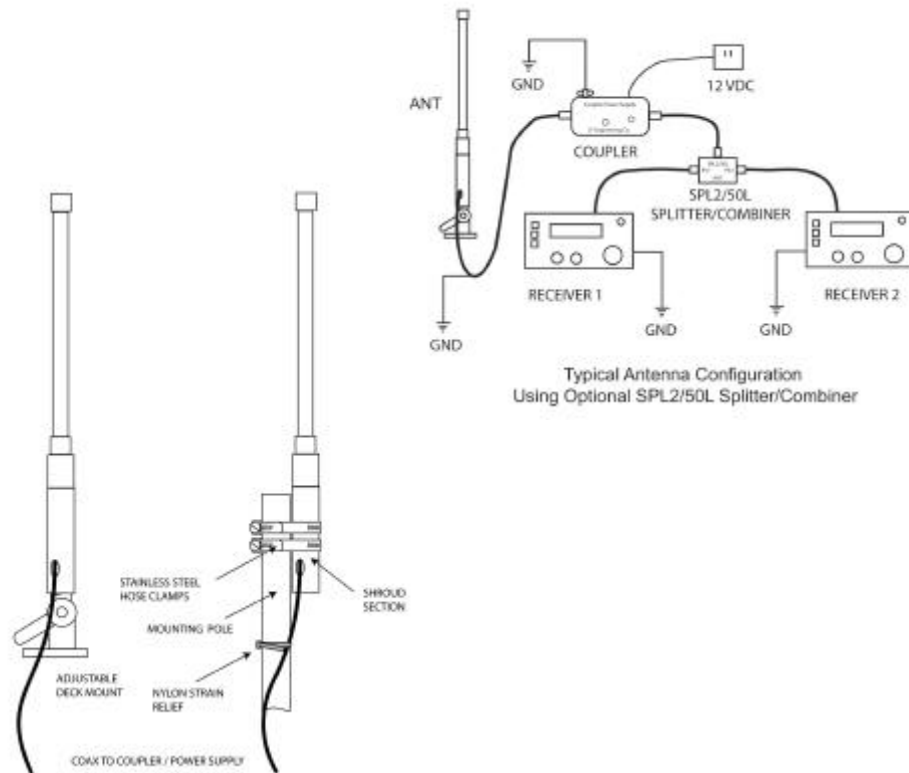


MH-920 LF/MF/HF Marine Active Antenna



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,
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MH-920 LF/MF/HF Marine Active Antenna

The MH-920 is a compact broad-band active antenna that is designed to cover the longwave, mediumwave, and shortwave bands (10 kHz - 60 MHz).

The active E-probe antenna consists of impedance matching electronics and amplifier, with a maximum linear output of 17 dBm. The MH-920 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 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 60 MHz
- High desense immunity from signal overload.
- Fully sealed weatherproofed construction.
- Extended ESD and RF protection.
- Adjustable 1"-14 threaded marine mount included.
- Multiple services: GMDSS, NAVTEX, LORAN, DGPS
- Power Options: 120 VAC, 12 VDC

MH-920 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 60 MHz
E Field Sensitivity	-21 dB (probe)
Signal Amplifier Gain	10 dB
Max. Linear Power Output	17 dBm (E-probe)
Third-Order Intercept	>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-920DC)	12 Volts, 80ma, fused
AC Power (ML-920AC)	120 vac / 12 vdc power pack

Introduction:

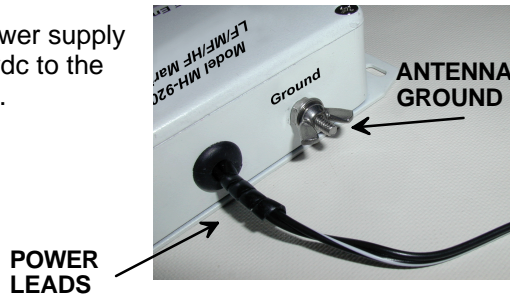
The MH-920 Active Antenna design is derived from the H-900 HF consumer antenna, and our work with SPAWR research projects for the US Navy. The combination of a proprietary low noise amplifier in the E-probe (2 wire feed), and a swithcable broad-band signal amplifier within the coupler provides ample gain throughout the operating spectrum. 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.

MH-920AC Power Supply:

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

MH-920DC Power Supply:

Open leads with fuse, and polarity protected For wiring directly to 12 vdc supply panel.



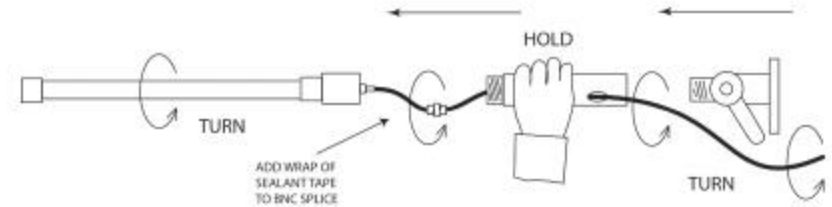
Antenna Installation:

1. The antenna will operate in any angle, in just about any location, but installing it in a clear area 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:

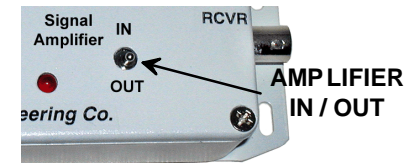
1. The BNC antenna connector coupling is protected within the shroud housing and must be installed in the following order to prevent twisting and stressing the feed cable:
 - a. Pass the feed cable through the shroud section as shown and connect it to the BNCF connector on the antenna probe.
 - b. Cover the BNC connection with the supplied sealant tape, forming a watertight seal around the two piece BNC 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 E-probe 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 just below the antenna as well as grounding it 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 coupler/signal amplifier by connecting the power supply to 120 vac. The coupler LED will light and your system is now ready for use.



Signal Amplifier Operation:

1. The 10 dB signal amplifier an be switched in or out as needed. The output level is fixed and not adjustable. If necessary, attenuators may be used to control the signal level.
2. The normal position of the signal amplifier is "IN" for high sensitivity performance. The amplifier is switched "OUT" if very strong stations are present and receiver overloading occurs.

Note: In the signal amplifier "IN" mode, if oscillation occurs, be sure to check that the output coaxial ground connection is secured.

The E-probe alone without the signal amplifier applied can handle very strong signals without overloading, although the receiver in use may overload and may require signal dampening with attenuators or by use of the receiver's RF gain control.