



3-COLOR  
SONAR ICE  
SYSTEM

USER MANUAL

**LX-1**



3-COLOR  
SONAR  
SYSTEM

**MarCum**  
Technologies

## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>Introduction</b> .....                       | <b>1</b>  |
| <b>General Description</b> .....                | <b>1</b>  |
| <b>Ice System Set-Up</b> .....                  | <b>2</b>  |
| <b>Open Water Set-Up</b> .....                  | <b>2</b>  |
| <b>Operation</b> .....                          | <b>4</b>  |
| <b>Display Diagram</b> .....                    | <b>6</b>  |
| <b>Ice System Only</b> .....                    | <b>8</b>  |
| <b>Product Performance Specifications</b> ..... | <b>8</b>  |
| <b>Signal Interpretation</b> .....              | <b>9</b>  |
| <b>User Tips</b> .....                          | <b>10</b> |
| <b>Service</b> .....                            | <b>12</b> |
| <b>Warranty</b> .....                           | <b>13</b> |

### Introduction

Thank you for purchasing the LX-1 multicolor sonar unit. The LX-1 incorporates the latest in sonar technology, featuring 1500 watts of peak-to-peak power, signal interference rejection, and target separation down to 2.15 inches. Our goal at MarCum Technologies is to set the industry standard for performance while maintaining the highest level of reliability. Please read this operation manual carefully before using your unit. Only by reading this manual can you realize the maximum benefit from your purchase. Enjoy your new LX-1.

### General Description

The LX-1 multicolor sonar unit utilizes three different colors within its display to differentiate between densities of objects. The Red light displays the strongest of return signals, often signifying a hard bottom or a larger fish that is often in the center of the transmit signal (cone). The Orange light displays the next in the line of weaker-signal returns, often signifying a softer bottom or smaller fish in the middle of the transmit signal or a larger fish on the outside of the transmit signal. The weakest return is displayed by a Yellow light and often signifies weeds, small bait-fish, medium-sized fish on the outside of the transmit signal, or a very soft bottom. 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 LX-1 offers six levels of signal Interference Rejection (IR) that knock out signals from nearby competing units. This is most prevalent in ice-fishing applications where anglers utilizing sonar are often grouped together within small areas.

The LX-1 is offered with any one of three different twenty-degree (cone angle) transducers. The puck-style transducer is often used for mounting on the bottom of trolling motors or for in-hull applications. The high-speed transducer is intended for outside the hull mounting on the transom of a boat and is designed for picking up depth or return signals at higher speeds.

The ice transducer is a weighted, self-aligning transducer used for ice-fishing applications. The LX-1 runs off of any 12-volt power source and includes a power cord for wiring directly to the battery or into an electrical panel. The unit is mounted onto a factory-supplied gimbal bracket that can be in turn attached to a rotating swivel base (not supplied) or mounted directly to a boat deck, drivers console, portable electronics shuttle, or located in an electronics locker. The LX-1 is designed to withstand moisture from rain, sleet or snow. This unit was tested under the harshest of conditions to ensure that you will receive the kind of dependability that you deserve.

### Ice System Set-Up

Your LX-1 comes virtually ready to fish. All you need to do is hook up the positive lead from the LX-1 power cord to the positive terminal of the battery. The LX-1 is mounted to an electronics shuttle that has recessed compartments for the battery and transducer. Take the transducer out of the recessed holder and rotate the adjustable ice arm out from inside the shuttle. The adjustable ice arm allows for maximum flexibility in positioning the LX-1 around the ice hole. The transducer is weighted and self-aligns no matter how uneven the ice. The amount of cable hanging below the ice arm should allow for the transducer to be completely submersed.

### Open-Water Set-Up

The LX-1 is an excellent sonar unit for open-water use. To convert the LX-1 from an ice system to open water, remove the LX-1 powerhead, gimbal bracket, and powercord from the electronics shuttle. The gimbal bracket can be mounted on any flat surface. The unit should be mounted in a location that is free from other electrical apparatus to eliminate interference. If interference is observed, reposition the unit until optimum performance is obtained. Your boat's 12-volt DC electrical system can be used to power the unit. A power buss can be used, but interference may result. Interference is recognized as random flashes around the dial. Lowest noise will be obtained by direct connection to the battery.

The LX-1 is protected from accidental polarity reversals. No damage will result from an incorrect battery hook-up. The ice-fishing transducer supplied with the Ice System is not designed for open-water use. There are two transducer choices for use in open water. The high-speed transducer is designed for transom mounting (outside the hull) and reads depth while the boat is on plane. The puck-style transducer is most often mounted on the bottom of a trolling motor or epoxied into the hull of a fiberglass boat.

