Levelogger Edge Uses Absolute Water Level Measurement Precision Technology

Absolute vs Vented Cable

Vented Cable

Barometric compensation has traditionally been performed using a vent tube leading from the surface down to the transducer. This vent tube terminates behind the transducer diaphragm, providing a cancellation effect for barometric pressure.

Vent tubes may cause erroneous barometric compensation due to crimped, damp, wet, or cut tubing, unacceptably slow response to small barometric change, and there is no possibility to review data to determine if barometric compensation was correctly applied. Vent tubes also require the use of desiccants, which need to be replaced regularly.

However, when the vented tubing is cared for, inspected, and tested regularly, it responds quite well, especially in shallow applications.

Absolute Pressure Dataloggers

For the highest integrity readings, Solinst decided the Levelogger Edge would use an absolute pressure transducer.

The Levelogger Edge, Levelogger Junior, and LTC Levelogger Junior measure absolute pressure, so when in water, they measure the total head of water plus the barometric pressure. One Barologger at a site is used to measure barometric pressure. The algorithms programmed into the Barologger are strictly for use in air, making this instrument extremely accurate. The barometric data is then used, along with a software Wizard, to compensate the Levelogger data, and provide true water level readings. To increase the accuracy of barometric compensation data, it is recommended the Barologger and Leveloggers be programmed with the same recording times.

Once the Levelogger and Barologger data is downloaded to Solinst Levelogger Software, the Compensation Wizard can be used to barometrically compensate the data, and adjust it to depth measurements. Multiple Levelogger files can be barometrically compensated at once using one Barologger file. You can view your data directly, or it can be exported in a standard .csv or .xml format for use in any hydrologic software for further analysis and interpretation.

Levelogger Software provides a record of the raw barometric and total pressure recordings as well as the compensated data. This is not possible with vent tube compensated data files. When analyzing barometric data it is important to keep in mind that storm events commonly reduce total atmospheric pressure by about 1.7% from pre-existing high pressure conditions. 1.7% converts to approximately 0.6 ft or 0.2 m of water level equivalent barometric fluctuation. Raw data can be very useful information for calculating barometric efficiency in tight, confined aquifers, when the investigator has a choice not to compensate the readings.

It was found that recorded barometric data provides the necessary barometric compensation data our clients require. The use of a Barologger as an on-site barometer, rather than the use of local weather station barometric data is more convenient, and accurate.

The use of vented cable technology to provide barometric compensation can be more expensive, and higher maintenance, and in some applications, may provide less reliable results than the use of an absolute pressure datalogger, but can be suitable for shallow applications.