

Hydraulic Conductivity Logger

In brief, water level sensing systems may be categorized into:

- a) Floater-based systems (mechanical)
- b) Sensor-based systems (electronic)

a) Floater-based. Early systems that recorded continuous water-level changes in wells (shallow or deep) consisted of a float connected to a steel tape or beaded cable and a counterweight connected to a wheel. The rotating wheel turned a drum, upon which a pen, connected to a clock, recorded water levels on a paper chart.

b) Sensor-based. Submersible pressure transducers (pressure sensor) developed in the early 1960s, have made the collection of water level (pressure data) much more convenient than former methods. Submersible pressure transducers, when combined with electronic data recorders (datalogger) have made it possible to collect continuous water level data from wells.

Considering the facilities available in Iran, both the floater-based and sensor-based systems may be simply developed upon request:

1) *Floater-based:*

§ Components: floater apparatus (including all mechanical parts), datalogger (including software, electrical connections and power supply)

2) *Sensor-based:*

§ Components: datalogger (including computer software, electrical connections and power supply), pressure transducer (including transducer suspension apparatus)

Using the graphical user interface (which runs under Windows Operating Systems available), the data is retrieved via an RS232 lead connected to a PC. The logger is also programmed with a text string, used to identify the logging time interval and automatically with the current date and time. When the data is retrieved, the text string, time and date of each reading as well as water height are obtained. The data can be changed into various formats for exporting to spreadsheet (e.g. Excel) for analyses. As an optional feature, graphical and statistical output can be included into the software.

If the reliability and durability of the device is a major concern, we strongly recommend the latter option. In this assembly, all parts are fixed and a cylindrical probe which has a transducer incorporated into its base is positioned in the water. Providing good maintenance of the set; hopefully, it will last for several years without degradation of the components' performance.