

Critical Environment Controls



The power behind **your mission**





Critical Environment Solutions

Operating suites, patient isolation rooms, compounding pharmacies, laboratories, and research facilities all require complex HVAC systems to maintain a safe environment for patients and staff.

Johnson Controls has a broad product line to provide a complete solution for all your critical environment control and healthy building needs. In addition to best-in-class occupant protection, all of Johnson Controls products meet regulatory compliance and energy reduction requirements.

Air Valves

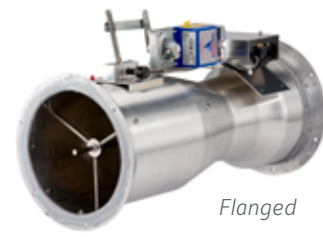
Venturi Valves

Critical environment airflow demands precise and dependable HVAC solutions. That's why the top hospitals, universities, and research facilities around the world rely on Johnson Controls Venturi valves as a crucial part of their HVAC infrastructure. Our Venturi valves help protect occupants from harmful airborne pathogens and chemicals all while optimizing energy consumption.

Our Venturi valve product line offers a variety of valve configuration options to create your custom airflow solution. The pressure-independent valves use electric actuators to provide a rapid response to constantly changing airflow conditions to maintain the desired airflow regardless of the static pressure changes.

Whether your space requires negative or positive pressure, Heresite® or Kynar® coatings to protect against harsh chemicals in the air stream, or ganged valves or provide increased airflow, we can customize a solution to fit your needs.

The valves are designed to be flexible and work harmoniously with system components from various manufacturers. Our family of valves can also integrate into any building automation system (BAS), allowing you to create a data-rich system for your facility.



Flanged



Constant volume



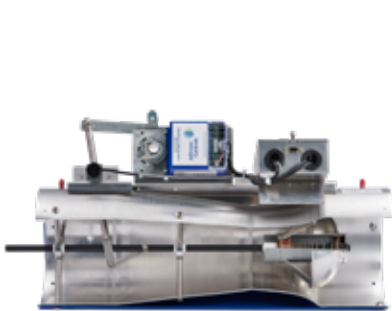
Insulated



Kynar®-coated



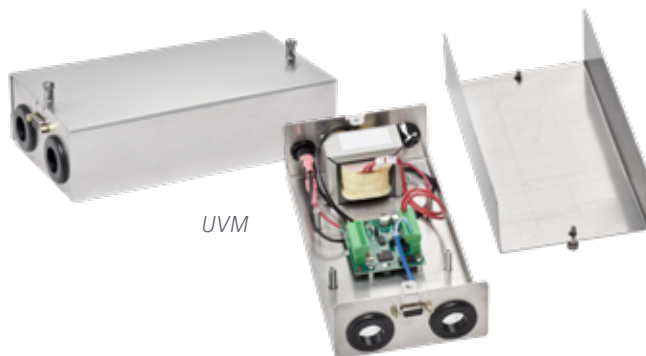
Heresite®-coated



Internal View



Standard Venturi Valve



UVM



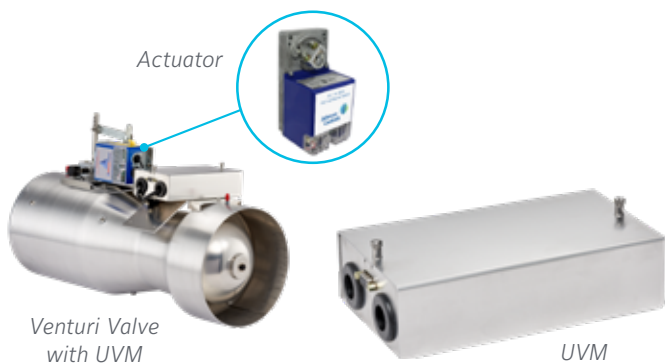
Ganged

Universal Valve Module (UVM)

The UVM is ideal for renovations or new installations in which controllers from multiple vendors are employed. The UVM simplifies valve communication throughout the HVAC infrastructure and eliminates other costly controllers and gateways.

Venturi Valve Upgrade Kit

The Venturi Valve Upgrade Kit converts legacy valve systems into digital valve systems that are compatible with any BAS. With the Upgrade Kit, you can easily create an airflow system with state-of-art HVAC controls without having to remove valves from the ductwork.



