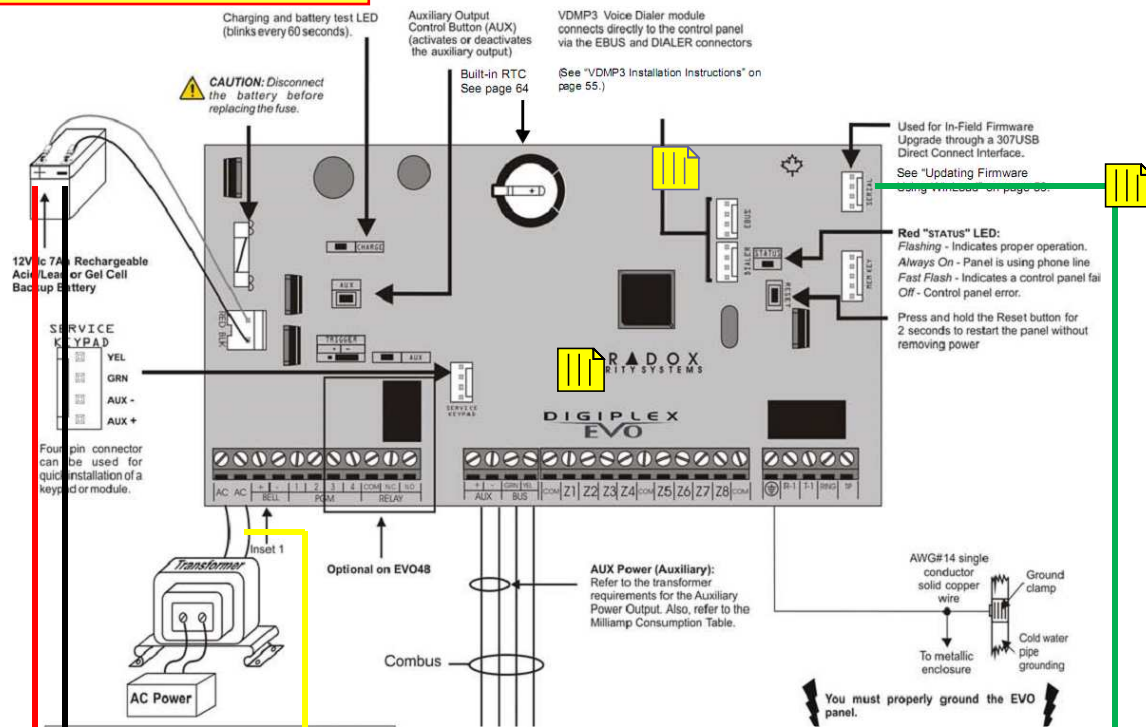
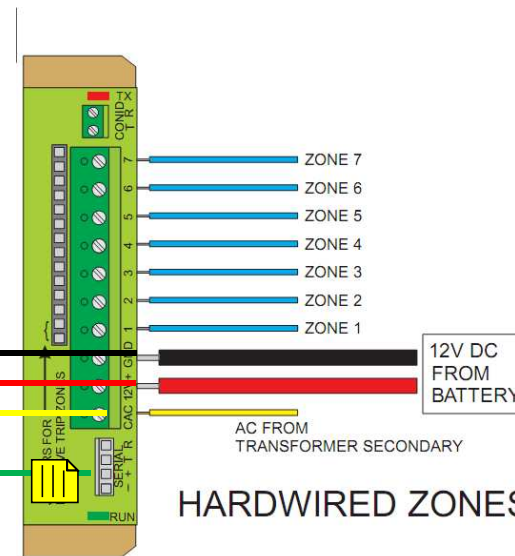


