MarCum TECHNOLOGIES

M1LR

3-Color Ice-Sonar

User Manual

www.MarCumTech.com

Introduction

Thank you for purchasing the MarCum M1LR True Color sonar unit. The M1LR incorporates all the sonar technology from the flagship VX series, but now features the new Max Brightness and Clarity patented MBC lighting. Still featuring 1000 watts of peak-to-peak power, patented signal interference rejection, auto zoom, and target separation down to 2.15 inches. Our goal is to set the industry standard for performance while maintaining the highest level of reliability. Please read this manual carefully before using your M1LR system. Only by reading this manual can you realize the maximum benefit from your purchase — enjoy your new M1LR sonar system!

General Description

The M1LR True Color sonar unit utilizes three different colors within its display to differentiate between densities of objects: RED, ORANGE, and GREEN. The use of different colors in defining return signals is meant to be informative in indicating the size of fish, type of bottom or location of weeds. The interpretation of these signals improves with experience and use in the field.

The M1LR offers multi-level Interference Rejection (IR) from nearby competing units. This is most prevalent in ice-fishing applications where anglers utilizing sonar are often grouped together within small areas.

Your MarCum is water and weather resistant and is designed to be used in the outdoors, but in extreme weather conditions, care should be taken to shield the monitor from driving rain and boat spray. At no time should the monitor be in direct contact with large amounts of water. Should your M1LR become wet, it is unlikely that any harm will come to it, but make sure to get the entire system completely dried out as soon as possible.

BATTERY CHARGING

Your MarCum system comes with a 3-stage battery charger. This style of charger has proven to be the 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 LiFePO4 battery will last for many 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 to promptly recharge your battery after each use.

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 a charge right away. Likewise, on the night before an ice fishing trip, put it on the charger again, just to make sure. 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 EVERY 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.

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 always, as well as having the wiring harness with receptacle for your charger attached always. 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 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 just 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 “LiFePO4” variety. They are 12 volts 10 amps and have a life span of approximately 2000 charge cycles. 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 are having difficulty with the charging process, please see the Knowledge Base/ FAQ section on our website, www.marcumtech.com/support .

If you need to remove the battery, slide the power cord leads from the battery. Open the back storage zippers and lift the battery out. To replace the battery, place a new battery of similar specifications into the battery compartment and secure back in the holde and re-connect the positive and negative terminals.

Ice System Set-Up

Your M1LR comes virtually ready to fish. All you need to do is hook up the positive lead from the M1LR power cord to the battery. Your M1LR is delivered with a 3/4 charged battery so you can take it fishing right away. Inside the M1LR Roamer case is an electronics shuttle that has recessed compartments on either side and the single beam transducer and charger. Take the transducer out of the recessed holder and rotate the adjustable ice arm out from inside the front of the shuttle. The adjustable ice arm allows for maximum flexibility in positioning the M1LR around the ice hole.

DEPLOYING THE TRANSDUCER FOR ICE FISHING:

When used in conjunction with the retractable pivoting transducer arm and rubber stopper, the M1LR’s transducer will automatically level itself in your ice hole. To begin operation, take the transducer out of the recessed holder and rotate the adjustable ice arm out from inside the shuttle. Extend the transducer arm, (the cable should already be threaded through it with the stopper in place) and deploy the transducer into the water. We recommend setting your stopper to have the transducer down the least amount possible. The MarCum M1LR puts out enough power that in most cases it is not necessary to have your transducer down more than a few inches below the water line to get a good reading. When the ice thickness is over two feet, it may be necessary to have your transducer set somewhat farther down. Remember--the less transducer cable you have out, the easier it is to pull it out of the water when bringing in a fish or moving to a new location. Under no circumstances should you ever have the transducer below the ice—this can lead to the transducer becoming damaged. It is also important that you keep the cable near the center of the ice hole. We frequently hear from anglers who allowed their cable to freeze into the side of the ice hole. If this should happen to you, make sure the unit is turned off before attempting to chisel it out. If you accidentally cut the transducer cable, do not try to use that transducer again.

