



## Cable Height Meter must point directly at cable.

The Suparule Cable Height Meter operates on the principle of speed of sound.

The meter sends out an ultrasonic signal (i.e. a sound wave which is above the human hearing frequency range) and measures the time it takes to receive the echo of that sound signal, after it has bounced off an object, i.e. the cable being measured. Knowing the speed of sound in air, the unit can then accurately calculate the distance traveled by the signal in that time, and therefore the distance from the Meter to the object being measured.

The ultrasonic signal originates from the ultrasonic transducer positioned at the center of the cone of the Cable Height Meter. The physical area covered by the signal beam spreads out as the signal moves further away from the Meter. The exact width of the signal beam at a particular distance from the meter is shown in the Performance diagrams at the back of the Cable Height Meter User Manual and Datasheet. For example, at the transducer the signal beam width is approx 16mm, while at a distance of 10m from the unit, the beam width has increased to over 1m. When the ultrasonic signal reaches an object, such as an overhead cable, the signal will bounce off that object. After it has sent out the ultrasonic signal, the Meter waits to receive the

signal which has bounced off the object being measured.

However, in order for the meter to pick up the bounced echo, that echo signal must be directed back to the cone of the Meter. If the signal does not travel back to the cone, then the Meter will never see the echo, and therefore cannot calculate the time and distance traveled.

Referring to Figure 1, it can be seen that, if the cone of the Cable Height Meter is not pointed correctly at the object (e.g. position A), the transmitted signal will bounce off the object (in this case a sloping wire) at such an angle that it will not return back to the Meter. This will result in an invalid or null reading.

In order to ensure the signal echo returns correctly to the Cable height Meter, the unit must be positioned such that the face of the cone on the Meter is parallel with the object being measured (i.e. position B).

When measuring sloping wires, it is necessary to have an idea of the direction of the slope of the wire. Position the Meter with the back of the cone touching the ground, and the face of the cone pointing in the general direction of the wire. Tilt the Meter sideways and/or back and forth, still keeping the back of the cone on the ground, until a valid reading is received. Note that, when measuring multiple cables, they must be parallel to each other to ensure the Meter "sees" them. If one or more of the cables has a different slope, then using the same theory described above, the echo returned from that cable may not reach the Meter, and therefore give a null or invalid reading.

Figure 1