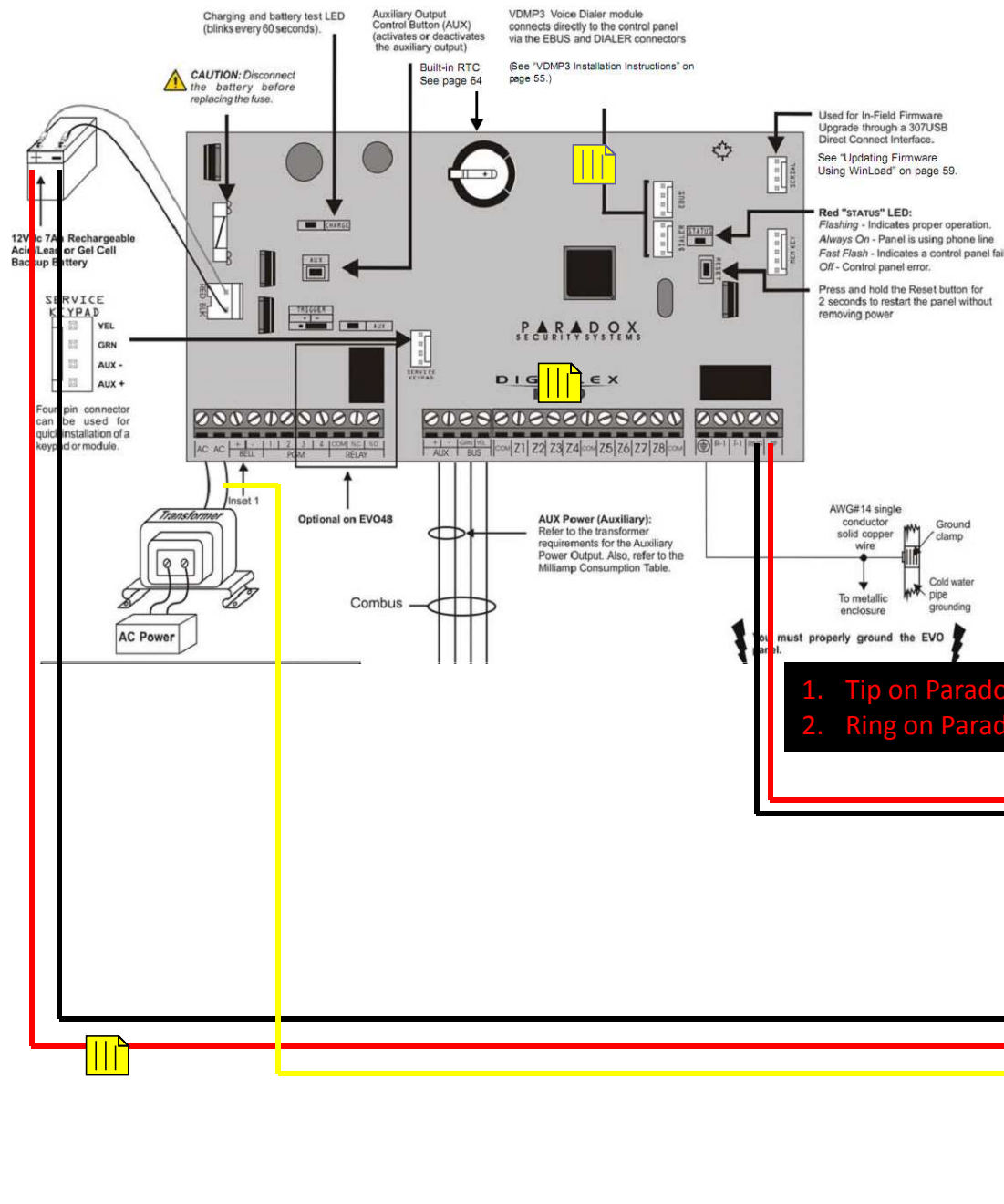
Please read the antenna section



Connection diagram if used with the following panels:

1. Esprit E55
2. MG5000
3. MG5050
4. SP5500
5. SP6000
6. SP7000

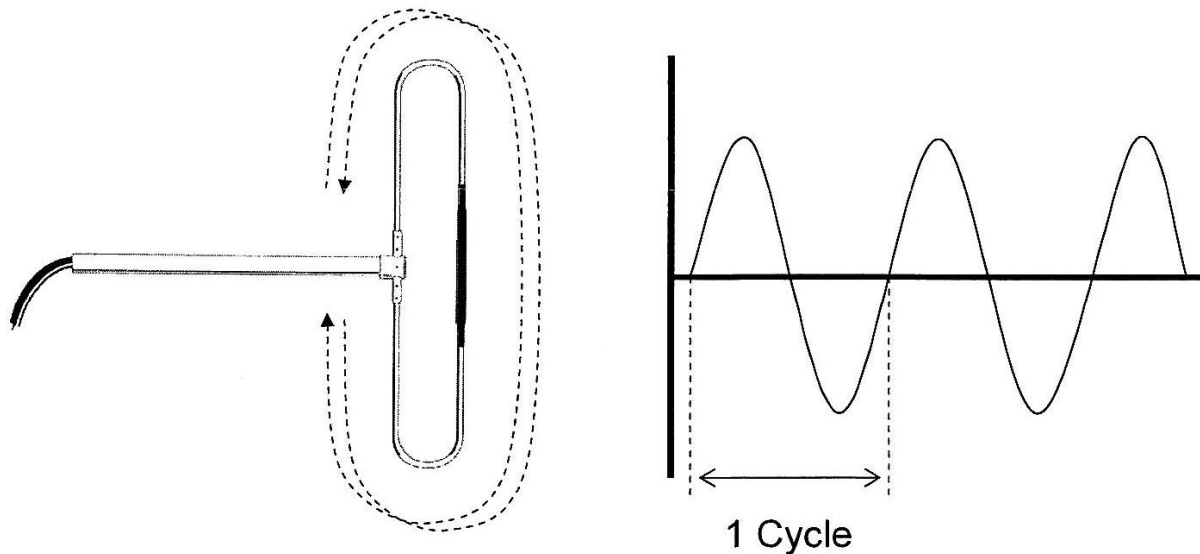




Connection diagram if used with Paradox panels that don't work with serial or are not Paradox panels.

