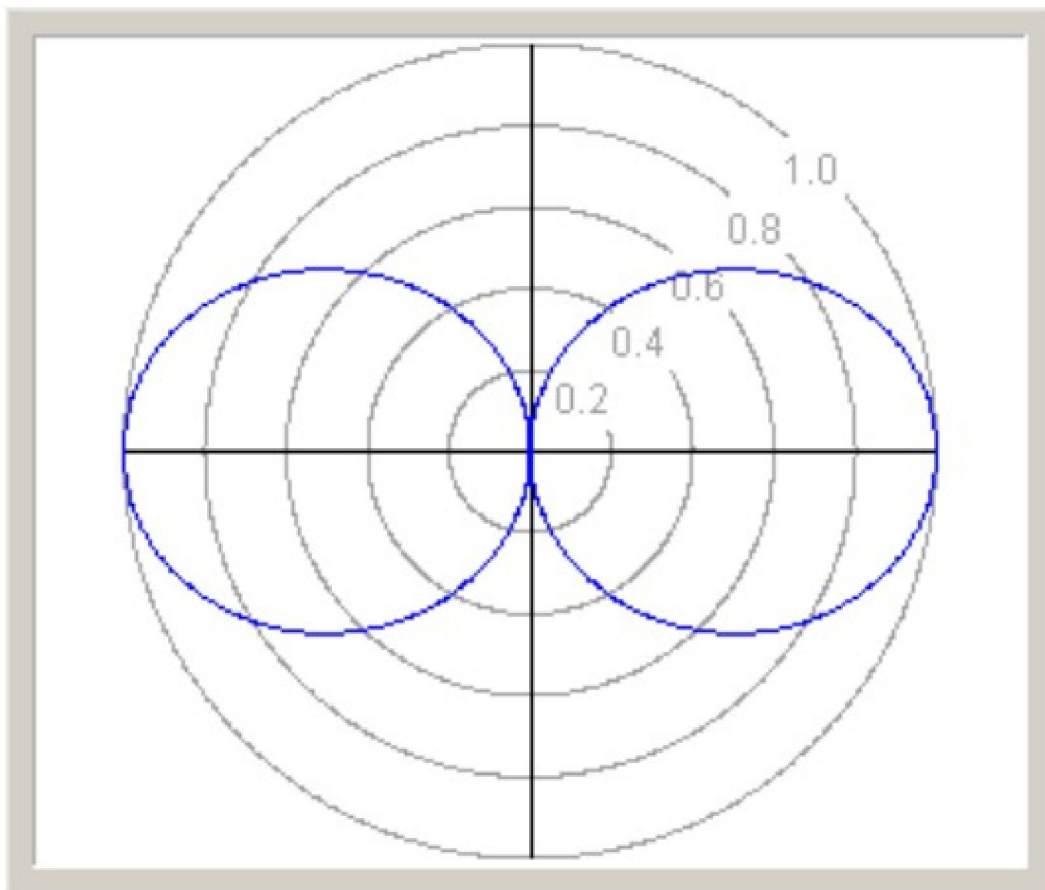


# DP-100 half wave Dipole Antenna Manual

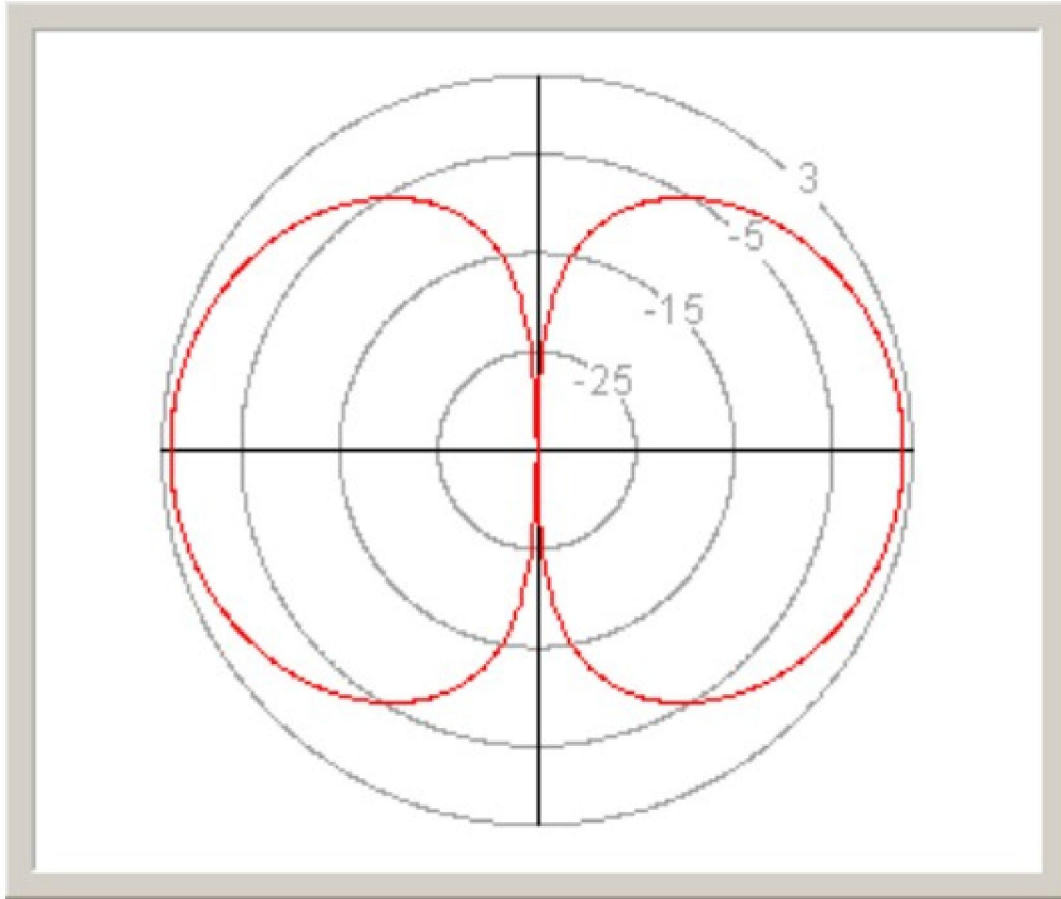


## 1. Introduction:

A dipole antenna is a radio antenna that can be made of aluminum, copper, and bronze tube with a center-fed driven element. It consists of two metal conductors of rod, oriented parallel and collinear with each other (in line with each other), with a small space between them. The radio frequency voltage is applied to the antenna at the center, between the two conductors. These antennas are the simplest practical antennas from a theoretical point of view. They are used alone as antennas, notably in traditional "rabbit ears" television antennas, and as the driven element in many other types of antennas, such as the Yagi. Dipole antennas were invented by German physicist Heinrich Hertz around 1886 in his pioneering experiments with radio waves.



Radiation pattern of a half-wave dipole antenna, scale is linear



The Gain of a half-wave dipole (same as above).  
The scale is in dBi (decibels over isotropic).

