



**3-COLOR
SONAR ICE
SYSTEM**

USER MANUAL

LX-3



**3-COLOR
SONAR
SYSTEM**

MarCum
Technologies

TABLE OF CONTENTS

Introduction	1
General Description	1
Ice System Set-Up	2
Open Water Set-Up	3
Operation	5
Display Diagram	8
Deluxe Ice System Only	10
Product Performance Specifications . . .	11
Signal Interpretation	12
User Tips	13
Service	15
Warranty	16

Introduction

Thank you for purchasing the LX-3 multicolor sonar unit. The LX-3 incorporates the latest in sonar technology, featuring a flexible zoom that can be set anywhere between surface and bottom, 1500 watts of peak-to-peak power, signal interference rejection, and target separation down to 1 inch. 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-3!

General Description

The LX-3 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-3 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-3 offers a Zoom feature that allows the user to hone in on a specific section of water within the water column and, conversely, improve the ability to separate targets from 2.15 inches down to 1 inch. The Zoom window (area of water being selected) can be set at either 5 or 10 feet on the 20- and 40-foot depth range, 10 or 20 feet on the 80-foot depth range, or 20- or 40-feet on the 160-foot depth range.

This allows for a larger Zoom window to be viewed on the deeper range settings. The Zoom window can be moved anywhere between the surface and the bottom by use of the UP / DN arrow keys located on the keypad.

The LX-3 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-3 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-3 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-3 comes virtually ready to fish. All you need to do is hook up the positive lead from the LX-3 power cord and DCS to the positive terminal of the battery. If the LCD display indicates less than 70 percent of battery charge remaining, it's recommended that you plug in the power supply as described under Digital Charging System (*see section Deluxe Ice System Only*). Inside the LX-3 deluxe soft pack is 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-3 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-3 is an excellent sonar unit for open-water use. To convert the LX-3 from an ice system to open water, remove the LX-3 powerhead, gimbal bracket, and powercord from the soft pack. 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 bus 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-3 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-3 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-3 utilizes a combination of control knobs (Gain & Range) and keypad (IR, ZM, UP & DN) 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 explanation of the various system functions.

Range Select - The Range select knob is used for turning the LX-3 on or off, as well as choosing the correct depth range. The LX-3 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.