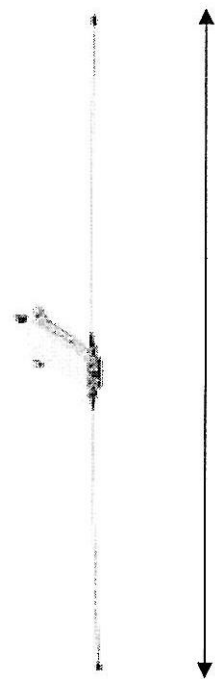
Antenna's

- Most antennas are from two basic types:
 - *Dipole* antenna
 - *Whip* antenna
- This direction is changing about 160 million times a second.



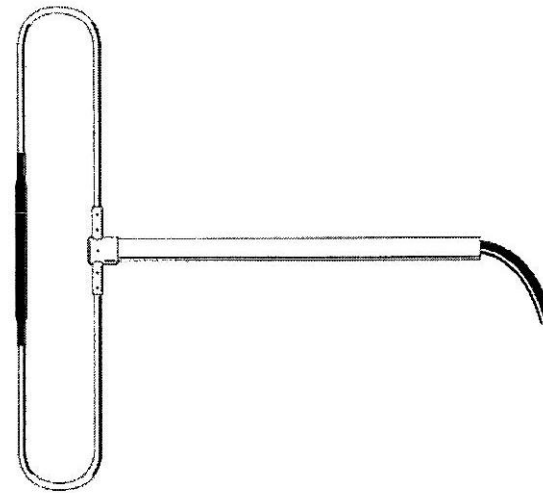
Dipole Antenna's

- The Dipole antenna is $\frac{1}{2}$ wavelength long.
- Folded dipoles have a broader frequency spectrum.
 - Are slightly shorter than normal dipole.



Dipole

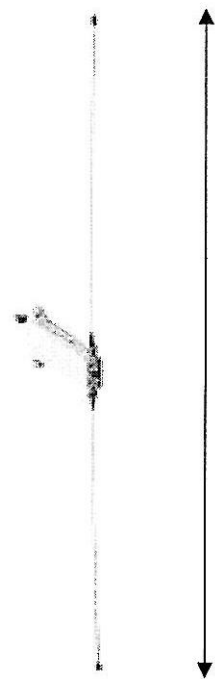
$\frac{1}{2}$ Wavelength



Folded Dipole

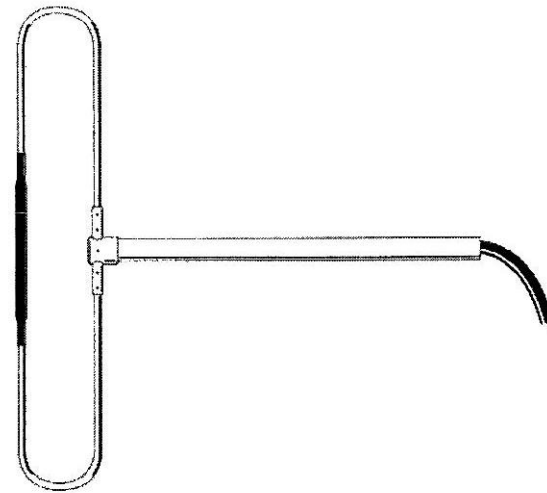
Dipole Antenna's

- The Dipole antenna is $\frac{1}{2}$ wavelength long.
- Folded dipoles have a broader frequency spectrum.
 - Are slightly shorter than normal dipole.



Dipole

$\frac{1}{2}$ Wavelength



Folded Dipole

Introduction

- Nothing should be closer than 1 wave length from any part of the antenna.
- On Radionet frequencies this is about 1.8m.
- The signal one meter from an antenna is four times stronger than the same signal 1.8m away!
- The signal is weakest directly above or below a vertical antenna.
 - If you need to mount the panel nearer than 1.8m from the antenna, this should be done directly below it. 

