

1/4 WAVE SLOPERS!

**Wanna Work Some GREAT Low Band DX in Limited Space Area?
Here's How to Do it RIGHT!**

GENERAL PRODUCT USE

Alpha Delta designs and produces a line of high performance 1/4 wave slopers for limited space installations. For extra reliability, these antennas do not use traps of the traditional type with coils and capacitors but ISO-RES inductors that serve a trapping function. There is no separate capacitor therefore to break down under high RF voltages. All models use stainless steel hardware to accommodate extreme weather conditions. When our antennas are properly installed, tuners are usually not required.

APPLICATION: 1/4 WAVE SLOPERS

Alpha Delta slopers are designed for users who desire effective low band DX performance, but who have limited space installation capabilities. These slopers can be easily attached to existing towers and masts without the need for additional supports. However, please note the unique installation requirements explained in the following sections.

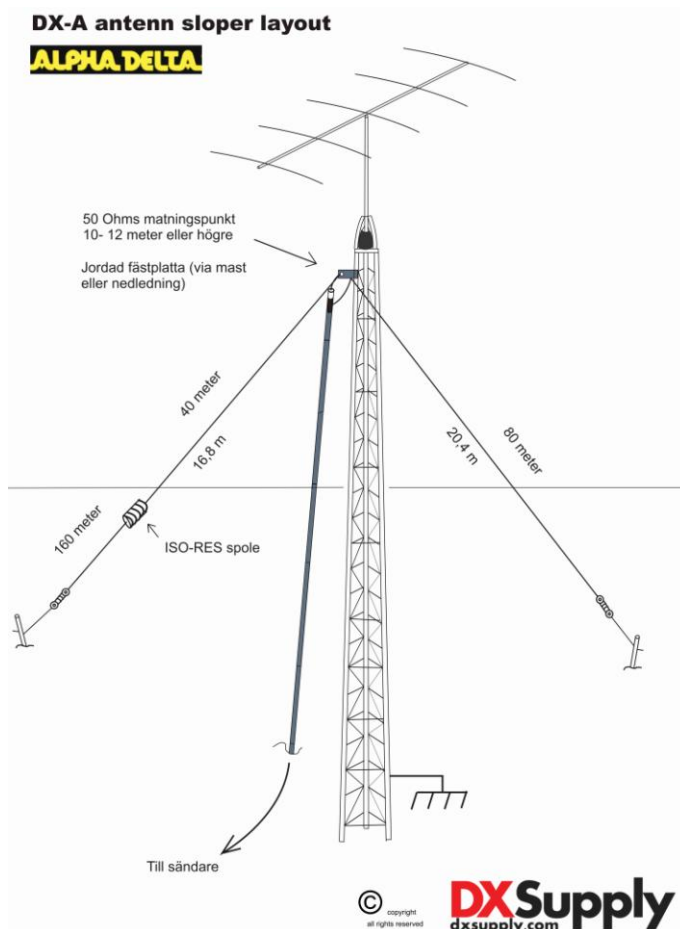
While 1/4 wave slopers are only about half the size of the regular 1/2 wave dipole, their installation requirements are very different than a dipole for proper SWR and operational performance. The 1/2 wave dipole when mounted in the clear, is essentially a self resonant antenna and relatively easy to tune. However, a 1/4 wave sloper relies on three important additional factors for proper "no tuner" operation and lowest SWR.

1 A 1/4 wave sloper is essentially an "up side down" vertical where the traditional radials are up in the air over the high feed point with the radiating element sloping downward. In actual practice these "radials" are actually the elements of a HF beam antenna and this beam is referred to as the "capacity hat" for the sloper. In addition, the sloper feedpoint must be at least 4 to 5 feet below the beam for proper decoupling. The tower or support must be clear of unbroken guy wires, other wire antennas or near by metal objects such as gutters, rooftops, or metal fascia.

