MarCum TECHNOLOGIES

Mission SD
Underwater Viewing System

User Manual

INTRODUCTION

Thank you for purchasing the MISSION SD underwater viewing system from MarCum Technologies. The MISSION SD offers several technologies that are the first of their kind, making this system the most technologically advanced underwater viewing system available.

Using technology such as an 7" Solar Intelligent-H2D display will deliver the sharpest, most vivid display, even in bright sunlight. Color Kill technology allows you to switch between a Color or Black and White image on demand, while maintaining crisp screen resolution. On-Screen displays of Camera Direction, Depth, Temp and Battery Status Indicator take all the guess work out of your camera position so your new Mission SD can be used to hunt for underwater treasures, locate the "spot on the spot", observe fish in their natural habitat or learn how fish react to your lure or bait presentation. The applications are endless, and it's never been easier or more fun to view.

800v x 480h Solar-Intelligent, H2D LCD monitor. The daylight viewable monitor requires no sunshield while viewing outdoors. Although classified as daylight viewable, it is recommended that you use the provided visor and turn the monitor away from direct sunlight when using outdoors during the day. The ultra-thin monitor housing is sealed with a rubber gasket and all plug-in connections are potted to protect the internal electronics from the harsh elements.

CMOS Camera - .01 lux - The next generation low-light camera. In order to create an ultra-clear, nearly HD picture, there needs to be a matching high-quality camera. This camera offers a 90° angle of view, giving the user a wide coverage area for maximum visibility.

The Manta camera design matches the high- quality - Switchable CMOS camera to adjustable high intensity white LEDs. This lighting option incorporates MarCum's exclusive Darkwater lighting technology.

Dark-water technology greatly reduces particulate reflection and increases viewing distance by positioning the lights above and behind the actual camera lens. The Manta camera incorporates internal ballast weights within the camera housing. The amount of weight is ideal for trolling at low speeds or keeping the camera tracking smooth in current. For added open water stability or to use as a down view camera, the fin (included) snaps into the rear of the Manta camera housing with ease.

- Color Kill Technology – Switch between Color and Black and White on demand
- OSD – On Screen Displays of: Direction, Depth, Temp and Battery Level 75 feet of high strength, flexible camera cable
- Manta camera design utilizing Darkwater technology lighting system Super high intensity white LED lights for low light viewing
- Front keypad control panel for one-touch menu and on-screen display.
- Removable down-viewing and trolling fin
- Video Output jack for attaching to external monitor or recording device 90° cable connections to prevent cable wear
- Padded soft pack encompasses internal molded case that stores battery, camera cable, and Manta camera. Provides for maximum portability and protection
- 9.0 amp 12v rechargeable battery. This battery will provide up to 11 hours of continuous use during ideal conditions. Battery run time will vary depending on the condition of the battery, use of underwater LED lighting, level of screen backlight (brightness) and LCD heater system.
- Automatic 1-amp, 3 stage battery charger Full 1 Year Warranty
- Removable visor to improve daylight viewing

Getting Started

The MISSION SD has been set-up and tested at the factory before being placed into its retail packaging. Remove the MISSION SD from the packaging and place it on a level surface with the MarCum Technologies logo facing towards you and right side up. Once opened, loosen the knobs on either side of the gimbal bracket (at the base of the monitor) by turning each one counter-clockwise. Make sure to loosen the knobs a considerable distance. Then depress both knobs by pushing inwards and hold in place. This releases the lock on the monitor angle. While depressing the knobs with the base of your palms use the index fingers of each hand and gently lift the monitor up to the desired viewing position and release tension on the gimbal knobs. Once you have set the monitor to the desired viewing angle, gently tighten the knobs until they are snug. The battery, camera and cable are now accessible behind the monitor. It's easiest to remove the hook and loop straps and unzip the soft pack case.

The battery has a wiring harness with "piggyback" terminals attached. The power cord from the monitor attaches to this; the positive (red) terminal should already be attached. You should only have to attach the negative (black) wire to the negative terminal, and you're ready to go. The other cord coming from the battery is the port to attach your battery charger, more on that in the section on charging. There is no reason for you to disconnect any of these wires unless you are going to remove/replace the battery.

To turn ON the MISSION SD, press the power key which is located on the keypad on the lower left side on the front of the monitor. After pressing the power key, a small red LED indicator light (located next to the power button) will turn ON. The monitor should now be displaying the image being transmitted from the camera. The camera can now be unwrapped from the cable spool and deployed into the water to the desired depth.

