



Validation report

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Abstract:

We measured the accuracy, precision, and resolution of a wind meter. Our measured resolution is 0.2 m/s. Our measured precision stands at also 0.2 m/s. And lastly, Accuracy was an approximate 0.4 m/s.

Instrument Validation Report

Purpose:

Purpose of this report is to examine the reliability of the Wind Meter named “Skymate” model BAT 2032. We will be measuring all details in the format of Meters per Second using a “Windmere Products” fan model NR-6/418 as our wind, but the fan’s wind speed will be chosen as, ‘LO’. We will be needing to find, as specifically as possible, the precision, resolution, and accuracy of the Wind Meter. Accuracy in this report is known as how close the measurement is to the actual measurement. Precision in this report is known as how close our values are together. Lastly, resolution is how close you can tell the difference between two things.

Method:

- 1) To receive the same analysis and calculations using a Windmere Products fan, measure a continuous current of wind from that type of fan at ‘LO’ setting, measuring first with the Mind Meter measuring mps.
- 2) As in a small container, have in handy soap and water. Have them mixed together without stirring much, just enough to allow you to make bubbles by process of wire in the form of a circle, which can be dipped and blown through, to form bubbles.
- 3) Using a meter stick, lain starting with zero, which will be touching the front end of the fan, stretched out vertically from the front end of the fan. With the fan on ‘LO’, blow bubble(s) and measure, using a stopwatch, the time interval from the beginning of the meter stick to its end, how long does the bubble take to reach the front of the meter stick to the end of it? Preferable to do three trials.
- 4) Record these time intervals onto a chart or data table, and find reciprocal of s/m to turn answers into m/s. Formula: $1/\text{speed of a trial}$.

Data Tables: All answers/measurements rounded to the nearest tenth.

| Trial number | Current of Wind Through Wind Meter (This is what we read through the meter) | Speed measured |
|--------------|--|----------------|
| 1 | 4.8 m/s | .21 s/m |
| 2 | 5.0 m/s | .22 s/m |
| 3 | 5.0 m/s | .25 s/m |

Calculations:

In calculation we had to go through the above methods, and come up with the speeds measured, and keep them written on a table, like shown above. All calculation in the above table to get what we needed we first had to convert the speed measured from its seconds per meter, into meter per seconds. To do so, we took the speed measured. Using the speed measured we divided 1 over the speed measured, and the answer given would be in m/s and give us the Current of Wind Through the Wind Meter. Ex.- Trial 1. Speed Measured is .21 s/m. $[1 / .21 \text{ s/m} = 4.8 \text{ m/s}]$.

Analysis:

Resolution- ± 0.2

Precision- ± 0.2

Accuracy- ± 0.4

Conclusion:

In conclusion, the report itself was overall correct. Most of the complications we had were not exceeding a great entire amount of error. Their were errors in which were bound to be made inevitably, but, as for resolution, precision, and accuracy, it gives a specific and approximate \pm to each. Despite some of the errors, the answers were correct.