If a 1/4 wave sloper is put on a tower without the "capacity hat" on top, tuning will usually be difficult and will exhibit high SWR. In this case a sloper can perform well but a wide range antenna tuner will be required.

2 Since a 1/4 wave sloper is essentially one half the size of a regular 1/2 wave dipole, the "missing part" of the sloper is made up by the ground return path through the tower or metal

mast. If a nonmetallic support or a crank-up tower is used, it will be necessary to provide a "down lead" wire from the sloper bracket to the ground. This "down lead" wire should be 12 gauge or better and attached to a ground rod. Also to decouple RF currents from the coax shield, it is good practice to wind an "RF choke" at the feedpoint of the sloper. This is done by winding six or eight turns of the coax at a diameter of approximately 6 inches. A common practice is to secure these turns with electrical tape. (Schematic : Refer to the graphic drawing below to use as a reference while reading this section.)



3 Sometimes when a sloper is installed in what seems like an ideal situation, the user still finds a relatively high SWR. Our Customers have reported that to correct this situation, it has been necessary to install additional ground rods or radials at the base of the tower due to a poor RF ground condition. After doing this they report normal SWR bandwidth results.

PRODUCT DESCRIPTION: 1/4 WAVE SLOPERS

Alpha Delta provides two 1/4 wave slopers the model DX-A twin sloper and the model DX-B single wire sloper. Both models are designed to meet varying installation space requirements.

Model DX-A Twin Sloper

This model is designed to provide broad band characteristics by having two separate slopers driven from a common feedpoint. One sloper wire is about 67 feet long and resonates on 75/80 meters. The other sloper wire utilizes an ISO-RES inductor and resonates on both 40 and 160 meters. The 40/160 wire has an overall length of about 55 feet. The two wires should have an included angle of 90 degrees or more. When installed, this configuration looks like an inverted "V" dipole but must meet the installation requirements noted in previous sections. Broad-banded characteristics are accomplished by dividing the ham bands across two separate sloper wires. This model can be used at installation heights of 35 feet to 40 feet or more.

Model DX-B Single Wire Sloper

When dimensional and space limitations do not permit the use of the model DX-A twin sloper the model DX-B provides a space saving option. The antenna is a single wire utilizing two ISO-RES inductors and an under slung parallel wire with stand offs for operation on 160, 80, 40 and 30 meters. The overall length of the model DX-B is about 60 feet. Since the ham bands are divided by ISO-RES inductors instead of separate sloper wires, the antenna is more narrow band than the model DX-A and should be used with a tuner. Our customers report excellent DX performance with this antenna at heights of 35 feet to 40 feet or more above the ground. This model must also conform to the installation requirements outlined in previous sections.

FEATURES AND BENEFITS: 1/4 WAVE SLOPERS

When installed properly, a 1/4 wave sloper provides a significant antenna solution for those desiring excellent DX performance on the low bands where space does not allow full size 50 OHM antennas. Sloper lengths are typically 60 ft to 67 feet long for bands covering 160, 80, and 40 meters. You will recall that a full size 160 meter dipole is 260 feet long, an 80 meter dipole is 130 feet long and a 40 meter dipole is 66 feet long. These MODEL DX-A compact small size slopers perform with an excellent DX punch across all these bands. The primary reasons for excellent sloper performance are:

- 1.** The current lobe, which defines the radiation efficiency is up high at the feedpoint and away from surrounding objects such as trees, bushes and buildings which could attenuate the signal. Comparatively, vertical antennas have a feedpoint at ground level and the current lobe therefore can be attenuated by surrounding objects.

2. The angle of the sloper wire provides a favorable angle of radiation for DX signals. It is generally thought that a dipole would have to be up in the air much higher than a Slopers to provide the same level of DX performance.
3. The effect of the "capacity hat" above the sloper provides an efficient loading and SWR characteristic for a small physical size.

Thousands of Alpha Delta Slopers are in use world wide providing outstanding DX contacts.