# ML-420 VLF/LF Marine Active Antenna



# **Product Warranty**

LF Engineering Co. warrants that, at the time of shipment the products manufactured by LF Engineering Co. are free from defects in material and workmanship. LF Engineering Co. obligation under this warranty is limited to replacement or repair of such products within 1 year from the date of shipment.

For sales or return authorization, contact LF Engineering Co. at (860) 526-4759. LF Engineering E-mail address: sales@lfengineering.com

Copyright LF Engineering Co., Inc. All rights reserved.

LF Engineering Co. 17 Jeffery Road East Haven, CT 06513 **ML-420 VLF/LF Marine Active Antenna** 

The ML-420 is a compact low frequency active antenna that is designed to cover the longwave band (10 kHz - 550 kHz).

The active E-probe antenna consists of impedance matching electronics and amplifier, with a maximum linear output of 15 dBm. The ML-420 has high E field sensitivity for its compact size with the advantage of good BC and spurious intermodulation rejection. The antenna is compact, totally sealed and ESD suppression treated.

The compact antenna is omni directional allowing for various angled installation configurations The antenna probe is waterproof and UV resistant.



# Features

- Broad-band coverage from 10 kHz to 550 kHz
- High desense immunity from signal overload.
- Fully sealed weatherproofed construction.
- Extended ESD and RF protection.
- Adjustable 1"-14 threaded marine mount included.
- Multiple services: NAVTEX, DGPS, NDB, LORAN
- Power Options: 120 VAC 12 VDC

# **ML-420 Specifications**

Antenna Probe Size	27 inches long, 1 inch dia. white PVC, 1"-14 threaded
Coupler/Signal Amp. Size	4.4"L x 2.3" W x 1.3" H, Aluminum die-cast housing
Operating Frequency	10 kHz to 550 kHz
E Field Sensitivity	-6 dB
Max. Linear Power Outout	15 dBm (E-probe)
IP3	35 dBm
Input/Output Jacks	BNC
Output Impedance	50 - 75 ohms
Operating Temperature	-25°F to +120°F
Weatherproofing	Antenna probe tested to 2 atmospheres (-66 ft)
DC Power (ML-420DC)	12 Volts, 30 to 40 ma, fused
AC Power (ML-420AC)	120 vac / 12 vdc power pack

Printed in U.S.A.

#### Introduction:

The ML-420 Active Antenna design is derived from our L-400B low frequency research antenna with the enhancements of improved intermodulation rejection and enhanced weatherproofing and mounting for marine use. The rugged PVC construction is compact and easy to install just about anywhere, and with the use of a signal splitter, the antenna will feed multiple receivers with ample gain.

#### ML-420AC Power Supply:

Directly wired, the 120 vac power supply wall transformer supplies 12 vdc to the coupler/amplifier and antenna.

#### ML-420DC Power Supply:

Open leads with fuse, and polarity protected

POWER LEADS

## Antenna Installation:

- 1. The antenna will operate in any angle, in just about any location, but installing it in a clear area away from shielding metal objects will always improve antenna performance. Experiment with various placements high in signal and low in noise before completing final installation and wiring.
  - a. Use the supplied 1"-14 adjustable deck mount for flat surface attachment, or use optional stainless clamps to attach the antenna to a support pole or mast. See Illustration.
  - b. The antenna should not be mounted directly against any metal object higher than the shroud section. See Illustration.

## Cable Attachment:

- 1. The BNC antenna connector coupling is protected within the shroud housing and must be installed in the following order to prevent twisting the feed cable:
  - a. Pass the feed cable through the shroud section as shown and connect it to the BNCF connector on the antenna probe.
  - b. Cover the BNC connection with the supplied sealant tape, forming a watertight seal around the two piece cable connection.

- c. Hold the shroud section stationary, and thread the antenna probe onto the shroud section, allowing all cabling to freely turn within the shroud and out through the shroud feed hole. See Illustration.
- d. If the adjustable deck mount is to be use, thread it onto the shroud section at this time.
- e. If the antenna is to be pipe mounted, use two stainless steel clamps to secure it to a pole or mast. Only attach clamps to the shroud section, and not to the antenna itself.



f. Route the feed cable to your receiver, using strain relief where necessary and secure all through holes with sealant . Grounding the cable outer shield below the antenna as well as at the receiver end will help to reduce local EMI noise.

# **Receiver Connection:**

2. Connect the coupler output (RCVR) to the antenna input of your low frequency receiver with an input impedance between 50 and 75 ohms. Connect a grounding wire to the ground lug located on the coupler / power supply box.



3. Power up the antenna by connecting the power supply to 120 vac. The coupler LED will light and your system is now ready for use.

## How to Get the Most Out Of Your ML-420 Active Antenna:

- 1. Keep your antenna in the clear, above metal objects, and use a good ground on your receiver, coupler, and antenna.
- 2. Locate the antenna away from transmitting antennas, florescent lighting, light dimmers and other EMI noise generators.
- 3. When mounting onto a metal pole, the mounting area should not exceed the shroud section.



vdc supply panel.