



# CRITICAL ENVIRONMENTS 2021

The power behind **your mission**



## VENTURI VALVES

### FAST ACTING & CONSTANT VOLUME

#### JV SERIES

*FAST ACTING & CONSTANT VOLUME - JOHNSON CONTROLS* **1**

#### VV SERIES

*FAST ACTING & CONSTANT VOLUME - TRIATEK* **4**

## ROOM PRESSURE CONTROLLER

### THIN MOUNT

#### LB-FMS-2000C

*ROOM PRESSURE CONTROLLER - JOHNSON CONTROLS* **7**

#### FMS-2000C

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# CRITICAL ENVIRONMENTS

## VENTURI VALVES

FAST ACTING &  
CONSTANT VOLUME

## JV SERIES

FAST ACTING & CONSTANT VOLUME - JOHNSON CONTROLS

Top hospitals, universities, and research facilities across the globe trust Johnson Controls® Venturi Valves to protect their occupants from dangerous airborne pathogens and chemicals.

Johnson Controls Venturi Valves maintain the desired airflow regardless of duct pressure. This is accomplished with a cone and spring-loaded piston inside the cone. As the duct pressure increases, the spring compresses and pushes the cone further into the shell. This mechanism keeps the volumetric flow rate constant as air travels through the valve and duct pressure varies.

Johnson Controls Venturi Valves utilize fast-acting electric actuators that provide a rapid response to changing conditions. This rapid response ensures the airflow is maintained which is critical in areas requiring a specific threshold of air flow in order to protect individuals from airborne chemicals or particulates.

## FEATURES

- Medium or low pressure ratings
- Partially closed or full shut-off design
- Valves available in DN200, DN250, DN300, DN350 diameters
- Available with Heresite® coatings
- Kynar® and PVDF coated valve options are available for special requirements
- Available as a constant volume or with a fast acting smart actuator
- Fully pressure independent in low and medium pressure applications
- Factory calibrated airflow
- Field adjustable
- Can be ganged for increased flow
- Maintenance-free





## VENTURI VALVES

JV SERIES FAST ACTING & COSTANT VOLUME - JOHNSON CONTROLS

### ORDERING INFORMATION

JV	x	x	x	x	x	x	x	x		
										<b>PRESSURE</b>
									L	Low pressure 75 to 750 Pa
									M	Medium pressure 150 to 750 Pa
										<b>AIRFLOW</b>
									H	Horizontal
									U	Upflow
									D	Downflow
										<b>TYPE<sup>3</sup></b>
									P	Partially closed
									F	Full shut-off
										<b>ACTUATOR</b>
									CV	Constant volume <sup>2</sup>
									FA	Fast acting
										<b>INSULATION</b>
									N	No insulation
									I	Insulated
										<b>MATERIAL</b>
									A	Aluminium
									H	Heresite
									S	SS316
										<b>SIZE</b>
									08	DN200
									10	DN250
									12	DN300
									14	DN350
										<b>GANGED<sup>1</sup></b>
									N	Not ganged
									F	Flanged
									2	Dual
									3	Triple
									4	Quad
									6	Hexa
									JV	Johnson Controls

**1** Flanged valves cannot be ganged together.

**2** Constant volume valves need to be ordered with the required flow volume. Specify m<sup>3</sup>/h for this purpose.

**3** DN350 valves are not available in full shut-off (Type = F) or SS316 (Material = S) at this time.

**4** Refer to the UVM Installation Instructions for more information.

**Note:** Low pressure (Pressure = L), Full Shutoff (Type = F) valves are NOT available in vertical upflow orientation (Airflow = U)



## VENTURI VALVES

JV SERIES FAST ACTING & COSTANT VOLUME - JOHNSON CONTROLS

### TECHNICAL SPECIFICATIONS

Aluminum shell thickness	14 gauge
Stainless steel shell thickness	18 gauge
Accuracy	±5% or 17 m3/h; whichever is greater
Internal assembly construction materials	Stainless steel shaft and struts with Teflon® PTFE bearings
Operating range	0°C to 65°C (32°F to 150°F) 10% to 90% non-condensing RH
Density	32 kg/m3
Performance	Pressure independent over a 75 to 750 Pa for low pressure and 150 to 750Pa for medium pressure applications. Volume control accurate to ±5% of airflow command signal No additional straight duct runs needed before or after valve Response time to change in command signal: <1 second Response time to change in duct static pressure: <1 second
Size	DN200, DN250, DN300, DN350 diameter valves for a variety of applications

# CRITICAL ENVIRONMENTS

## VENTURI VALVES

FAST ACTING &  
CONSTANT VOLUME

## VV SERIES

FAST ACTING & CONSTANT VOLUME - TRIATEK

Top hospitals, universities, and research facilities across the globe trust Triatek® Venturi Valves to protect their occupants from dangerous airborne pathogens and chemicals.

