

# FTE Series Multi-Band HF Antenna

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## Forward

Thank you for purchasing a Fourten Engineering HF antenna. The FTE End Fed antennas are multi band and available in 10 - 20, 40 and 80 meter varieties.

Bands Configurations Available:

- FTE-2010 – 20 thru 10 Meter End Fed Multi-Band Antenna
- FTE-4010 – 40 thru 10 Meter End Fed Multi-Band Antenna
- FTE-8010 – 80 thru 10 Meter End Fed Multi-Band Antenna

## Functional Description

The FTE series Zepp antennas are a new take on a traditional design. The Zepp name comes from its first common application; a resonant antenna consisting of a half-wave wire dangling from a Zeppelin blimp.

The magic of the antenna is in the feeder, or matching section that is in the first portion of the antenna. This end-fed Zepp design requires a tuner (either external or internal to your radio) and will tune 1:1.2 or less on all bands.

The Zepp design uses a 1/2 wave radiator and a 1/4 wave long feeder, and this design is an interpretation of that original Zepp design. Depending on the bands covered, this concept generally holds true.

We provide a balanced feed to the open wire line at the rig. At the other end ONE side of the feeder goes to the radiator and the other side is insulated and connected to nothing at all.

The radiator shows high impedance at the end where it is fed, so very little current is drawn from the feeder. It is a classic "voltage" feed with very high r-f voltages at that point. Since the current in the side of the feeder going to the antenna is very low, and the current on the side of the feeder that connects to nothing is also very low. The currents in the feeders will be fairly well balanced, preventing radiation from the feeder. The balanced line feeder (matching section) transforms that very high impedance into a low impedance at the auto-tuner in the shack, which keeps the r-f voltages there low and feed point impedance close to 50 ohms.

## Installation Safety

**WARNING: INSTALLATION OF THIS PRODUCT NEAR POWER LINES IS DANGEROUS! FOR YOUR SAFETY, FOLLOW THE ENCLOSED INSTALLATION DIRECTIONS.**

*THOUGH THIS ANTENNA IS CONSTRUCTED OF INSULATED WIRE, PROPER CARE MUST BE TAKEN DURING INSTALLATION. INSTALLER ASSUMES ALL LIABILITY FOR PROPERTY AND LIFE SAFETY.*

### **YOU, YOUR ANTENNA, AND SAFETY**

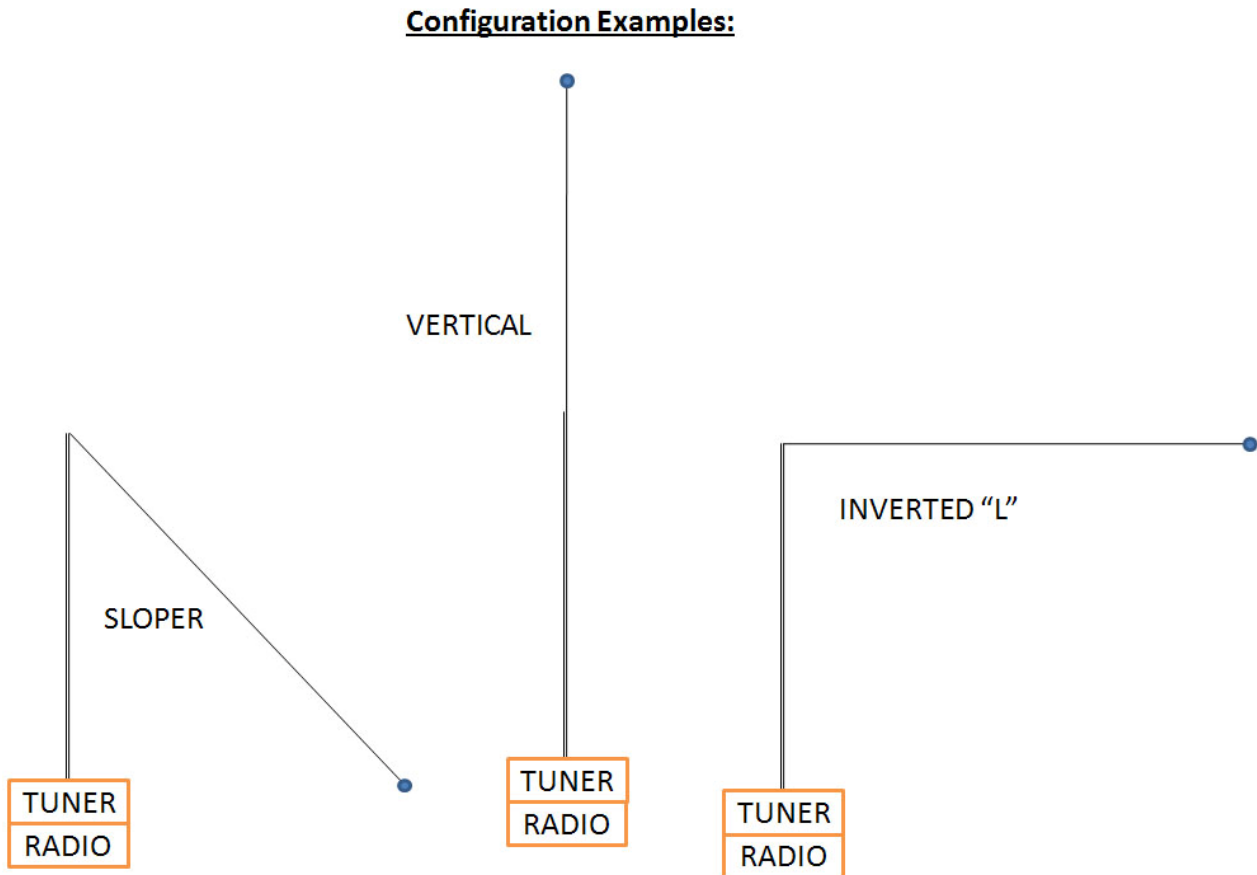
Each year, hundreds of people are killed, mutilated, or receive severe and permanent injuries when attempting to install an antenna. In many of these cases, the victim was aware of the danger of electrocution, but did not take adequate steps to avoid the hazard.