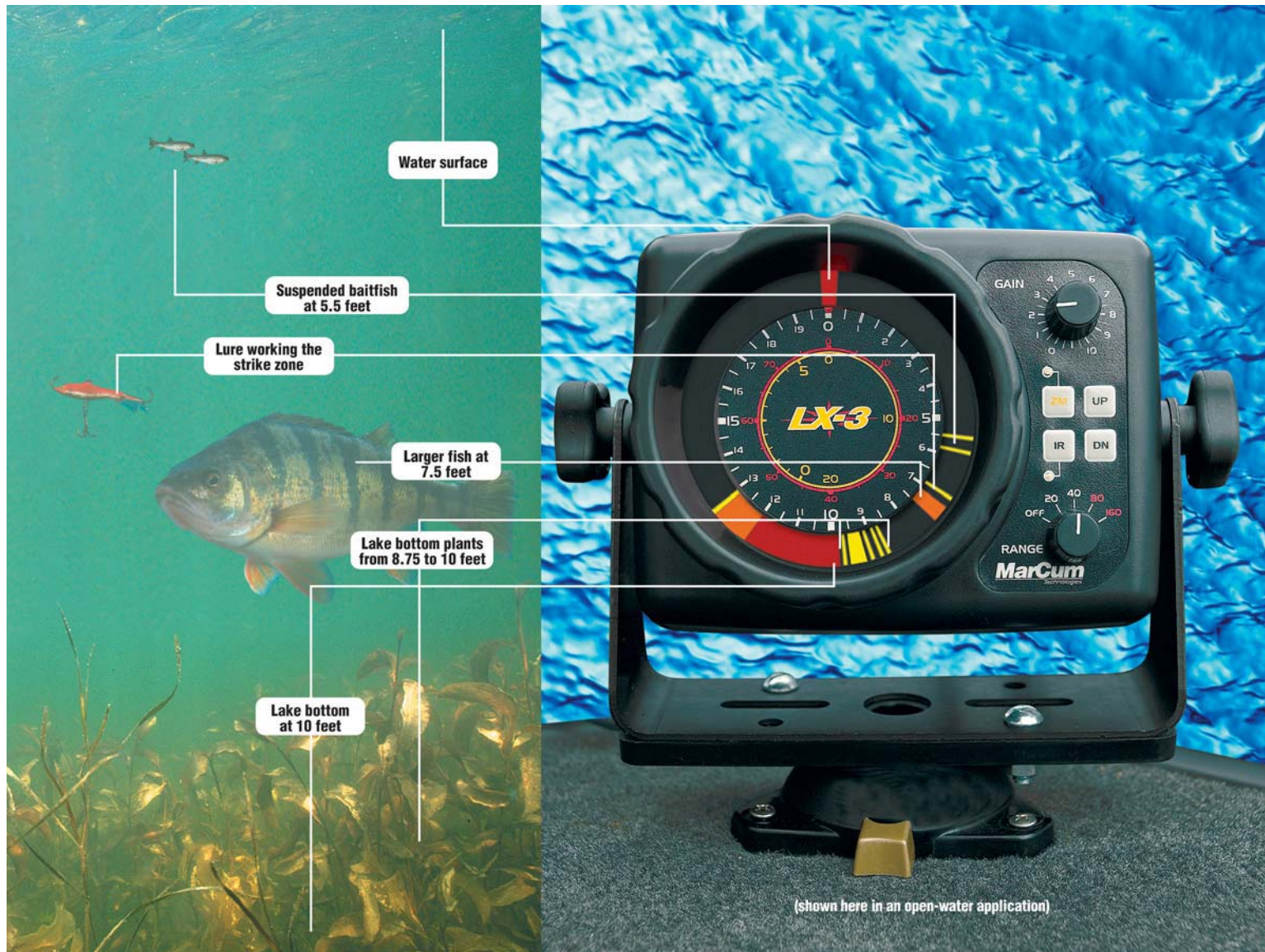
Interference Rejection - The Signal Interference Rejection system is designed to knock out competing return signals from other sonar units being used within close proximity. When other sonar units are causing interference to the display of the LX-3, activate the SIR feature by depressing the IR key located on the face of the LX-3. A red LED light located next to the IR key will come on when the SIR has been activated.

There are six levels of interference rejection that can be used to knock out competing signals. Press the key to activate (red LED is on) and 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 SIR will be achieved when the display is clear of display clutter. In some extreme cases, clutter will be greatly reduced but not totally eliminated.

Zoom - The Zoom function can be activated by depressing the ZM key. An audible beep as well as a red LED will be lit indicating that the Zoom function has been activated. The Zoom function divides the circular display screen in half. The right half of the display, (12 to 6 o'clock on the dial) will become your entire surface-to-bottom display. This will be indicated by a red band of light at the top (zero) and a red band of light at the bottom (or 6 o'clock). If you are on the 20-foot depth Range, the 12 o'clock position will be the surface of the water and 6 o'clock will be the bottom of your chosen Range (20 feet on the 20-foot scale). When utilizing the Zoom function, you will be reading your depth markings by viewing the inner circle (yellow numeric) located in the center of the LX-3 display dial. If you select the 40-foot scale, the same applies, except you multiply the yellow numeric markings by 2. The 80-foot Range setting is a multiple of 4, and the 160-foot Range setting is a multiple of 8.

