# Liquid Level Controls

OPERATION AND SELECTION

A conductance-type control will sense liquids up to 60,000 ohms resistivity. It can be used to activate a low level alarm, high level alarm, pumps to fill/drain a tank or any combination thereof. Typical applications include, but are not limited to, cooling towers, storage tanks, water fountains and condensate receivers.

The control utilizes the conductivity of a liquid to make or break circuits. Some liquids may be more resistive than the control can sense (above 60,000 ohms). The resistive and conductive properties of a liquid depend on several factors, including the amount of soluble material, temperature of the liquid, and placement of the probes. A TDS tester, which can be purchased from a supply house carrying boiler chemicals, is required to accurately measure a liquid's resistivity.
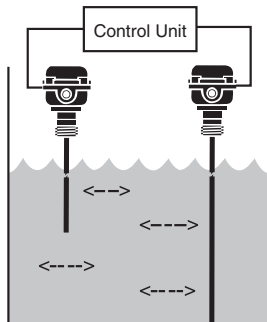
For many applications, water is the liquid being sensed. Raw or tap water usually has naturally occurring salts, chlorides and minerals that make it conductive enough to operate the control. Condensate receiver and cooling tower water are also very conductive due to evaporation. Ultrapure water (RO, deionized, demineralized, etc.) is highly resistive and is not able to conduct the current needed to operate the control.

Refer to the following charts to determine the resistivity of the liquid in an application. If it is above the 60,000 ohm rating, another type of control will be required.

Conductivity Values of Water

Liquid	Resistivity (Ohms/cm)	Conductivity (Micromhos/cm)	Series 250B
Water - Deionized	2,000,000	0.5	
Water - Distilled	450,000	2	
Water - Condensate	18,000	50	X
Water - Chlorinated	5,000	200	X
Water - Hard/Natural	5,000	200	X
Water - Sewage	5,000	200	X
Water - Salt	2,200	450	X

Converting Total Dissolved Solids to Resistivity and Conductivity

Total Dissolved Solids (ppm)	Resistivity (Ohms/cm)	Conductivity (Micromhos/cm)
0.0277	18,000,000	0.056
0.0417	12,000,000	0.084
0.0833	6,000,000	0.167
0.500	1,000,000	1.00
1.25	400,000	2.50
10.0	50,000	20.0
100	5,000	200
1,000	500	2,000
10,000	50	20,000