MOVING THE DUCER TO A NEW LOCATION

Being mobile is one of the keys to being successful on the ice. Whenever you move from one spot to another, it is tempting to leave your transducer hanging on the transducer arm. This is likely to lead to failure of the transducer arm, and can cause damage to the transducer itself. Always stow the transducer inside the pack when you are moving. Keeping the amount of transducer cord you have out at a minimum will make transporting your M1LR easier. Similarly, you may need to quickly remove your transducer from the hole when about to land a fish. We have seen anglers in a panic grab the shuttle itself and toss the entire unit to the side. This is no way to treat any piece of electronics; a much better approach is to simply lift the transducer out of your way by the cord, and the shuttle itself can be gently pushed aside. Whenever you are moving via sled or vehicle, always fold up your transducer arm, stow the transducer inside, and close the protective soft pack.

READING THROUGH ICE

The M1LR will provide accurate information reading through ice as long as the ice is reasonably clear. Wet the ice with at least a cup of water to improve the coupling of the transducer to the ice. Place the face of the transducer firmly on the wet ice and you will now be able to see the depth and fish displayed on your dial. Drilling into the ice 1-2" before taking a reading may be necessary if the surface of the ice is very rough, or if the ice is filled with air bubbles.

Operation

The M1LR utilizes a combination of control knobs (Gain & Range) and keypad (IR) and (ZM) to change or activate various system functions. The keypad has an audible beep when a key is depressed to indicate that a system function has been activated. The following is an information of the various system functions.

Range Select - The Range select knob is used to turn the M1LR on or off as well as to select the correct depth range. The M1LR offers four depth ranges to choose from that can be selected by rotating the knob clockwise. The depth ranges are 20, 40, 80, or 160 feet. The depth-range setting is determined by turning the unit on and turning the Gain knob looking for a solid return (band of light) indicating bottom on the display. If no return is present, then select the 40-, 80-, or 160-foot range until a bottom reading is displayed on the screen.

Interpreting the different rings of numbers around the dial-

When on the 20' range, simply go by the white numbers. When on the 40' range, use the outer white numbers, but multiply x 2 to determine your depth [13 on the dial = 26 feet]. When on the 80' range, use the red numbers. When on the 160' range, use the red numbers x 2. The innermost numbers are for the split screen zoom, and they are used in a similar manner.

Gain Knob - The Gain knob controls the amount of sensitivity required by the unit to pick up objects like bottom, weeds, fish, smaller baitfish, or small lures and jigs. The lower the number, the less sensitivity, conversely higher numbers mean more sensitivity. However, too much Gain (sensitivity) will result in too much information being displayed, and it becomes difficult to interpret the return signals. The best Gain setting is achieved by turning up your Gain from 0 until you receive a clear and steady bottom reading. If you're looking for your lure or bait, turn up the gain until you just begin to display your bait without it fading or flickering on the screen. The lower the sensitivity, the narrower the display segments, the easier it is to distinguish targets. We cannot emphasize this strongly enough. Too much Gain will only clutter the display with unnecessary information, making it more difficult to interpret the return signals. Keeping the Gain at minimum levels will provide you with the most accurate and precise information.

Interference Rejection - The Interference Rejection system is designed to knock out competing return signals from other sonar units being used within proximity. When other sonar units are causing interference to the display of the M1LR, activate the IR feature by depressing the IR key located on the face of the M1LR. When you press the key, a beep will be heard. There are multiple levels of interference rejection and each press of the key will change the level of Interference Rejection. The correct level of IR will be achieved when the display is clear of display clutter. In some extreme cases, clutter will be greatly reduced but not eliminated. It is recommended that only one person in a group adjust the interference rejection at a time.

Zoom - The M1LR is equipped with a "bottom zoom" feature. When the ZM key is depressed, the circular display is divided in half. The right half of the display (12 to 6 o'clock on the dial) will become the entire depth range (20, 40, 80, or 160 foot) you chose when turning the depth range knob to your desired depth setting. This will be indicated by a red light at the zero mark (12 o'clock) and another red light at 6 o'clock. These will be stationary and will not move while in Zoom mode. The backside of the display (6 to 12 o'clock) is the other half of your split screen display. This is the Zoom window portion. The M1LR comes with a bottom zoom that displays the bottom 5 feet in an expanded view. This expanded view of the bottom 5 feet is what is displayed on the left side of the split screen display (6 to 12 o'clock). For the Zoom to be activated, you must have a strong bottom return signal (Red) that equals or exceeds one foot on the display dial. If a strong return signal is not achieved (this can happen if fishing over a very soft bottom or when trying to activate the zoom out of the water) the unit will not go into the Zoom mode. If the unit will not go into zoom mode, turn the GAIN up to 10. This will make the bottom signal very strong. Once the ZOOM has been activated, turn the GAIN back down to a normal operating level.

