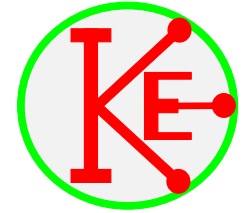


Basic Equipment.



Wire aerial.

An aerial is needed for a radio system to interact with the electromagnetic waves transmitted by the radio station and turn these into an electrical signal that can be processed by the radio.

Ideally this will be a piece of wire at least 20m long supported outdoors at a height of at least 10m above the ground. Mains stranded equipment wire can be used for outdoor aerials (16×0.2).

Normal stranded connecting wire (7×0.2) can be used but may break with strong winds, snow and ice.

In reality, this is unachievable by most people and so a length of wire supported inside the loft space of a building is a next best alternative. Normal stranded connecting wire is suitable for indoor aerials. Care should be taken to avoid mains electricity cables.

If this is not achievable then a length of wire supported within a room within a building can be tried. Such wires could be attached around where the ceiling joins the walls and fixed in place with 'white tac'. It will be necessary to experiment with different lengths of wire etc to find the best results for the frequencies being received.

Connection to earth

A good connection to earth is needed to act as a return path for the electrical signals produced within the aerial. The lower the resistance to earth the better the aerial system will be.

Ideally this will consist of a thick wire connected to several 1m lengths of copper tubing that have been knocked into the earth. The thick wire should be soldered to the copper tubing to ensure good electrical contact. The solder contacts should then be coated in paint to protect them from rain and moisture.

Again, for most people, this is unrealistic. In older buildings, it may be possible to wrap a wire around a copper cold water pipe for an earth connection, though in many cases plastic pipes are often used somewhere within the property and so there will not be any connection to earth via the pipe.

As a final resort, a connection to the mains electricity earth can be used, but this does have possible inherent dangers in the event of an electrical fault elsewhere within the building, when a large current can flow in the mains earth wire.

Basic multimeter

Multimeters can be analogue (with a pointer that moves across a dial) or digital (the values are displayed as numbers). In general digital multimeters are more robust and are likely to give more reliable measurements of voltage, since they will have less effect on the circuit under test.

Both types start at around £7 and in general the more they cost, the more facilities they offer, though a basic multimeter is likely to be suitable for most measurements.

Power supply

Ideally this should be a mains operated unit providing a regulated 12V output at a current of at least 1A. It should also be short circuit protected in case of any wiring errors. Such power supplies cost around £10

An alternative could be a set of 8 non rechargeable AA cells connected in series or 10 rechargeable AA cells connected in series, though these may cost more than a small 12V mains adaptor.

Initially, many of the subsystems will operate from 9V and so a PP3 battery could be used to start with.