Once you use the LX-3 a few times, your brain will automatically make the adjustment without any noticeable thought process. The backside of the display (6 o'clock moving clockwise to 12 o'clock) is the other half of your split-screen display. This half reads what you see on the right half, but in a magnified version. The normal view (right half) will show targets that are 2.15 inches apart (on the 20-foot depth Range) but the Zoom view (left half) will show targets 1 inch apart. This will greatly enhance the precision of your presentation and show that multiple smaller targets might exist on the left half (Zoom) where it appears that one larger target is showing on the right (normal display). You can determine the size of your Zoom window (the width or amount of water viewed within the water column) by depressing the ZM key. If you depress the key once (turning Zoom ON), the window is 5 feet on the 20- or 40-foot Range setting, if you press the ZM key again the Zoom window is expanded to 10 feet. Depress the Zoom key again and the Zoom feature is turned OFF. The 80-foot range allows you a 10-foot viewing window, or depress Zoom again and it will become a 20-foot Zoom window. The 160-foot range has a 20-foot window, or it becomes 40-foot when ZM is depressed again.

Up & Down Keys - The UP / DN keys are used to move your Zoom window up or down in the water column. When you first depress the DN key, two yellow blinking lights will appear on the LX-3 display. The yellow blinking LEDs will be 5 feet apart between the 1-foot and 6-foot markings on the yellow scale located on the inner circle of the display dial. If you remove your finger from the keypad, the blinking yellow indicator lights will disappear after 2 seconds. If you hold the DN key, the two blinking lights will remain on and move down the display (with audible beeping) until you locate them in the area that you desire. To increase the Zoom window to 10 feet, depress the ZM key (audible beep) and then depress the DN key, then the blinking yellow lights will appear 10 feet apart on the inner yellow numeric scale in the center of the LX-3 display decal. You can then locate the Zoom window at the desired viewing depth. Even though your yellow indicator lights are no longer blinking, your Zoom window is still set and in position.



To check the location, press either the UP key or the DN key to activate the visual blinking lights to reacquaint yourself with the location. The blinking yellow lights only assist you in setting the location and act as a visual reference.

The benefit to the MarCum design is that it allows you to move your Zoom window between surface and bottom, and in turn Zoom in on any 5- or 10-foot section of water (on the 20-foot depth Range). There are many species of fish that are not bottom huggers that we all enjoy pursuing. Crappies, sunfish, perch, tullibies, whitefish, trout (rainbow, brook, brown, etc.) as well as lake trout are not bottom huggers and often suspend anywhere within the water column. The MarCum design allows you to have two sizes of Zoom window per depth Range and position the Zoom where you need it for the fish that you enjoy pursuing.

Deluxe Ice System Only

The "Deluxe Ice System" comes with some additional features that require further explanation. Included in this system are a high-quality 600 x 600 PVC-backed denier soft-pack carrying case, ABS electronics shuttle with recessed trays for transducer and battery, 12-volt/7-amp sealed lead acid battery, Digital Charging System (DCS), power cord, LX-3 sonar unit, self-aligning transducer, and gimbal bracket with mounting knobs.

Digital Charging System - The "Digital Charging System" (DCS) is another MarCum Technologies proprietary design. This product was designed to address the need to both accurately monitor batteries while in the field as well as provide a battery-friendly charging and maintenance system. The DCS utilizes a small LCD panel to display battery charge remaining in increments of 10 percent. To utilize the charging and maintenance function of the DCS, plug the male DC jack from the 1-amp wall transformer into the female DC receptacle. Then plug the wall transformer into an AC outlet. The LCD panel should display a flashing percentage and the letters "CHRG" should appear, indicating the system is in the charging mode.

The DCS is a three-stage charger providing an initial bulk rate charge, slowing to an absorption charge, and finishing and maintaining with a trickle charge. This sophisticated charging and maintenance system allows you to leave the battery unattended without concern over damaging effects from overcharging.

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) 1.0 inch in Zoom mode (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-3 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-3 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 be 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 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-3 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-3 has a current draw between 300 and 350mA per hour. With a standard 7-amp hour battery, the LX-3 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-3 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.

Service Information

If possible, please ship product in original packaging. If unable to ship in original carton, please carefully package adding adequate internal protection as required. Please ship UPS, FedEx, or postal service, when available. 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.

**For warranty repair and/or service,
call (763) 271-1988.**

**Ship to:
MarCum Technologies, Inc.
6919 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-3 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.

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