



ULTRASONIC LEVEL INDICATOR

An ultrasonic level transmitter is mounted on the top of the tank and transmits an ultrasonic pulse down into the tank. This pulse, travelling at the speed of sound, is reflected back to the transmitter from the liquid surface. The transmitter measures the time delay between the transmitted and received echo signal and the on-board microprocessor calculates the distance to the liquid surface using the formula.

$$\text{Distance} = (\text{Speed of sound in air} \times \text{time delay}) / 2$$

Once the transmitter is programmed with the bottom reference of the application – usually the bottom of the tank – the liquid level is calculated by the microprocessor. The basic equation for calculating the tank level is

$$\text{Level} = \text{Tank Height} - \text{Distance}$$

SPECIFICATIONS :

Ultrasonic transmitters are easy to install on empty tanks or on tanks containing liquid. Set-up is simple and those devices with on-board programming capability can be configured in minutes.

As there is no contact with the media and no moving parts, the devices are virtually maintenance free. Wetted materials are usually an inert fluoropolymer, and resistant to corrosion from condensing vapors. Because the device is non-contacting, the level measurement is unaffected by changes in the liquid density, dielectric, or viscosity, and performs well on aqueous liquids and many chemicals.

Changes in process temperature will change the speed of the ultrasonic pulse through the space above the liquid, but built-in temperature compensation automatically corrects this.

Changes in process pressure do not affect the measurement.

