

Tank level measurement in elevated tanks is an ideal application for a rangeable pressure transmitter. The actual level in the elevated tank is what the customer wishes to measure. In order to facilitate mounting and servicing of the pressure transmitter, it is mounted at the base of the tower, sometimes as much as 100 feet below the bottom of the tank. This can also be done if the water tank is on top of a hill with a pipe running down to the water plant.

The RTX 1000 Series Pressure Transmitters are rangeable between 10:1 and 100:1 with a complete zero elevation and suppression capability. In the case of the elevated water tower, we wish to suppress zero, placing 4mA output at the bottom of the tank on top of the tower as shown in Figure 1. In this example, the distance between the bottom of the tank and the ground is 80 feet; the depth of the tank is 20 feet. This requires a URL of at least 100 feet of water. The zero is suppressed up to 80 feet, resulting in 4mA at 80 feet and 20mA at 100 feet of water.

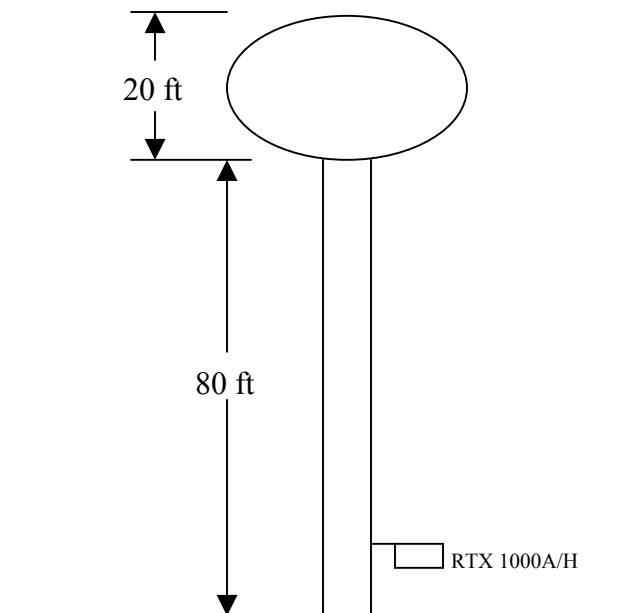
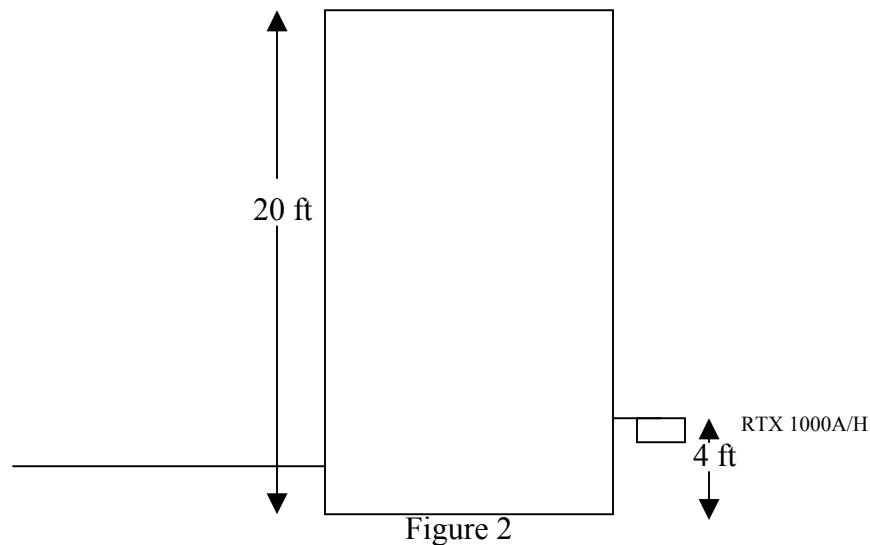


Figure 1

Setting this up using the DPI 610 is simple. After enabling the zero and span adjustment via the Dip Switches on the Motherboard, apply 80 feet of water pressure on the DPI 610. Push the zero button. Then increase the pressure to 100 feet of water and press the span button. Return the Dip Switches to their normal lock-out position and the deed is done.



In an application where a tank is partially submerged in the ground and access to the bottom of the tank is difficult, it is possible to use the zero elevation function to give an accurate reading of tank contents. Note: Using the zero elevation function will allow accurate measurement only down to the actual level where the Pressure Transmitter is attached. In Figure 2 we see that the pressure transmitter is located 4 feet above the bottom of the tank. Normally the tank level will never go below the 4 foot level. This allows us to elevate the zero 4 feet. This allows the entire tank level to be considered when reading the Pressure Transmitter output. We have essentially set up a compound range from -4 to +16 feet relative to the Pressure Transmitter, for a total of 20 feet of measurement.



Setting this up with the DPI 610 is also quite easy. After enabling the zero and span adjustment via the Dip Switches on the Motherboard, apply -4 feet of water (vacuum) to the RTX 1000. Push the zero button. Then apply a positive 16 feet of water, pressing the span button. Return the Dip Switches to the lockout mode and the device is set up. The RTX 1000 will now reflect the entire tank contents.

There seems to be some confusion about elevation and suppression of zero in many people's minds. When we suppress zero, we actually are suppressing the desired measurement point down to the actual location of the measurement device. Likewise, we elevate the zero up to the point at which the device is located.