Triatek Venturi Valves maintain the desired airflow regardless of duct pressure. This is accomplished with a cone and spring-loaded piston inside the cone. As the duct pressure increases, the spring compresses and pushes the cone further into the shell. This mechanism keeps the volumetric flow rate constant as air travels through the valve and duct pressure varies.

Triatek Venturi Valves utilize fast-acting electric actuators that provide a rapid response to changing conditions. This rapid response ensures the airflow is maintained which is critical in areas requiring a specific threshold of air flow in order to protect individuals from airborne chemicals or particulates.

## FEATURES

- Medium or low pressure ratings
- Partially closed or full shut-off design
- Valves available in DN200, DN250, DN300, DN350 diameters
- Available with Heresite® coatings
- Kynar® and PVDF coated valve options are available for special requirements
- Available as a constant volume or with a fast acting smart actuator
- Fully pressure independent in low and medium pressure applications
- Factory calibrated airflow
- Field adjustable
- Can be ganged for increased flow
- Maintenance-free





## VENTURI VALVES

VV SERIES FAST ACTING & COSTANT VOLUME - TRIATEK

### ORDERING INFORMATION

VV	x	x	x	x	x	x	x	x	
									<b>PRESSURE</b>
								L	Low pressure 75 to 750 Pa
								M	Medium pressure 150 to 750 Pa
									<b>AIRFLOW</b>
								H	Horizontal
								U	Upflow
								D	Downflow
									<b>TYPE<sup>3</sup></b>
								P	Partially closed
								F	Full shut-off
									<b>ACTUATOR</b>
								CV	Constant volume <sup>2</sup>
								FA	Fast acting
									<b>INSULATION</b>
								N	No insulation
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									<b>MATERIAL</b>
								A	Aluminium
								H	Heresite
								S	SS316
									<b>SIZE</b>
								08	DN200
								10	DN250
								12	DN300
								14	DN350
									<b>GANGED<sup>1</sup></b>
								N	Not ganged
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## VENTURI VALVES

VV SERIES FAST ACTING & COSTANT VOLUME - TRIATEK

### TECHNICAL SPECIFICATIONS

Aluminum shell thickness	14 gauge
Stainless steel shell thickness	18 gauge
Accuracy	±5% or 17 m <sup>3</sup> /h; whichever is greater
Internal assembly construction materials	Stainless steel shaft and struts with Teflon® PTFE bearings
Operating range	0°C to 65°C (32°F to 150°F) 10% to 90% non-condensing RH
Density	32 kg/m <sup>3</sup>
Performance	Pressure independent over a 75 to 750 Pa for low pressure and 150 to 750Pa for medium pressure applications. Volume control accurate to ±5% of airflow command signal No additional straight duct runs needed before or after valve Response time to change in command signal: <1 second Response time to change in duct static pressure: <1 second
Size	DN200, DN250, DN300, DN350 diameter valves for a variety of applications



# CRITICAL ENVIRONMENTS

## ROOM PRESSURE CONTROLLER

THIN MOUNT

### LB-FMS-2000C

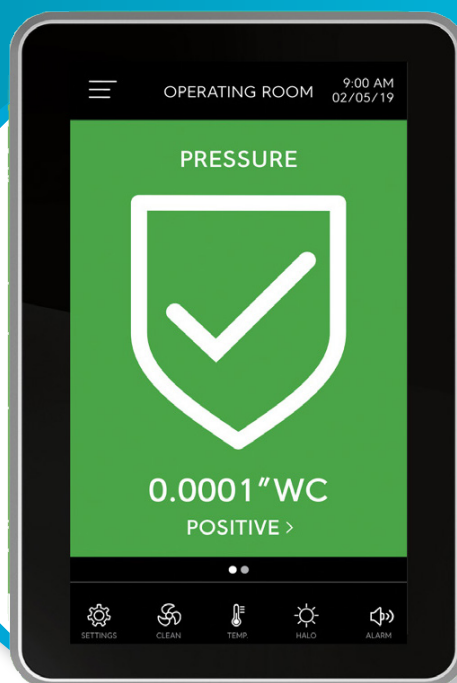
ROOM PRESSURE CONTROLLER - JOHNSON CONTROLS

The LB-FMS-2000C Critical Environment Controller ensures laboratory and healthcare settings are safe for all occupants by continuously verifying room pressure and airflow. It can precisely control and monitor six parameters including differential pressure, temperature, humidity, CO<sub>2</sub>, airflow, and air changes per hour. One controller can control or monitor up to four spaces simultaneously for any of the six parameters.