Additional Venturi Valve Product Specifications

- Aluminum or stainless-steel valve material available.
- Heresite® or Kynar® coatings for protection from harmful airborne pathogens and chemicals.
- Low or medium pressure for pressure independent airflow control.
- Partially closed or shut-off valves provide an energy-efficient option.
- Constant volume or actuated valve flow to fit your system needs.
- Offered in 8", 10", 12" and 14" diameters for a variety of options.
- Thermal insulation to reduce heat loss and save on energy.
- Ganged valves for increased airflow.
- Flanged valves for easier installation.
- Vertical or horizontal orientation depending on ductwork.
- Fast-acting or standard-acting electronic actuators.

EcoAir Valve

The EcoAir Valve is a powerful, ultra-low pressure drop valve designed with airflow sensing and debris-proof technology to provide clean air. The valve provides safety, reliability, and energy efficiency for critical environment HVAC design.



The EcoAir Valve can be used in tandem with Venturi valves in healthcare and laboratory spaces. The valve uses the EcoAir Valve Module (EVM) to enable compatibility with all controllers independent of their protocol.

The unique blade design provides high turn-down ratios with more resolute control.

The design also protects sensors from getting blocked and does not require an access port to clean the valve. The valve provides accurate airflow measurement within the specified $\pm 5\%$.

Additional EcoAir Valve Product Specifications

- **Fast-acting actuator:** The ACT-FA-9001 smart actuator provides performance data and enhances efficiency.
- **The unique air fin design** delivers accuracy across a wide pressure range, instantly delivering the right amount of airflow.
- **A robust gasket guard** protects the pressure sensing mechanism, ensuring precise airflow control.
- **Debris-proof technology:** No access port is required to clean the internal components.



Multiple valve sizes to fit your needs

Controllers and Monitors

Our line of controllers and monitors enable you to manage your critical environments with confidence and ease. Both the FMS and HMS series is designed to provide staff with the information needed to ensure their hospitals and laboratories are suitable for occupancy.

Each product features an intuitive touchscreen navigation menu and customizable audible alarms for simple installation and programming. With the patented 360° Safety Halo™ edge lighting, changes in your controlled parameters are reflected with a new screen color and action icon. The lighting also helps reduce audible alarm fatigue and enables staff to easily monitor their critical spaces down long hospital corridors or across large laboratories with a simple glance.

Johnson Controls controllers and monitors integrate into a variety of building automation systems allowing users to examine data and make informed decisions for more energy-efficient hospitals and laboratories. All critical environment products comply with the required standards and recommendations, including USP, OSHA, ANSI, ASHRAE, ASHE, and the CDC.

FMS Controllers and Monitors

The Johnson Controls FMS-2000 series is unmatched in the industry. Features of the product line include:

- Five-inch touchscreen display with intuitive user interface, which makes system configuration easy. The high definition 720 x 1280 resolution works with rubber gloves.
- Audible and color-coded visual alarms paired with the 360° Safety Halo™ illuminated edge provide room status indication, even from a distance. The visual alarms help reduce alarm fatigue and includes a snooze button you can activate with the tap of a finger. The Safety Halo™ can be dimmed for night time settings.
- Two password-protected access levels are included for increased security. One level is usually reserved for administrators, and one for nurses and other end users.
- Native BACnet®/MSTP compatibility



360° Safety Halo™ edge lighting changes if your controlled parameters change.



FMS-2000C Critical Environment Controller

The FMS-2000C Critical Environment Controller ensures laboratory and healthcare environments are safe by continuously verifying the room pressure and airflow of up to four spaces simultaneously. The controller can precisely control and monitor up to six parameters including:

- Pressure
- Temperature
- Humidity
- CO₂
- Airflow
- Air changes

FMS-2000M Critical Environment Monitor

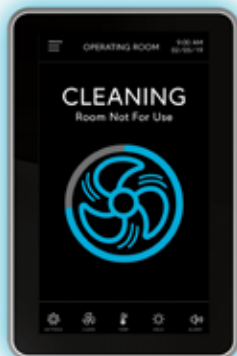
The FMS-2000M Critical Environment Monitor is a great option if you do not need a full controller for your space. The monitor measures and displays room pressure for up to four rooms. You can also display temperature, humidity, airflow, air changes, and CO₂ through the BAS.