The depth of field (distance the camera can see underwater) depends on the clarity of the water and available light at the depth the camera is used. In clear water, the depth of field can be many feet but in cloudy or muddy water the depth of view can be reduced to only a few inches due to particles suspended in the water. Dirty or muddy water and/or low light penetration can detract from the quality of the color picture. Optimum color quality will result from clear water and adequate light penetration.

Adjusting the Monitor and On-Screen Display (OSD) Settings

MONITOR SCREEN ADJUSTMENTS
The MISSION SD monitor has four different adjustments that can be made to enhance the image on the monitor to the user's preference. (Note: The MISSION SD has been pre-set with factory defaults for normal viewing) To access the settings menu, press the menu key on the digital keypad. The settings menu will be displayed on the screen (Note: if you wait too long before selecting and adjustment, the menu screen will time out and disappear).

To change between on-screen adjustment choices
When making adjustments for Birghtness, Color Kill, Color, Contrast, Reset and Exit press the menu key to get to your desired monitor adjustment option. The selected on-screen adjustment will be highlighted on the LCD screen. To change the settings within a selected menu, use the UP and DOWN arrows located on the far right of the digital keypad. After pressing your selected menu option, the main menu will disappear from the center of the screen, and your selected menu option will appear on the bottom of the screen. You will now be able to easily adjust and see the screen adjustments you are making. As you select UP or DOWN to make your adjustments, you will see the numbers of the selected adjustment increase or decrease depending on the arrow direction you are depressing. To accept the changes, release the UP/DOWN arrow and settings will be saved. Once the settings are adjusted properly, the on-screen menu will shut off automatically.
Occasionally, you may find that one of your settings will not adjust. By simply scrolling through the menu options and coming back to the setting that wouldn't adjust a second time, you will automatically reset the internal timer, enabling that setting to be adjusted.

Brightness – This increases how bright the individual pixels on your screen will illuminate. Different lighting conditions and water clarity will affect how you may want the brightness to be set. Too much "Brightness" can cause the image to have a washed-out look.

Contrast – Contrast is the difference in brightness between lightest and darkest tones in a picture. A picture with too much contrast has highlights (lighter tones) that are too bright with no detail, and shadow areas that are too black. A picture with too little contrast looks dull, with no true blacks and more grayish highlights. Different water clarities coupled with the amount of light available will affect the contrast. Adjust the contrast to the desired setting for the best overall picture.

Color – Increasing the color saturation will increase the vividness but can make the picture look darker overall. Decreasing the color saturation will make the colors look washed out and gray.

Color-Kill – This feature allows you to switch between super high-res color, and black and white with the push of a button. To access Color Kill, pressing the UP/DOWN arrows after this menu option is highlighted, will select either ON/OFF which will chance the display image from Color to Black and White and back again. For viewing in low-light, dirty water, or after dark, Black and White viewing is recommended for optimal viewing.

Clear or good water clarity and daylight viewing is optimal for viewing in color. **NOTE:** The Color-kill feature will turn on automatically when the camera's light sensor doesn't detect enough light for optimal color viewing. This can happen in low light conditions, in deep water, or when the ice is very thick and/or covered with snow.

ON-SCREEN DISPLAY (OSD) FUNCTIONS

The MISSION SD underwater viewing system includes the most technically advanced features available in an underwater fishing camera. This system incorporates a variety of sensors and an On Screen Display (OSD), capable of displaying water temperature, water depth, battery voltage, and the relative direction heading of the camera.

The Manta camera contains a digital temperature sensor, a pressure sensor for measuring camera depth, and an electronic compass sensor used to determine the heading of the camera. The monitor base includes an additional compass sensor used to determine the heading of the monitor. The OSD circuit, which includes the control panel with the DISPLAY and F/C buttons, receives data from the camera, calculates the "relative" heading of the camera, and displays temperature, depth, battery status icon, and heading. The heading is displayed around the perimeter of the screen indicates which direction the camera is pointing "relative" to the direction the monitor is facing. For this indication to be accurate, the camera must be suspended by the cable, and the monitor must be on a level surface. If either the camera or the monitor rotates, so will the arrow. An arrow at the top center of the screen indicates that the camera and monitor are facing in the same direction. An arrow at the left indicates the camera is pointing to the left relative to the direction the monitor is facing. Down indicates behind, and right indicates to the right. The arrow will move around the perimeter of the screen indicating all positions. The corners correspond to relative angles at the 45-degree marks. When enabled, the temperature, and depth are also displayed along the top. The battery meter will always be on the screen.

