

Fume Hood Flow Meters and Controllers

Every fume hood on campus is equipped with a flow meter and/or controller, which can help determine if the fume hood is operating properly or if it may need service. A flow meter is a device that measures actual air flow in the hood, whereas a flow controller is able to manipulate a valve to alter flow. Some hoods are also equipped with sash sensors which can change air flow based on sash height to maintain proper face velocity. If your flow meter is not working properly, please put in a work request through the physical plant [here](#) and then report the issue to EH&S at askehs@umass.edu. This guide will walk through some of the types of meters that may be encountered on the hoods on campus. There are many different types on campus, and if there are ever any questions about specifics not covered in this guide, please contact EH&S.

Flow meters can have different types of outputs on them to relay safety information. Some display feet per minute (fpm) or cubic feet per minute (cfm). The cfm reading takes into consideration the sash opening in the calculation. Face velocities of fume hoods on campus are typically between 80-100 fpm and flow controllers are set to alarm at $\pm 20\%$ of this value. These alarms are in place to keep the user safe when working in a hood. When in alarm, air flow is not at a safe level to contain the vapors and fumes that may be inside a hood. This can include face velocity being too low or high. It is important to make sure flow is proper when doing work, and ***NEVER WORK IN A FUME HOOD THAT IS IN ALARM.***

Many of these meters and controllers are equipped with mute buttons. These will temporarily silence an alarm that is actively sounding. Silencing the alarm does NOT mean that the hood is safe to work in, and the hood will return to actively sounding within a minute or so. The user should report this alarm to solutions center immediately and stop working in the hood.

Many hoods are equipped with an emergency purge button. This button should be used if there is a small spill just outside the hood or inside the hood. This will allow for maximum air flow to exhaust the fumes, and the hood should not be used while this feature is on as it can create eddy currents that draw hazardous materials out of the fume hood and into the user's breathing zone.

Below are some common flow meters/controllers found in labs on campus. This is not a comprehensive guide, and if there are any questions about specific devices in your lab, please reach out to EH&S for more information.

AirGard 335

Found primarily in ELab II and Goessmann, one of the flow controllers on campus is the AirGard 335. Its simple digital design makes it easy to use to quickly view the hood's status. The AirGard 335 monitors the hood's face velocity by measuring the air velocity of air from the room passing through the air inlet on the front of the monitor. The monitor reports this information via audio and visual indicators. A red indicator would mean the hood's flow is too high or low, a yellow indicator would mean the hood is in a caution zone, and a green indicator would mean the hood is in normal range. If the flow is too high or low, it will be accompanied by an audio signal, which can be silenced using the "test/reset" button. If the hood is in alarm, it should NOT be used, and should be reported to the solution center for service. This meter also displays the flow in feet per minute (fpm) for added assurance. These meters are equipped with an emergency purge button, which should only be used when necessary.



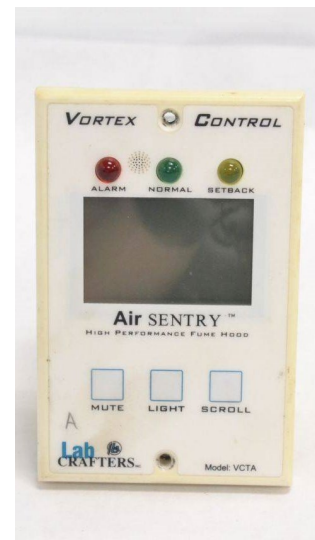
Accutrol LLC

There are a few types of Accutrol fume hood controllers around campus found in PSB, ELab II, and LSL. These have a simple design, with a display reporting the fpm (or cfm) of the hood, a visual alarm, and two functional buttons (one for mute and one for purge). These audio and visual cues will allow for monitoring of the fume hood's performance. Depending on the hood's design, these meters can either read sash height or actual flow through the hood. The mute button can be used to silence a hood in alarm, but the hood should NOT be used, and reported to the solution center for service. These controllers are also equipped with an emergency purge button.



LabCrafters VCTA

The LabCrafters VCTA model flow meter will be found in many of the teaching labs of ISB. These meters are capable of three different display outputs: alpha, numeric, and graphic. Alpha displays information such as “normal” and “warning” to relay the status of the hood, numeric displays the fpm of the hood, and graphic displays a graph over time of the fpm of the hood. In the teaching labs, the default mode is set to alpha, and this should not be changed by the user. This meter uses a probe inside of the hood to read the hood’s velocity. There are two buttons on this display, one being to mute and alarm, and the other used to scroll through menus. The mute button can be used to temporarily silence a hood in alarm, but it should NOT be used, and reported to the solution center for service.



Phoenix Controls

There are a variety of Phoenix controls fume hood controllers on campus in ELab II and Paige. These can have either just a “green light” or “red light” feature that will tell you if the air flow is safe, or they can have displays reading out the fpm of the hood. The sensors of this controller are wired directly into the local valve controller for accurate readings on the face velocity. Some of these, such as the one pictured on the left, are also equipped with a sash sensor, to more accurately relay safety information of the hood (i.e. if the sash is too high). In ELab II, the Phoenix Controls fume hood monitor (shown on the right) only reads the static pressure levels. Many of these hoods are also equipped with an Accutrol meter



(shown previously) to measure actual face velocity. Due to the nature of these sensors, the Phoenix Controls can go into alarm while the Accutrol reads normal fpm levels. This is due to the static pressure not directly correlating with the face velocity, thus, the hood may still be working even though one meter is in alarm. Fume hood containment ability, and therefore, user safety, is governed by the face velocity of the hood. Thus, if the face velocity of the hood is correct, the hood is safe to use. Any alarms should be reported to the solutions center. Many of these also include an emergency purge button, and an alarm mute.

Sources

<https://ehs.berkeley.edu/labs-research/fume-hoods>

<https://buildings.honeywell.com/us/en/products/by-category/control-panels/building-controls/wall-modules/fume-hood-display>

<https://prod-edam.honeywell.com/content/dam/honeywell-edam/hbt/en-us/documents/literature-and-specs/datasheets/HBT-BMS-Sentry-Fume-Hood-Display-MKT-0377.pdf>

<https://www.lab-crafters.com/wp-content/uploads/2018/05/Lab-Crafters-Vortex-Control-OM-Quick-Ref.pdf>