Many people have had success in feeding a dipole directly with a coaxial cable feed rather than a ladder-line. However, coax is not symmetrical and thus not a balanced feeder. It is unbalanced, because the outer shield is connected to earth potential at the other end. When a balanced antenna such as a dipole is fed with an unbalanced feeder, common mode currents can cause the coax line to radiate in addition to the antenna itself, and the radiation pattern may be asymmetrically distorted. This can be remedied with the use of a balun.

## 2. Antenna Gain Information:

This antenna gain chart shows the maximum theoretical (minus a small allowance for system losses) gain achievable from arrays of closely spaced co-linear dipole elements. Dimensions shown are for elements almost touching; the actual heights may be slightly more due to phasing networks used between the dipole elements.

Number of Co-Linear Elements	Gain dBd	Gain dBi	Overall Height			
			2 Meters Meters	2 Meters Feet	70 Centimeters Meters	70 Centimeters Feet
1	0.00	2.15	0.98	3.2	0.32	1.0
2	2.15	4.25	1.95	6.4	0.64	2.1
4	4.25	6.35	3.90	12.8	1.28	4.2
8	6.35	8.45	7.81	25.6	2.56	8.4
16	8.45	10.55	15.62	51.2	5.11	16.8
32	10.55	12.65	31.23	102.5	10.22	33.5
64	12.65	14.75	62.47	204.9	20.45	67.1
128	14.75	16.85	124.93	409.9	40.90	134.2
256	16.85	18.95	249.86	819.8	81.79	268.4
512	18.95	21.05	499.73	1639.5	163.59	536.7
1024	21.05	23.15	999.45	3279.0	327.17	1073.4

