

DT80 enables horizontal distance measurement in a circle of 80 meters.

The Suparule DT80 enables the CHM300DT Cable Height Meter to measure horizontal distance as well as vertical height of overhead conductors.

This broadens the scope of the unit to include applications involving horizontal distance surveying, in addition to comprehensive line sags profiling.

The DT80 is a dynamic or active target for use with the CHM300DT. In normal mode, the CHM operates by sending an ultrasonic sound signal to the target to be measured, and listening for the echo of that signal when it bounces back from the target. It measures the time it takes from sending the signal to the receipt of the echo, and from that, calculates the distance traveled, using the speed of sound in air. Such a target is considered an inactive target.

In this mode, the total distance traveled by the sound signal is from the CHM to the target and back to the CHM, i.e. twice the distance from the CHM to the target. As the signal travels through the air, it weakens in strength. Also, as it hits the target, a significant portion of the signal is absorbed by the target, thereby further reducing the strength of the signal returning to the CHM. The overall measurement range of the CHM is directly proportional to the strength of the signal.

When the target is the DT80, the signal transmitted is received by the DT. The DT, which contains similar electronics as in the CHM, then generates a completely new signal, and sends it back to the CHM. It can be seen therefore that the measurement range of the CHM when used with the DT is at least double, as each signal only needs to be strong enough to travel to the target, and not back again. Furthermore, because a new signal is generated at the DT, there is no weakening of the signal due to absorption of the signal by the target, as in the case of the inactive target.

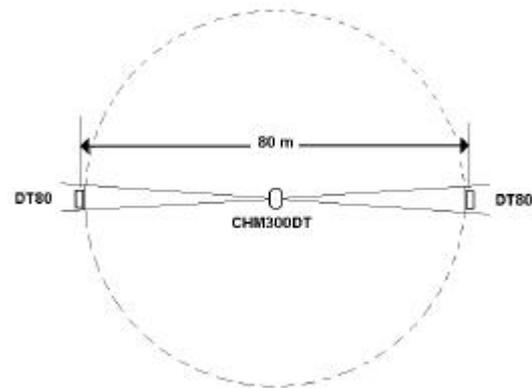


Fig. 1 Circle of Operation

As a result, the overall range of CHM300DT for horizontal distance measurement when used with the DT is considerably more than double, and in fact closer to triple the normal range, with measurements of more than 40m easily achievable.

When used with two DT80s, then the total circle of operation is more than 80 meters, as shown in Fig. 1.

When used with more than two DT80's possibilities for three-point surveying arise, as shown in Fig 2.

The instruments can be used to measure distances a, b, and c. If the CHM300DT is mounted on a tripod with an angular dial, the angles ϕ_1 and ϕ_2 together with the values a, b, and c, can be used to calculate the distances between the DTs using standard trigonometry functions.

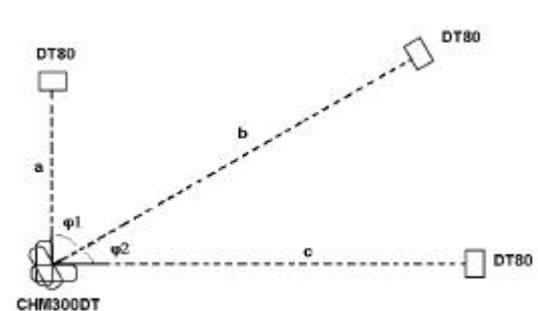


Fig. 2 Trigonometric Surveying