The LB-FMS-2000C provides maximum room status awareness with color coded visual alarms both on screen and with the 360° Safety Halo™ illuminated edge, which allows staff to easily monitor spaces down long corridors. The audible alarm can be muted with one tap to the screen to help reduce audible alarm fatigue. There are two password protected access levels, one for administrators and one for restricted level users, such as nurses.

## FEATURES

- **Parameters:** Controls and monitors up to six parameters across four rooms
- **Connectivity:** 18 available Input/Output (I/O) resources
- **Protocols:** BACnet® MS/TP and N2 communication
- **Lighting:** 360° Safety Halo illuminated edge helps staff monitor spaces down long corridors
- **Design:** Intuitive user interface allows for fast and easy set up
- **Display:** 127mm high definition 720 pixels by 1280 pixels touchscreen display that works with rubber, nitrile, and latex gloves
- **Non-volatile memory:** Saves users settings in case of a power outage
- **Password protection:** Two access levels to prevent unauthorized access
- **Energy savings:** Unoccupied mode reduces air and temperature changes
- **Maintenance free pressure sensor:** Provides highly accurate, long-term stability
- **Home screen customization:** The user can define the parameters displayed
- **Display override:** Display measured values from the other monitored devices within the building management system (BMS)
- **Global release:** Offers a user interface that is translated into 17 languages





## ROOM PRESSURE CONTROLLER

LB-FMS-2000C ROOM PRESSURE CONTROLLER - JOHNSON CONTROLS

### ORDERING INFORMATION

CODES	DESCRIPTION
LB-FMS2C-BT00	FMS-2000C Critical Environment Controller with BACnet®/N2, Safety Halo, no remote sensor, no power
LB-FMS2C-BT10	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, one remote sensor, no power
LB-FMS2C-BT20	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, two remote sensors, no power
LB-FMS2C-BT30	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, three remote sensors, no power
LB-FMS2C-BT40	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, four remote sensors, no power

### TECHNICAL SPECIFICATIONS


Intended use	Indoor use
Overvoltage category	II
Altitude	Up to 2000 m
Pressure range	± 62 Pa
Alarm range	± 62 Pa
Display range	± 62 Pa
Accuracy	± 0.5% full scale
Air flow sensor type	Digital differential pressure features no offset, zero drift and is hysteresis free
Flow control resolution	± 0,25 Pa
Displayed pressure resolution	± 0,25 Pa
Control capability	Up to 4 independent spaces
I/O Resources	4 universal inputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC) 2 thermistor inputs (NTC Type 2 or 3, 10K at 25°C) 4 digital inputs (active-high or active-low 0 VDC to 5 VDC or 0 VDC to 24 VDC) 4 universal outputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC) 4 relay outputs (NO or NC contacts 1A at 24 VDC)
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10% to 95% relative humidity, non-condensing
Mounting	Thin mount for shallow wall cavities, surface mount for mounting to standard single-gang wall box
Alarm indication	360° Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 50 user passwords with 2 access levels (administrator and restricted)
Communications protocol	BACnet® MS/TP (to BAS) 76.8k, 38.4k, 19.2k, 9600 baud, Metasys N2 open
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, or LPS
Power consumption	30 VA maximum



## ROOM PRESSURE CONTROLLER

LB-FMS-2000C ROOM PRESSURE CONTROLLER - JOHNSON CONTROLS

### TECHNICAL SPECIFICATIONS

Optional input power supply	Universal 120 VAC/240 VAC-to-24 VAC, 30 VA step-down isolation transformer 24 VAC-to-24 VAC, 30 VA isolation transformer
Pollution degree	2
Display resolution	720 pixels x 1280 pixels
Pluggable screw terminal blocks	1.0 mm to 0.6 mm diameter (18 AWG to 22 AWG)
Display dimensions (height x width x depth)	134.62 mm x 88.9 mm x 29.72 mm
Mounted depth	14.73 mm
Controller dimensions (height x width x depth)	166.62 mm x 139.7 mm x 47.75 mm
Power supply enclosure dimensions (height x width x depth)	127 mm x 119.38 mm x 58.42 mm
Compliance	
United States	UL Listed to UL 61010-1; FCC 47CFR Part 15; BTL Listed
Canada	cUL Listed to CAN/CSA C22.2 NO. 61010-1; ICES-003
 Europe	CE (EMC Directive) to EN 61326-1
Australia and New Zealand	RCM Mark (Australian Radiocommunications Act) to EN 61326-1