### High-Speed Transducer Installation

High-Speed transducers are designed to be mounted on the transom of a boat. If properly installed, you will be able to read depth, weeds, and fish while the boat is on plane. Transducer mounting location is critical for optimum performance of the LX-1 sonar unit. The mounting location should be free of any white water or turbulence resulting from rivets, ribs or hull strakes. It is preferable to mount the transducer at least 18 inches from the centerline of the boat to avoid turbulent water resulting from the outboard motor. The transducer is wedge-shaped and should be mounted with the leading edge mounted against the transom. The leading edge of the transducer should be mounted flush with bottom of the boat. This can be best achieved by using a flat object like a ruler and holding it flat along the bottom of the boat and matching the bottom of the transducer to the bottom of the boat. Attach the mounting hardware to the high-speed transducer as shown in the instructions included with the transducer. Hold the transducer with attached mounting hardware to the transom of the boat (flush to the bottom) and mark the center of the holes on the transom. Drill the appropriate-size holes and attach the transducer to the transom. Tilt the rear of the transducer between 2 to 5 degrees below the transom to ensure solid contact with the water when the boat is on plane. It may be helpful to use a small amount of marine silicone along the leading edge of the transducer filling in any gap between the transducer and hull. This will help eliminate any white water or air bubbles, which can cause random interference on the sonar display.

Use caution in applying silicone to ensure that it only comes in contact with the leading edge of transducer, and does not smear across the face of transducer resulting in reduced sensitivity. More-detailed installation instructions are included with the high-speed transducer and mounting hardware.

### Puck Transducer

Puck-style transducers can be mounted on the bottom of a trolling motor, epoxied in the hull of a fiberglass boat, or mounted to a suction cup for portable use. Mounting to a trolling motor is achieved with the use of a large, adjustable stainless steel hose clamp available at most hardware or automotive stores. Slots are included in the puck transducer for passing the clamp through and then around the motor. Align the transducer so that it is perfectly centered from right to left on the bottom of the motor. If the transducer is tilted or angled, you won't receive a signal on your sonar display. Do not mount the transducer next to the propeller. Turbulence from the propeller may cause disruption in the sonar display. In-hull mounting is designed for achieving high-speed sonar readings in fiberglass boats. For the best readings, the transducer must be mounted in the layer of fiberglass that is in direct contact with the water. This is best achieved by mounting the transducer in the area surrounding the bilge pump in the transom area of the boat. Some boats have false bottoms or floors. Mounting the transducer in a location not in direct contact with the water will result in dead air space and no sonar reading. Once the correct area is located, the transducer is installed using a good grade of marine epoxy. For more-detailed installation information, refer to the directions included with the puck transducer.