Whip Antenna's

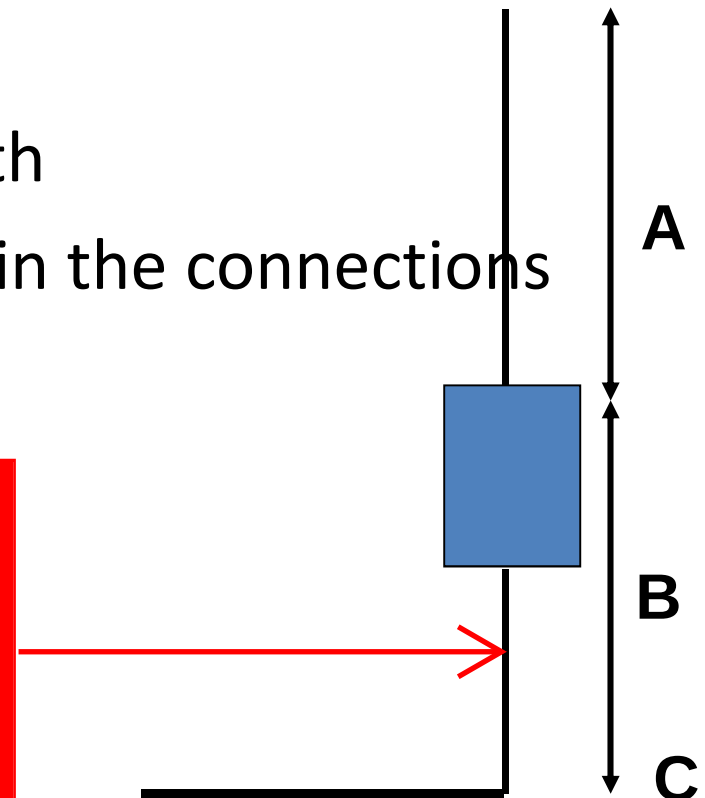
- The basic whip antenna is $\frac{1}{4}$ wavelength long.
 - Example: If the frequency is 160MHZ, this is +/- 47cm.
 - The antenna **can not** be shortened, bent or coiled.
- Must be mounted vertically.
- Needs to be grounded or connected to a network of wires called a COUNTERPOISE.
- The counterpoise provides the equivalent of an additional $\frac{1}{4}$ wavelength, required for the antenna to resonate.

Whip Antenna's

- When installing the radio with a whip:
 - Distance **A** = **whip antenna**
 - Distance **B** = **counterpoise**
 - **A** must be equal to **B** in length
 - A 90 degree bend is needed in the connections wiring at **C**.

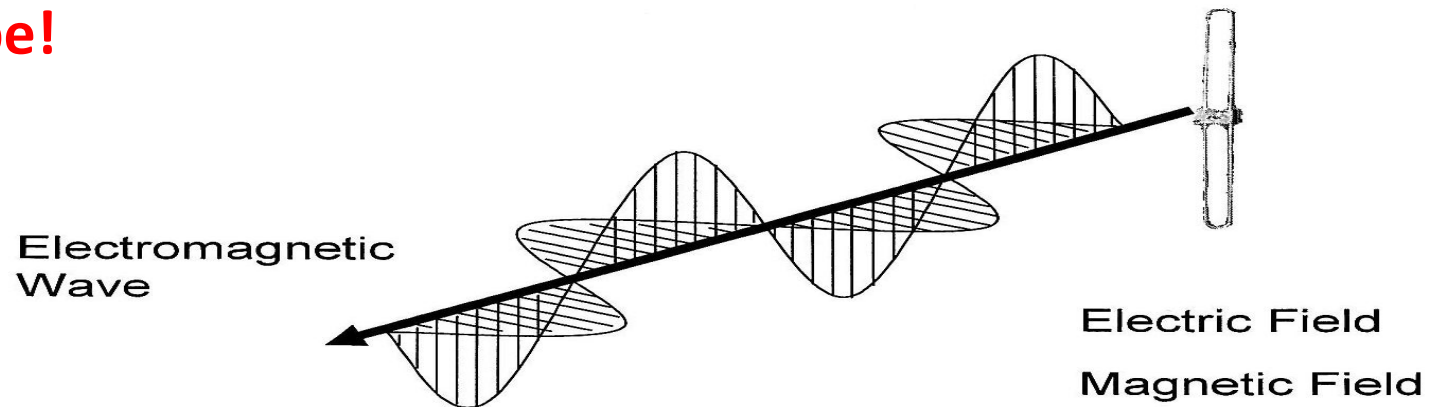
Steps:

1. Measure the whip antenna from the upmost tip to the metal case.
2. Measure the length of the transmitter case.
3. Subtract the length of the transmitter case from the length of the whip antenna
4. Example, lets say your resulted length is 350mm, then run you power cable downwards from the positive and negative terminals as reflected in "B" of the diagram to the right for a distance of 350mm. At the length of 350mm, secure a 90 degree bend to the left in the cable.



Polarisation

- For the best signal both the transmitter antenna and the receiver antenna must both be on the same plane of polarisation.
 - A vertical aerial will create an electromagnetic wave that is vertically polarised.
 - The electric field will be vertical and the magnetic field will be horizontal.
 - **The RX antenna is vertical, so the TX antenna must also be!**



Dipole Antenna's

- If the cable must be folded, Distance **A** must not be less than 5 x diameter of the cable.