Additional FMS-2000 Series Product Specifications

- **Isolated power transformer options** include 120-240V/24V and 24V/24V.
- **Protocols** native JCI BACnet®MS/TP provides seamless communication to Metasys N2 or Facility Explorer.
- **Non-volatile memory** saves all user settings in case of a power outage.
- **Display override** measures values from other monitored devices within the BAS.
- **Backward compatibility** with the FMS-1655 display, controller, and remote pressure sensors.
- **Four configurable digital inputs** for monitoring door switches, occupancy sensors, and override switches.
- **Thin mount display** is just 1.17" deep and sits just .5" off the wall surface which minimizes interference in busy hallways and wall space.



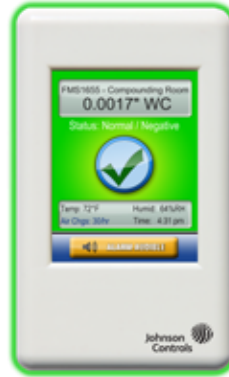
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Cleaning mode was designed to flush the air of contaminants between patients in a negative isolation room. Once the cycle is complete the room is returned to its pre-configured state.

FMS-1655L

The Johnson Controls FMS-1655L Room Pressure Controller is available for spaces utilizing a LonWorks® BAS. The FMS-1655L features a user-friendly touchscreen that simultaneously displays:



- Pressure
- Temperature
- Humidity
- CO₂
- Airflow
- Air changes

The FMS-1655L instantly updates as conditions change. Users can control up to four different spaces and will be alerted of changes with both a visual and audible alarm.

The FMS-1655L Room Pressure Controller also features the signature Safety Halo™ edge lighting and password protection.

The FMS-1655L's highly configurable design includes four analog inputs/outputs, four digital inputs, and four relay outputs. It is also available in a plastic surface mount or sleek, stainless steel flush mount.

Additional FMS-1655L Product Specifications

- **LonWorks® native**
- **Non-volatile memory** saves all user settings in case of a power outage.
- **Intuitive control menus** for easy to set up.
- **Safety Halo 360° edge lighting** to instantly monitor critical environments down long hospital or laboratory hallways.

HMS and CMS Series

HMS-1655 Fume Hood Controller

Ideal for universities, laboratories, and research facilities, the Johnson Controls HMS-1655 Fume Hood Controller regulates a fume hood's airflow and exhaust to protect users from toxic chemicals, vapors, and dust.

The HMS-1655 Fume Hood Controller simultaneously displays sash height, face velocity, exhaust, hood status, time, and the date and will immediately alert users if the fume hood malfunctions. It also utilizes a closed-loop system to better regulate airflow and produce more accurate and reliable fume hood readings.



Additional HMS-1655 Product Specifications

- BACnet® and LonWorks® network compatibility.
- Safety Halo™ for color-coded edge lighting that provides 360° of status visibility.
- Audible and visual alarms for added safety and easy monitoring.
- Password protection for added security.
- Non-volatile memory in case of a power outage.
- Zone presence sensor support.
- Pairs seamlessly with Venturi valves as well as other valves in the industry for maximum convenience and compatibility with your HVAC infrastructure.

HMS-1655R Remote Display

Designed with the same innovative features, the HMS-1655R Remote Display is offered as a secondary display for the HMS-1655 Fume Hood Controller.

The best applications for the HMS-1655R include:

- Extra-wide or walk-in fume hoods.
- Double-sided or pass-through fume hoods.

CMS-1655 Central Monitoring Station

The CMS-1655 Central Monitoring Station allows staff to simultaneously monitor the parameters of up to four rooms, four fume hoods, or a combination of rooms and fume hoods.

The monitoring station creates a centralized location to easily access critical information like the room pressure, isolation mode, exhaust airflow, face velocity, and alarm status of multiple spaces and/or fume hoods. Ideal for nurses' stations and other critical environments that require constant monitoring.

The intuitive navigation menu makes drilling down to view parameters of specific rooms or hoods quick and easy. It is available in a stainless-steel flush mount or plastic surface mount.

The CMS-1655 is designed specifically to work with the FMS and HMS controllers. The monitoring station is protocol-independent and can be connected to any building automation system.