Signal Interpretation

Hard-bottom readings (rock or gravel) will be displayed by a wide band of RED light indicating a strong return signal. Conversely, a soft bottom (mud or silt) will return a weaker signal and will result in a narrower RED band or possibly even a combined RED and GREEN band. A soft bottom with weed growth will often appear as a narrow RED or GREEN band combined with both solid and broken ORANGE segments indicating weeds. Any fish in the weeds may show as RED or GREEN depending on fish size and relationship within the transmit beam (in the middle or on the outside of the transmit signal).

Reading Fish - Fish will generally appear as separate targets from the bottom. A fish target can be displayed as RED, ORANGE or GREEN, depending on the size of the fish and the location within the transmit beam. Larger fish located in the center of the beam (cone) can appear RED and will be displayed as a wider band on the display. Smaller fish or fish on the outside of the cone may appear ORANGE or even GREEN. Fish moving through the transmit beam may change color as the return signal strengthens or weakens reflecting their location. Fish that are right on the bottom can appear as part of the bottom. The best indication of a fish sitting right on the bottom is that the leading edge of the bottom return signal is either ORANGE or possibly a dithering or flickering RED segment. It is important that the GAIN or sensitivity be kept to a minimum when displaying a strong bottom return. Too much GAIN will flood out the ability to differentiate targets and clutter the display. Fish - Fish will generally appear as separate targets from the bottom. A fish target can be displayed as RED, ORANGE or GREEN, depending on where the fish is located within the cone.

Reading Your Jig - The M1LR will pick up and display small objects like jigs, spilt shots, or swivels. When tuning the unit to display your lure or bait, lower the object to the desired depth and turn up the GAIN until you see the jig on the display. It is important that the GAIN be set so it displays the jig as you raise or lower it. Sound waves emitted by the M1LR bounce off targets and return with the strength of the targets' density.

Denser targets return with a stronger signal, displayed as RED. Less-dense objects (small fish) return a medium-strength signal, displayed as GREEN. The least dense objects (weeds, baitfish, lure) return a weak signal, displayed as ORANGE. Objects on the edge of the sound cone may appear as ORANGE. A fish moving through the cone may appear first as ORANGE then GREEN, then RED, depending on where the fish is located within the cone.

NOTE: Too much GAIN will cause clutter and may make it difficult to distinguish other targets like fish near the bottom. When tuning the unit to display lures or bait, make sure that the objects are in the center of the hole and therefore in the center of the transmit beam. If there's water current (some lakes have underwater current or movement) and the lure doesn't weigh much, it may move to the outer edge of the signal or out of the transmit beam altogether. This will make it difficult or impossible to pick it up on the display.

Dead Zone - All sonar units will have a dead zone in certain circumstances. This occurs on sharp drop-offs where the transmit beam (cone) hits the shallower edge of the drop-off and returns before the deeper edge returns. This in effect creates an un-displayed area between the shallower and deeper water within the transmit beam.

Product Performance Specifications

Output Power	1000 watts peak to peak
Depth Ranges	20, 40, 80, & 160 feet
Transmit Frequency	200 KHz
Current Draw	250 mA
Operating Voltage	10.5 to 15 volts (12-volt DC)
Display Colors	Red, Orange, Green
Transducer Cone Angle	20 degrees (all transducers)
Target Separation	2.15 inches (20-foot depth scale)

WARRANTY - SONAR

MarCum warranties this product to be free from defects in materials and workmanship for two years 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 self-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 proof of purchase. Please see our website, www.MarCumTech.com/support for full details on warranty coverage.

HOW TO OBTAIN SERVICE

If your system is malfunctioning, check the Knowledge Base/FAQ under the "Support" tab on 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, www.MarCumTech.com clicking the support tab and then filling out the MarCum Warranty Claim.

If your system is under warranty, be sure to attach a picture/scan of your proof of purchase with date included. If your system is out of warranty, we have a flat rate fee that will cover the cost of repairs, including parts and labor. You will find the non-warranty claim on our support site.

Once you have completed and submitted the warranty claim, package the unit as described on the website and ship it to 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 using the “Live Chat” option.

OUR ADDRESS:

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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 unit to MarCum Technologies. MarCum will pay for shipping the repaired unit 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 unit 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 accesso-ries 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.

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MarCum User Manuals are available for downloads from
www.MarCumTech.com
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