Table 1.1

### 3. Assemble & Install

#### 1).How to assemble the antenna elements:

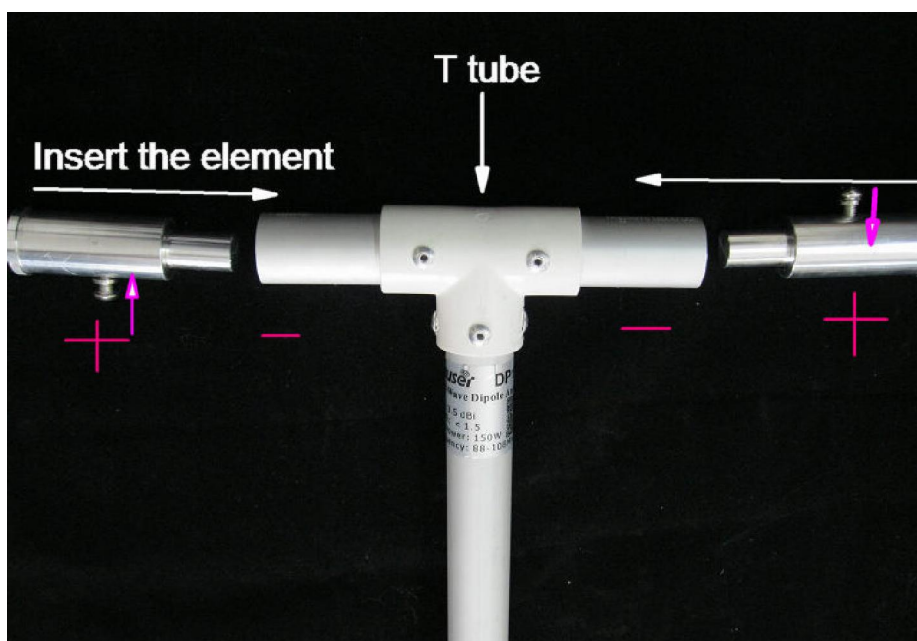


Figure 1.1

**A** .Insert the elements into the T tube with corresponding polarity positive( + ) to positive ( + ) and negative (–) to negative ( - )

**B** .When inserted screw it with the metal screw as you see in figure 1.1

**C** .As you finish assembling the antenna it look like at the figure 1.2 in the picture

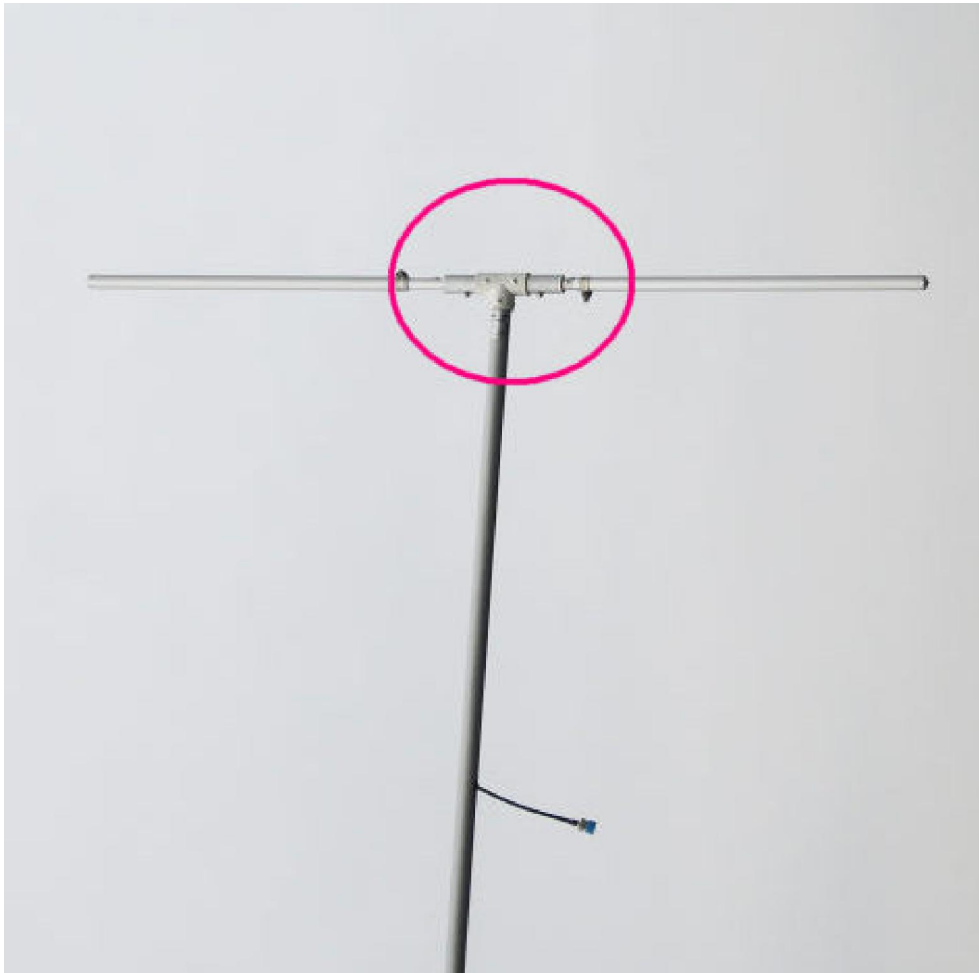


Figure 1.2

## **2).Tuning/calibrating the Dipole Antenna:**

**A.** Select the Frequency you would like to use as you can see in list of frequency and with corresponding scale of elements.