Display: Each press of the OSD/DISPLAY button will toggle the unit through its various display modes:
Mode 1 (Direction, temperature, depth) – default
Mode 2 (Direction and depth)
Mode 3 (Direction only)
Mode 4 (all OSD off)

F/C: Each press of the F/C button will alternate the units between Fahrenheit and Celsius. In addition, with each initial press of the F/C button, the battery meter is displayed briefly.

CALIBRATION: The system contain sensors which measure water temperature, relative direction, and depth. The temperature sensor is pre- calibrated. The compass sensor may be calibrated with a sophisticated calibration routine contained within the microprocessor software. The Depth sensor automatically calibrates itself, and can optionally be manually zeroed.

Compass Calibration: Pressing and holding both buttons simultaneously for several seconds will cause the unit to enter Compass Calibration mode. This is only necessary if the user suspects the camera or monitor compasses have become magnetized for some reason, or if the direction appears to be incorrect. Tilt of the camera, such as "nose down", or "nose up", will also cause direction errors. Calibration can be used to compensate for a change in tilt, such as from the addition of weights or attachment of fins.

Step 1 – Press and hold the F/C (Ft/M) and the OSD DISPLAY buttons until "Calibrate the display" pops up on the screen.

Step 2 – Rotate the monitor 720 degrees clockwise. Once complete press the F/C (Ft/M) and the OSD DISPLAY buttons at the same time to enter the next step. A menu will pop up saying "Calibrate the camera".

Step 3 – With the camera suspended below the monitor hanging horizontally rotate the camera 720 degrees clockwise. Once complete press the F/C (Ft/M) and the OSD DISPLAY buttons at the same time. A menu will come up saying "Calibrated". The Compass sensors are now calibrated.

Depth Calibration: Since the depth sensor is sensitive to barometric pressure changes, it is automatically zeroed each time the unit is turned on. If the unit is turned on while the camera is already under water, the previous stored zero is automatically recalled. If the depth display ever indicates a non-zero depth with the camera out of the water, To reset the depth calibration, power the system down and back on again.

Utilizing the RCA Jack: On the back of the monitor, there is a yellow RCA jack. This can be used to attach a larger monitor, or an external recording device. There are many compact recording devices available that will work great for capturing video. Be aware that the video signal coming from the RCA jack is "analog", and most recording devices nowadays are "digital". This means that you will likely need a device that will convert the signal from analog to digital in order to record. Any large retailer specializing in consumer electronics will have these devices, and they are inexpensive and easy to use. It is amazing how much more you see "the second time around" when you review recordings at home!

ICE FISHING APPLICATION

The MISSION SD can be used to search for that perfect weed line or locate the crib or rock pile where fish will generally school, entertain the kids, or as the perfect tool to enhance your ice fishing experience. To use as a search tool, drill a series of holes through the ice in the location you're interested in fishing. The MISSION SD is small enough to hold in your arms while walking from hole to hole. Drop the camera down each hole in search for the best spot or until you locate fish. Keep your eye on the directional and depth indicators to pinpoint the fish's hideout. Once you've located the spot, drill a hole 3 or 4 feet away from the hole you're actually going to fish in. Set the MISSION SD on the ice and lower the camera down the second hole. To assist in keeping the camera at the desired depth and direction, it is recommended that an Automatic Camera Panner be used. Once you send a lure or bait down and locate it with the MISSION SD, you're ready to fish. The depth, direction and temp indicators on MISSION SD can be changed at any time by pressing the OSD/ Display button.

The MISSION SD also includes a down viewing fin that snaps into the back of the Manta camera. Once the fin is attached, the camera cable can be inserted through the cutout at the rear of the fin and locked into place. It is recommended that you leave about six inches of excess cable, forming a loop, before locking the cable into place. The camera can now be lowered into the hole to view what is directly below you. This can be very helpful while fishing in shallow water.

Battery Charging

Your MarCum system comes with a 3-stage battery charger. This style of charger is proven to be most effective and easiest to use of all charging systems available. Because this is a 3-stage charger, there is no danger of overcharging your battery. When properly cared for, a sealed lead acid battery will last for at least a couple of years. Batteries are made to be used, and they need to be used to make the most of them. The most important thing you can do is promptly recharge your battery after each use. Not charging your battery immediately after use is the number one thing that leads to battery failure.

For safety reasons, it is recommended that you place your system on a flat, hard surface like cement or tile when charging it, away from any flammable materials. Be sure to disconnect the charger from the wall when not in use, and avoid leaving your battery hooked up to the charger for extended periods of time.