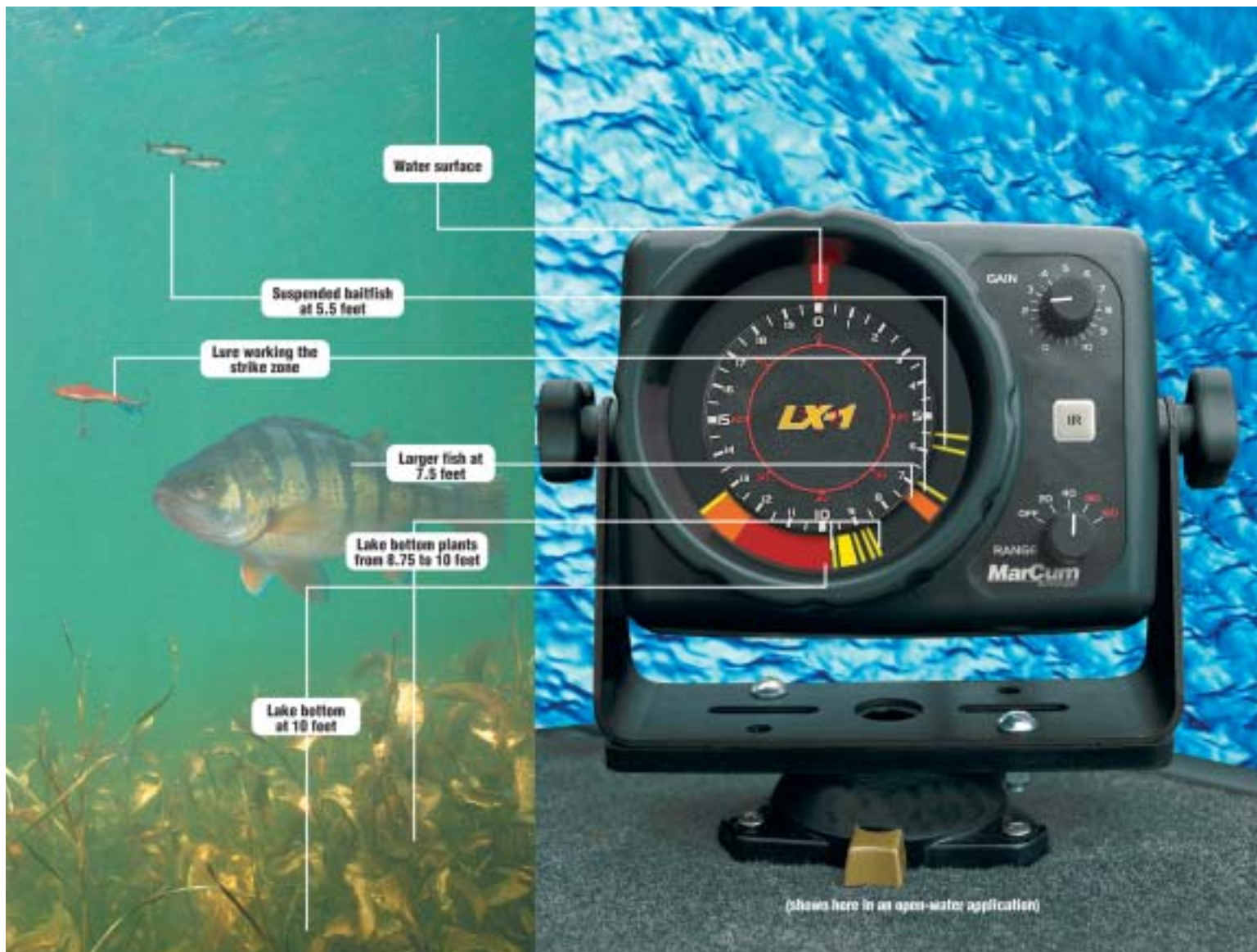
### Operation

The LX-1 utilizes a combination of control knobs (Gain & Range) and keypad (IR) to change or activate various system functions. The keypad has an audible beep when the key is depressed to indicate that a system function has been activated. The following is an explanation of the various system functions.

**Range Select** - The Range select knob is used for turning the LX-1 on or off, as well as choosing the correct depth range. The LX-1 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.

**Gain Knob** - The Gain knob controls the amount of sensitivity required by the unit to pick up objects like bottom, weeds, fish, smaller bait-fish, or small lures and jigs. The lower the number, the less sensitivity. Conversely, the higher the number, the 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 actually provide you with the most accurate and precise information.

**Interference Rejection** - The Signal Interference Rejection system is designed to knock out competing return signals from other sonar units being used within close proximity. When other sonar units are causing interference to the display of the LX-1, activate the IR feature by depressing the IR key located on the face of the LX-1.



There are six levels of interference rejection that can be used to knock out competing signals. Press the key to activate, each consecutive actuation (depressing the key) will change the level of signal rejection. Each actuation will result in an audible beep informing you that a system command has been recognized. 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 totally eliminated.

### Ice System Only

The "Ice System" comes with some additional features that require further explanation. Included in this system is a ABS electronics shuttle with recessed trays for transducer and battery, 12-volt / 7-amp sealed lead acid battery, wall charger with alligator clips, power cord, LX-1 sonar unit, self-aligning transducer, and gimbal bracket with mounting knobs.

### Product Performance Specifications

- Output Power** . . . . . 1500 watts peak to peak
- Depth Ranges** . . . . . 20, 40, 80, & 160 feet
- Transmit Frequency** . . . . . 200 Khz
- Current Draw** . . . . . 300 mA
- Operating Voltage** . . . . . 10.5 to 15 volts (12-volt DC)
- Display Colors** . . . . . Red, Orange, Yellow
- Transducer Cone Angle** . . . 20 degrees (all transducers)
- Target Separation** . . . . . 2.15 inches (20-foot depth scale)

### 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 ORANGE band. A soft bottom with weed growth will often appear as a narrow RED or ORANGE band combined with both solid and broken YELLOW segments indicating weeds. Any fish in the weeds may show as RED or ORANGE depending on fish size and relationship within the transmit beam (in the middle or on the outside of the transmit signal).

**Reading Bottom** - In interpreting depth, always read the leading edge (shallowest side) of the signal return. If you have a strong signal return (wide band of RED light) and it starts at 13 feet and ends at 16 feet, the correct depth is 13 feet or the shallowest leading edge of the return signal. Anything beyond the shallowest leading edge indicates the strength of the return signal.

**Reading Fish** - Fish will generally appear as separate targets from the bottom. A fish target can be displayed as either RED, ORANGE or YELLOW, 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 YELLOW. 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.

**Reading Lures or Bait** - The LX-1 will pick up and display small objects like lures or bait. 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 lure or bait on the display. It is important that the GAIN be set so it displays the lure or bait as you raise or lower it. **CAUTION:** 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 area undisplayed between the shallower and deeper water within the transmit beam.