**B.** When you have selected the frequency we are ready to tune/calibrate the element.

a) First we loosen the bolt and nut of the element as we can see in figure 1.3

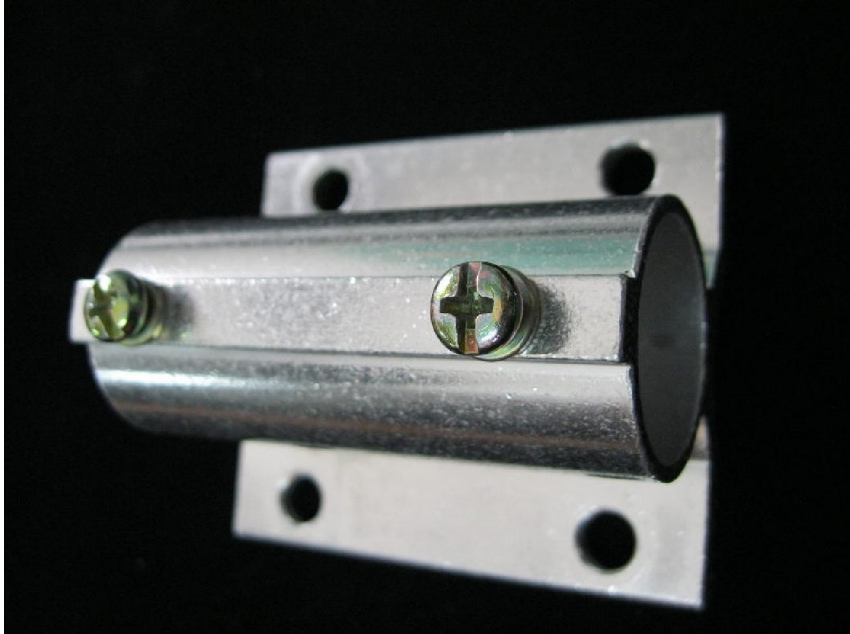
b) Then adjust the adjustable element to its corresponding frequency scale

c) we can tighten the bolt and nuts in every elements. Now we can mount it to your tower.



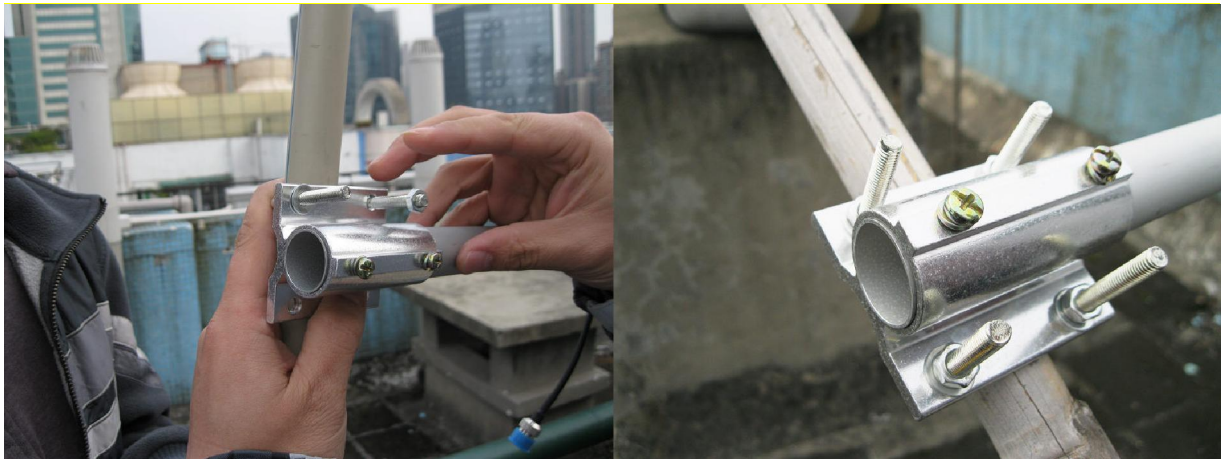
**3).Install the dipole antenna it to your tower or post:**

**A.** Insert the rod opposite T-tube end to the metal fixture, check the picture below:



**B.** Unscrew the U clips and insert the two U clips through the holes of metal fixture, fix the whole antenna to the post/tower:





Attention: the post should be at least 2 meters high, this is to ensure the antenna will maximize its advantage.

- C. Fix the post to one place, make sure the “Anode” end is up and “Negative Electrode” end is down.



D. Finished Installation (We didn't connect the cable in this manual, in real operation, please connect the cable to the antenna after installation)