For your safety, and to help you achieve a good installation, please **READ** and **FOLLOW** the safety precautions below. **THEY MAY SAVE YOUR LIFE!**

1. If you are installing an antenna for the first time, please, for your own safety as well as others, seek PROFESSIONAL ASSISTANCE.
2. Select your installation site with safety, as well as performance, in mind. (Detailed information in Site Selection appears in a separate section of this booklet.) **REMEMBER: ELECTRIC POWER LINES AND PHONE LINES LOOK ALIKE. FOR YOUR SAFETY, ASSUME THAT ANY OVERHEAD LINES CAN KILL YOU.**
3. Call your electric power company. Tell them your plans and ask them to come take a look at your proposed installation. This is a small inconvenience, considering **YOUR LIFE IS AT STAKE.**
4. Plan your installation procedure carefully and completely *before* you begin. Successful raising of a mast or tower is largely a matter of coordination. Each person should be assigned a specific task, and should know what to do and when to do it. One person should be designated as the leader/coordinator of the operation to call out instructions and watch for signs of trouble.
5. When installing your antenna, **REMEMBER: DO NOT USE A METAL LADDER. DO NOT WORK ON A WET OR WINDY DAY. DO DRESS PROPERLY:** shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
6. If the assembly starts to drop, get away from it and let it fall. Remember, the antenna, mast, cable and metal guy wires are all excellent conductors of electrical current. Even the slightest touch of any of these parts to a power line completes an electrical path through the antenna and the installer – **THAT'S YOU!**
7. If ANY PART of the antenna system should come in contact with a power line, **DON'T TOUCH IT OR TRY TO REMOVE IT YOURSELF. CALL YOUR LOCAL POWER COMPANY.** They will remove it safely. If an accident should occur with the power lines, call for qualified emergency help **IMMEDIATELY.**

## Antenna Installation

There are several basic methods to installing the antenna. The most common methods are Vertical and Inverted L, where the end point of then antenna are tied to a pole or high object in order to get the radiator as high in the air as possible. The best rule of thumb is to get it as high off the ground as possible for your situation. Other than that, even if you install it in a strange shape to fit your apartment, condo or other installation, the antenna is pretty forgiving.



Since the antenna can be used in either permanent or temporary installations, finding a good place for the antenna is just a matter of examining your location. Try to keep the entire antenna away from metal objects, including metal siding of houses or metal poles, water pipes, rain gutters, etc.

Affix the end point of then antenna to objects like trees, roofs, chimneys or string it up with a non-conductive cable (nylon rope) to get the end point as high off the ground as possible. The antenna will perform best when the end point is higher off the ground.

## Connection to HF Radio

The FTE Zepp antennas are design to directly connect to your tuner or radio's tuner. To connect the antenna to your tuner, simply screw the PL-259 of the FTE antenna to your tuner or radio. This antenna is not designed to be fed with unbalanced feed line, like coax.

If getting the feed point of then antenna is not practical, unbalanced 50 ohm coax can be used, though a 1:1 balun (or choke) must be installed between the feed point of the FTE antenna and the coax. 1:1 baluns are designed to keep RF from the balanced feeder of the FTE antenna from getting on to the shield of the coax. 1:1 choke style baluns are inexpensive and can be an effective way of feeding the balanced line of the antenna with coax.

*Note: For the DIY group of hams out there, making your own 1:1 balun can easily be accomplished. Simply wrapping your coax around a 2-3" hollow PVC pipe approximately 20 times, effectively stops RF from feeding back onto the coax feed line.*

## Troubleshooting

If your antenna isn't tuning up properly, simply try moving it. Chances are, you have it in a position which is causing a odd SWR and the tuner isn't liking it.

If your antenna is giving unwanted TVI or RFI to other equipment in the house, you may also need to reposition the antenna. This is mostly the case for inverted L installations, where the antenna is running parallel to ground. This creates a large reflection to ground, which tends to create interference in the shack and the house.

If you are running an inverted "L" and you aren't getting too much DX, try repositioning to a sloper or vertical (sloped or straight up). The inverted "L" positioning tends to give a NVIS, straight up, directive and you will only tend to get local stations with this positioning.

## Have Other Questions?

If you have questions about your antenna, please feel free to contact us.

Email [support@fourteneng.com](mailto:support@fourteneng.com) for assistance