When you get home from a trip, put your battery on charge right away and leave it there overnight, or for around 8-12 hours. Likewise, on the night before an ice fishing trip put it on the charger again to ensure a good charge. Again, there is no danger of overcharging your battery. We often talk to people who hesitate to charge their battery after each use for fear that the battery will develop a "memory" and this will lead to a shortened run time – THIS IS FALSE!!! ALWAYS CHARGE YOUR BATTERY AFTER EACH USE!!! Be sure to use the charger that came with your system. Using a larger charger, like you would use on a car, truck, RV, or boat is likely to cause damage to the battery. There is really no danger of overcharging your battery with a low amp charger, and most chargers automatically go into "maintenance mode" once a full charge has been achieved.

TO CHARGE YOUR BATTERY:

Your battery has a wiring harness attached to it that has "piggyback" terminals on it, enabling you to keep the power cord from the unit attached to the battery at all times, as well as having the wiring harness with receptacle for your charger attached at all times. To charge, simply couple the end of the charger with the end of the wiring harness. It is normal for a green light to appear on the charger at this time if the charger is plugged into the battery only. It is also normal for the light on the charger to be green if it is plugged into the wall. When it is plugged into the wall and battery, you will see a red LED light appear on the charger. If the light is red, the battery is being charged. When your battery is fully charged, this red light should change to green. If it is time to go fishing and the light has not turned green, go fish and try to allow a longer charging period next time.

Batteries are an expendable item, and must be replaced periodically. The batteries that we use are the "Sealed Lead Acid" variety, they are 12 volts, and range from 7 to 9 amps. The more amps the battery has, the longer it will run on a full charge. Your MarCum can be powered off of any battery that is 12 volts, even a large automotive or deep cycle battery.

If you need to remove the battery, slide the power cord leads from the battery. Remove the strap that is holding the battery in place and lift the battery out. To replace the battery, place a new battery of similar specifications into the battery compartment and secure it with the Velcro strap and re-connect the positive and negative terminals.

One Year Warranty

MarCum warranties this product to be free from defects in materials and workmanship for one year from the date of purchase. This warranty applies to customers who properly complete the online product registration form found on the MarCum Technologies Website: www.MarCumtech.com/support.

MarCum Technologies will repair or replace any components that fail in normal use. Failures due to abuse, misuse, unauthorized alteration, modification, or repair are not covered. The warranty is valid only for the original owner who purchases the unit from an authorized dealer. An original sales receipt dated within the warranty period is required for all warranty claims.

To best serve our customers, MarCum Technologies has set a standardized battery warranty policy. Battery warranty coverage requires a proof of purchase. Please see our website, www.marcumtech.com/support for full details on warranty coverage.

HOW TO OBTAIN SERVICE

If your unit is malfunctioning, check the support section of our website. You may find that the solution to your problem is something you can resolve yourself. If you need to send it in, there is no need to contact our office. Getting repairs made is as simple as going to our website, MarCumtech.com clicking the support tab and then filling out the MarCum Warranty Claim.

Once you have completed and submitted a warranty claim form, package the unit as described on the website and ship it to us.

If your system is out of warranty, it is a simple as going to our website and filling out a MarCum non-warranty claim. Once you have completed the non-warranty claim, package the system as described on the website and ship it to us. All non-warranty repair pricing is determined after the system is received by us.

Some people are more comfortable calling for shipping instructions. During peak ice season, we sometimes receive a high volume of calls, making it impossible to get to all customers who phone in. For this reason, strongly consider using the on-line forms at www.marcumtech.com/support or the "Live Chat" option.

OUR ADDRESS:
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3943 QUEBEC AVE NORTH
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Please send your email inquiries to service@marcumtech.com

If you are unable to use email or internet, you may call us at 763-512-3987.
Our office hours are Monday – Friday, 8 – 4 Central Time.
International callers may use 888-778-1208.

The customer is responsible for shipping costs associated with returning the system to MarCum Technologies. MarCum will pay for shipping the repaired system back to the customer while it is still under warranty. All out of warranty services will be charged a fee for service and shipping which must be paid in advance. The system should be securely packed and shipped "pre-paid freight" and insured to MarCum Technologies. It is the customer's full responsibility to track their products sent out in the mail or other forms of delivery service. MarCum Technologies will not be liable for packages lost in route to us. Unless specified otherwise, do not include batteries or other accessories when returning the product for repair. MarCum Technologies will not be responsible for lost or damaged accessories. Turnaround time can vary, on average it is about 1 week.

www.MarCumtech.com

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