

## Understanding Logger Accuracy

### Absolute Loggers

- If high accuracy is needed absolute loggers should not be used. They are intended as cost-effective solutions for groundwater level research when high accuracy is rarely needed. They are mostly unsuited for surface water except when a general indication of level suffices.
- The accuracy of absolute loggers stated in the specification sheets by the respective manufacturers are the specified (in) accuracy of the transducer. Usually this is given as a %FS at a specific temperature.
- As such the figure is pretty meaningless because it does not take account of many other factors such as stability, long term drift and so on.
- The accuracy of the Baro Logger, required when using absolute loggers, is as important as that of the logger and different manufacturers calibrate differently. (Van Walt's LevelSCOUT baro: BaroSCOUT is particularly well calibrated).
- Transducers hover around their specified measurements in a sine wave. If the baro and logger happen to be in opposite peaks then the inaccuracy is doubled. So, theoretically, on a 10m logger this is 10mm (2 X 5mm).
- The real relevant measure is the **typical accuracy**. An absolute logger with a 10 m fluctuation, from whichever manufacturer, will generally have an average accuracy over their lifespan of +/- 30mm.
- When considering a brand of absolute logger always look at the warranty offered and at what level of inaccuracy does the manufacturer replace an item under warranty? In our experience of completing hundreds, if not thousands of performance checks and checks for warranty considerations, many manufacturers will not replace a logger if the accuracy is better than 30-40mm, in other words, they are expecting this level of (in)accuracy.

### Summary

If you need a high accuracy datalogger you should not be using an absolute logger. If you are being told an absolute logger is accurate, what is the manufacturers definition of accuracy and does it match your own.