Additional CMS-1655 Product Specifications:

- Audible alarm and Safety Halo™ visual alarm for an extra level of protection and visibility.
- Full-color LCD touchscreen for high visibility.
- Password protected with four access levels to prevent unauthorized access.



Building Automation Controls

Third-party Compatibility

All our products work seamlessly with any building automation control system from BACnet® to LonWorks.® You can improve your building's performance by examining each layer of your critical environment control strategy to identify opportunities to improve occupant safety and comfort while reducing energy consumption.

Metasys for Critical Environments

Each critical environment control product seamlessly integrates into Metasys to provide facility managers with the intelligence they need to ensure their hospitals and laboratories are safe, improve building efficiencies, and reduce costs.

The Metasys user interface provides a high level of visibility and control to track everything from air change rates and temperature to lighting schedules and fume hood exhaust levels. Rapid-response, real-time alarms enable managers to immediately address HVAC system problems.



Healthcare Solutions ---

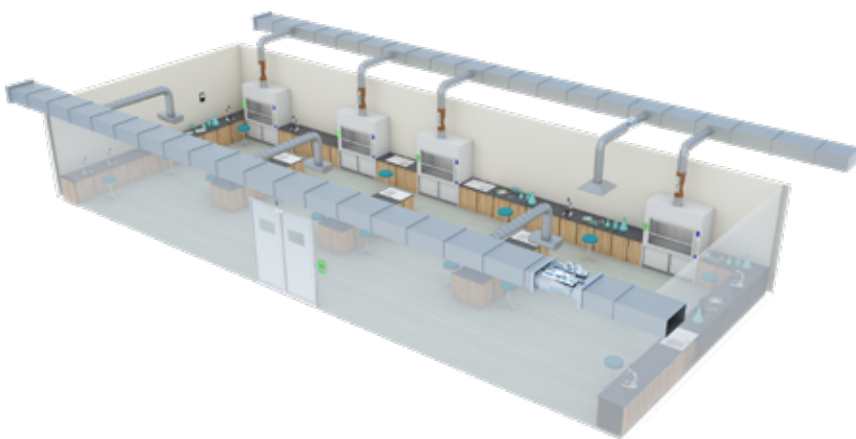


Negative Pressure Patient Room

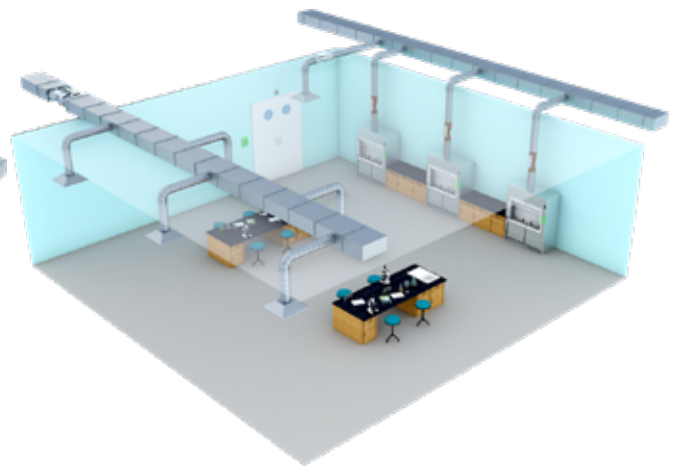


Operating Room

Laboratory Solutions ---



General Laboratory



FlowSafe Stable Vortex™ Fume Hood Laboratory

A Few of Our Clients



About Johnson Controls

At Johnson Controls, we transform the environments where people live, work, learn and play. From optimizing building performance to improving safety and enhancing comfort, we drive the outcomes that matter most. We deliver our promise in industries such as healthcare, laboratory and research, education, data centers, and manufacturing.

With a global team of over 100,000 experts in more than 150 countries and over 130 years of innovation experience, we are the power behind our customers' mission. Our leading portfolio of building technology and solutions includes some of the most trusted names in the industry, such as Tyco[®], YORK[®], Metasys[®], Ruskin[®], Titus[®], Frick[®], PENN[®], Sabroe[®], Simplex[®] and Grinnell[®].

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For additional information, visit johnsoncontrols.com or follow [@johnsoncontrols](https://twitter.com/johnsoncontrols) on Twitter

The power behind **your mission**

