# Verus Instruments Datasheet

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## Understanding a calibration certificate for a Checkbox


Wood is a natural material, if you push a probe in at one point and get a reading of say 18.1% then you push the probe in the same piece at a point a few millimetres away and you may get a reading of say 18.3% moisture content. The meter is not wrong, this is simply the nature of wood. That difference might be that the second time the pins penetrate they go in fractionally more deeply as there is often a higher moisture level at the centre of wood or it might be a pocket of higher wood density as this also raises a reading.

A wood moisture meter is not therefore like a length measuring instrument. Length measuring often needs to be precise in order for things to fit and work, but in timber moisture measuring that is never true, nor is it possible, as timber is a 'live' material, meaning it moves and it changes moisture content constantly. With wood, most moisture content measurements need only to be to the nearest 1 or 2%. Timber windows, laminated wood, furniture etc only require a meter of 1 or 2% accuracy. Surveyors, wood export packers and pallet makers normally never need better than 2% accuracy. (*Except when timber is near the wood decay safety limit of 20%, then you will need to be measuring a max 18% to be safe using a 2% tolerance.*)

Unlike a piece of wood which varies slightly by the day, the Verus wood moisture meter Checkbox II (shown above) has permanent inbuilt electronic *redwood* moisture values. These are on the engraved facia of each Mk II box marked with *European redwood* values of, 14%, 17.3% and 27%, which is a range stretching from a dry 14% to a very wet 27%. To ensure accuracy the rule-setting body for measurements in the UK, the United Kingdom Accreditation Service (UKAS) requires *external traceable calibration* for all instruments used for measurement within organisations working to ISO 9000 and ISO 17025.

External traceable calibration, measures to levels of accuracy far greater than a wood moisture meter user actually needs. This is why Verus measurements and certificates read to 0.1%. Checkbox manufacturing variations mean values for each box are very slightly different and a typical Verus Mk II certificate might for example, have values of 14.1%, 17.2% and 26.9%. These are shown in the right hand column of the calibration certificate we supply. It is those *right hand* column values that should be used to check the accuracy of your moisture meter. (European redwood is the standard reference species for moisture meters).

Some internal company quality procedures apply an overly tough tolerance when checking a moisture meter. Quality procedures should be concerned with adequate operation, but never overly accurate, otherwise a sound meter might unreasonably be withdrawn by your QA department. Quality procedures should allow a sensible tolerance band just adequate for the company production tasks. A practical tolerance is to allow the meter to vary +/-0.5% of the values marked on the Calibration Certificate. If when checking a moisture meter it drifts up to +/-0.9%, that might still be acceptable, check with your Scheme Assessor.

Just as important as tolerance is daily self-checking of a meter by an operator and not just rely on weekly checking of the meter by internal quality staff. Note also that if your company use *spruce (picea)* that most single range meters are set to *European redwood* not spruce. *This means if you take a reading on spruce it will* read 2.0 to 2.5% *lower than it should*, eg. if your spruce pallet reads 19% it is really 21%, so what you thought was safe, is in fact actually above the decay safety limit and more liable to sapstain or mould.