensing
Storage humidity	20% to 95% Non-condensing
Supplied accessories	CD-ROM (setup software), Operation manual, Installation manual
System requirements	
Operating system	Windows 2000/XP
Web browser	Microsoft Internet

7.7 HOUSING SPECIFICATIONS

Glass Dome	60% spherical glass dome specially designed to maximize the camera's optics
Maximum operational depth	OPT-06: 250 feet (75 meters)
Moisture	Silica dry bags or operate in a dry gas (air or N ₂)
Adjustable weight tray (optional)	Up to 30 pounds