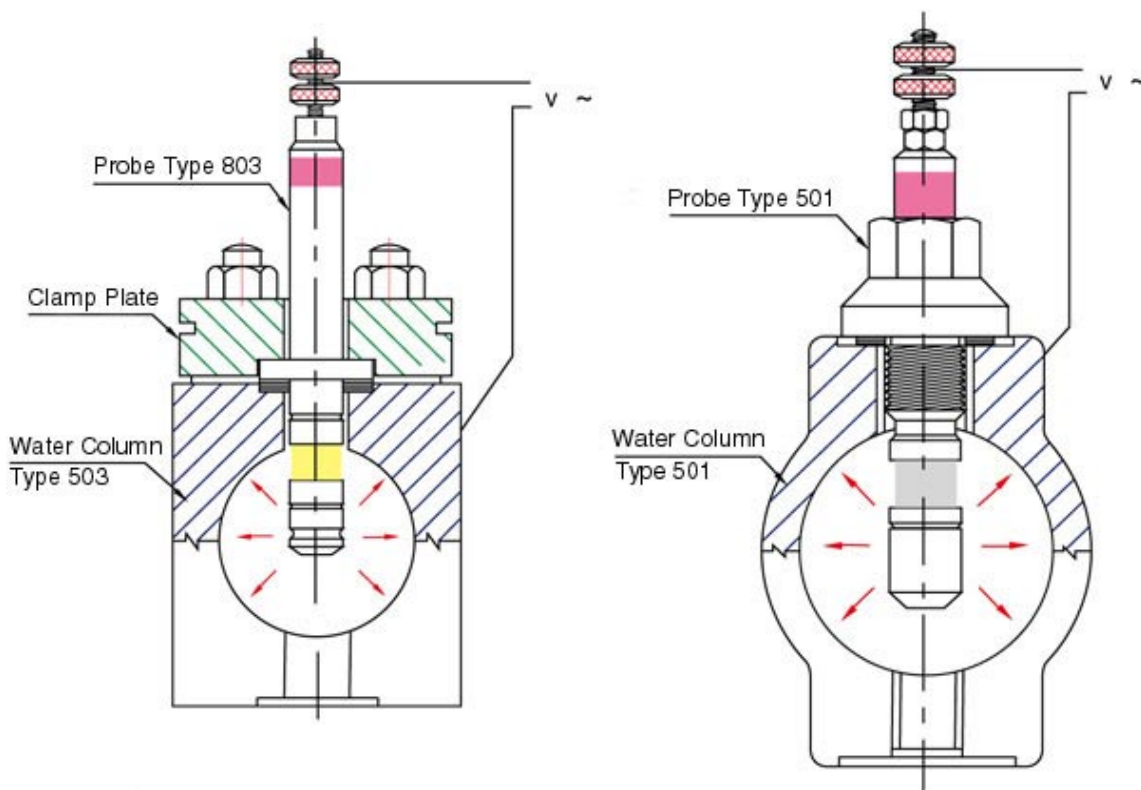


## Operating Principles

Levelstate EDLI incorporates multiple probes fitted to a water column, which is widely accepted as reliable, convenient and maintenance free equipment. The technology uses the well established principle of resistivity discrimination between steam and water to provide a clear indication of water level in a boiler drum or any other vessel such as Feedwater heater, Deaerated feedwater storage tank, Condenser Hotwells etc.

The discrimination between water and steam is based on the significant difference in resistivity between the two states over the saturation range. The sensing element is a Probe with an insulated tip inserted in a side-arm water column. If a voltage is applied to the tip, conduction occurs between the tip and the inside wall of the column. The dimensions are selected to provide a resistance typically less than 0.1 Mega-ohms when the Probe is immersed in water, which results in a resistance greater than 5.0 Mega-ohms for the steam condition. An electronic discrimination circuit is arranged to sense whether the Probe resistance is less than 0.1 Mega-ohms representing water or greater than 0.1 Mega-ohms representing steam. The detection level is dependent on water purity and boiler operating conditions.



Multiple probes are spaced vertically in two staggered vertical rows in a side arm water column attached to the boiler drum. Each probe is connected to its own sensing and water/steam indication circuit. A vertical display of multiple Green/Red indicators provide resolution for the water level indication.

The number of probes and the spacing between them can be chosen to cover the required sight range.

The side-arm column stimulates condensate flow and circulation. This flushing effect results in the water inside the column being purer than the water in the drum. As the pressure increases the water resistivity increases and it is essential that the water/steam switching threshold lies above the side-arm water resistivity for the maximum boiler pressure encountered. On the other hand it is advisable to use as low a resistivity switching threshold as possible to render the system less susceptible to switching over due to moisture and water droplets.