### User Tips

**Reading Through Ice** - The LX-1 will provide accurate information reading through ice providing the ice is reasonably clear. Ice that appears milky or full of air bubbles will make it difficult or impossible to get an accurate reading. To send and receive the best signal, wet the ice with water to improve the coupling of the transducer to the ice. Please do not use anti-freeze or windshield washer fluid, because it pollutes the environment. Bottom can easily be determined without drilling holes, therefore greatly reducing time and energy in locating your fishing spot.

**Fine Tuning Gain Control** - To adjust gain properly, lower your lure or bait to within a foot of the bottom. Turn the gain up or down until the lure or bait shows as a steady yellow light. You should be able to raise or lower the lure in a jigging fashion without losing the signal. If the gain (or sensitivity) is kept to a minimum, you should be able to separate targets down to

10

2.15 inches on the 20-foot scale. You may need to fine tune the gain each time you move locations, depending on the depth and bottom composition.

**Signal Interpretation** - Sound waves emitted by the LX-1 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 ORANGE. The least dense objects (weeds, bait-fish, lure) return a weak signal, displayed as YELLOW. Objects on the edge of the sound cone may appear as yellow. A fish moving through the cone may appear first as yellow, then orange, then red, depending on its size and how close to the center of the cone it moves.

**Using the Ice Transducer** - The weighted transducer suspends in the ice hole from the adjustable ice arm. The shuttle system does not have to be on a flat surface for the transducer to hang straight. The self-aligning transducer hangs like a plumb bob and always transmits and receives a direct signal. The transducer should be positioned just below the water line, except when the ice begins to get thick (more than 24 inches). Once the ice gets thicker than 24 inches, ringing off the side of the ice hole can occur. This is usually displayed as a solid band of light between 2 and 3 feet on the display dial. If this occurs, lower the transducer to the bottom of the ice hole. This should eliminate most display clutter.

**Battery Draw** - The LX-1 has a current draw between 300 and 350mA per hour. With a standard 7-amp hour battery, the LX-1 should last between 18 and 22 hours if fully charged. To extend the battery life, it is preferable to recharge the battery after every use.

**Cone Angle Coverage** - The cone angle of all LX-1 transducers is 20 degrees. A general rule of thumb is that the coverage (distance across the signal beam) is 3.5 feet per 10 foot of depth. In 10 feet of water, the coverage is 3.5 feet; at a 20-foot depth, the signal beam is 7.0 feet across; and in 30 feet its 10.5 feet of coverage.

11

## Service Information

MarCum Technologies is dedicated to providing you with the best customer service possible. We have designed a web site dedicated to providing you, our customer, with answers to your questions, access to product accessories, repair information, on line owners manuals, etc... These services can be obtained by going on line at **www.marcumcustomerservice.com**. We highly recommend that you take advantage of this service and utilize it as your first line of contact. For those of you that don't have access to a computer, you can call our customer service department at 763-493-3748. The phone lines will be manned from 9:00 am to 5:00 pm CST Monday through Friday.

When returning product for repair, please obtain a return authorization number by going on-line at

**www.marcumcustomerservice.com** or calling 763-493-3748.

This number must be displayed on the outside of the box and will be used as a reference number when checking on the repair status. Always include a note with your return stating the problem, RA # and return shipping address (No P.O. boxes, must be UPS shippable address). Please ship in original factory carton, please carefully package adding adequate internal protection as required. We make every attempt to complete our repairs within 48 hours of receipt. It is our goal to have you back on the water fishing as quickly as possible. Thank you in advance for your patience.

**Returns ship to:  
MarCum Technologies Service Center  
6713 Thesing Rd  
Brainerd, MN 56401**

## Two-Year Warranty

For two years from original date of purchase, all required repairs resulting from manufacturing defects on your MarCum LX-1 will be free of charge. This does not apply to physical damage resulting from accident or misuse. Any modification or attempt to repair the original equipment or accessories by unauthorized personnel will void the warranty. During the two-year warranty period, MarCum will repair or replace the unit at no cost to you, covering all labor, materials, and return transportation (standard ground charges only). It is the responsibility of the owner to cover the cost of shipping the unit to our authorized repair center. This warranty is non-transferable and applies to the original purchaser only. MarCum does not extend or offer any warranty on accessories included in this product that are not manufactured by MarCum (e.g. batteries).

MarCum reserves the right to make modifications on its products without assuming the obligation to install the changes on previously manufactured units. MarCum will not assume liability for any personal injury or property damage resulting from the use of this product.

To activate this warranty, send in the enclosed warranty card with proof of purchase. A copy of the receipt verifying purchase date must accompany warranty card within ten business days to activate warranty.



**MarCum**  
*Technologies*