LF Engineering Co.

WARRANTY

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

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L-101 VLF CONVERTER

by LF Engineering Co.

Unlike the standard 50 ohm input VLF converters, the L-101D uses a higher input impedance matched to an even higher impedance J FET mixer. With the wide dynamic range of the J FET and the high impedance input of the L-101D, much higher gain is achieved over conventional (50 ohm) designs. The new design approach is the result of several years of LF experimentation resulting in documented superior performance over other VLF converters using a long wire antenna.

The use of a 100 foot or longer wire antenna is recommended for best results although an active antenna can be used if desired with an output impedance of 50 to 600 ohms. The L-101D has input protection for moderate atmospheric discharges (short of direct lightning strikes). Power consumption is a negligible 2 ma at 9 volts. The converter will operate with only 50% battery voltage applied. Better than one year of operation can be expected under normal usage.

Use NEDA 1604 or equivalent 9 volt transistor battery. Remove the 4 screws on the top panel to install the battery to the battery clip.
NOTE: The LED may continue to illuminate below the converter's operating voltage.

INSTALLATION

1. Connect the VLF converter I-F output to the receiver's input. On ham transceivers, detune or disconnect the antenna tuner and or antenna from the 80 meter band and connect the converter to the transceivers optional external antenna jack. Never key the transmitter into the converter. Provide a good ground to the receiver.

2. Connect a 50 to 100 foot long wire to the converter ANT input. For best results locate the antenna away from power lines or any area prevalent to man made EMI.

3. Receiving with a communications receiver using VLF converter L-101D/70 (40 meters) tuning is from 4 MHz to 4.5 MHz for reception of 0 - 500 kHz. Example; for receiving 100 kHz, 4.1 MHz is where you tune. For digital readout, actual tuned frequency is the readout minus 4 MHz. Example; 4.2 MHz minus 4 MHz = 200 kHz.

4. Receiving with a ham transceiver using VLF converter L-101D/80 (80 meters) tuning is from 3.5 MHz for reception of 0 - 500 kHz. Example; for receiving 100 kHz, 3.6 MHz is where you tune. Use the upper dial on older transceivers, 0 - 500 kHz, such as the Yaesu FT101, Kenwood TS520, or TR4C. For digital readout, actual tuned frequency is the readout minus 3.5 MHz. Example; 3.7 MHz minus 3.5 MHz = 200 kHz. Peak your transceiver receive control as you tune across the low frequency spectrum.

5. When receiving on the lower portion of the spectrum (2 kHz to 100 kHz) lowering the receiver RF gain will reduce effects from the local oscillator and in some instances give better sensitivity.

6. Use the AM mode of your receiver for best observation of the atmospheric phenomena (2 kHz to 10 kHz). As you approach the local oscillator crystal frequency, 60 Hz power line harmonics can be heard.

How To Get The Most Out Of Your VLF Converter

1. Use a good grade communications receiver or ham transceiver.

2. Use a good ground to your receiver

3. The antenna should be 100 feet or longer in length, mounted in the clear. Connect the wire directly to the antenna input jack.

4. Do not use long lengths of coax cable at the antenna input. Restrict the antenna input cable length to 4 feet or less, excluding that of active antennas.

5. Locate the antenna away from power lines or any area prevalent to man made EMI.

6. If you do not wish the receive antenna to be rerouted to the receiver as with use with ham transceivers, cut the antenna jumper wire located on the inside of the converter panel.

7. In remote cases a very strong LF signal may cause overload with signals appearing in a couple of spots in the spectrum. A trap can be used to eliminate this problem tuned to the very strong signal frequency

Specifications

Tuned I-F Frequency	3.5 - 4 MHz L-101D/80 4 - 4.5 MHz L-101D/70
Voltage Required	9 volt NEDA 1604 or equiv.
Total Current	2 ma @ 9 volts
LF Band Pass Filter	± 4 dB 10 kHz to 470 kHz
Response	− 10 dB @ 500 kHz nominal
Filter Rejection	- 60 dB @ 800 kHz
I-F Rejection	> 80 dB
Oscillator Freq.	3.5 MHz ±.02% L-101D/80 (max) 4.0 MHz ±.02% L-101D/70 (max)