# CRITICAL ENVIRONMENTS

## ROOM PRESSURE CONTROLLER

THIN MOUNT

### FMS-2000C

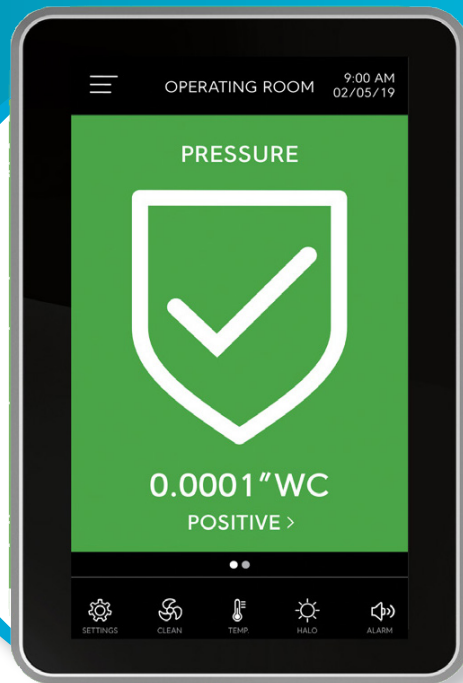
ROOM PRESSURE CONTROLLER - TRIATEK

The FMS-2000C Critical Environment Controller ensures laboratory and healthcare settings are safe for all occupants by continuously verifying room pressure and airflow. It can precisely control and monitor six parameters including differential pressure, temperature, humidity, CO<sub>2</sub>, airflow, and air changes per hour. One controller can control or monitor up to four spaces simultaneously for any of the six parameters.

The FMS-2000C provides maximum room status awareness with color coded visual alarms both on screen and with the 360° Safety Halo™ illuminated edge, which allows staff to easily monitor spaces down long corridors. The audible alarm can be muted with one tap to the screen to help reduce audible alarm fatigue. There are two password protected access levels, one for administrators and one for restricted level users, such as nurses.

## FEATURES

- **Parameters:** Controls and monitors up to six parameters across four rooms
- **Connectivity:** 18 available Input/Output (I/O) resources
- **Protocols:** BACnet® MS/TP and N2 communication
- **Lighting:** 360° Safety Halo illuminated edge helps staff monitor spaces down long corridors
- **Design:** Intuitive user interface allows for fast and easy set up
- **Display:** 127mm high definition 720 pixels by 1280 pixels touchscreen display that works with rubber, nitrile, and latex gloves
- **Non-volatile memory:** Saves users settings in case of a power outage
- **Password protection:** Two access levels to prevent unauthorized access
- **Energy savings:** Unoccupied mode reduces air and temperature changes
- **Maintenance free pressure sensor:** Provides highly accurate, long-term stability
- **Home screen customization:** The user can define the parameters displayed
- **Display override:** Display measured values from the other monitored devices within the building management system (BMS)
- **Global release:** Offers a user interface that is translated into 17 languages





## ROOM PRESSURE CONTROLLER

FMS-2000C ROOM PRESSURE CONTROLLER - TRIATEK

### ORDERING INFORMATION

CODES	DESCRIPTION
FMS2C-BT00	FMS-2000C Critical Environment Controller with BACnet®/N2, Safety Halo, no remote sensor, no power
FMS2C-BT10	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, one remote sensor, no power
FMS2C-BT20	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, two remote sensors, no power
FMS2C-BT30	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, three remote sensors, no power
FMS2C-BT40	FMS-2000C Critical Environment Controller with BACnet®/N2, thin mount, four remote sensors, no power

### TECHNICAL SPECIFICATIONS


Intended use	Indoor use
Overvoltage category	II
Altitude	Up to 2000 m
Pressure range	± 62 Pa
Alarm range	± 62 Pa
Display range	± 62 Pa
Accuracy	± 0.5% full scale
Air flow sensor type	Digital differential pressure features no offset, zero drift and is hysteresis free
Flow control resolution	± 0,25 Pa
Displayed pressure resolution	± 0,25 Pa
Control capability	Up to 4 independent spaces
I/O Resources	4 universal inputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC) 2 thermistor inputs (NTC Type 2 or 3, 10K at 25°C) 4 digital inputs (active-high or active-low 0 VDC to 5 VDC or 0 VDC to 24 VDC) 4 universal outputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC) 4 relay outputs (NO or NC contacts 1A at 24 VDC)
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10% to 95% relative humidity, non-condensing
Mounting	Thin mount for shallow wall cavities, surface mount for mounting to standard single-gang wall box
Alarm indication	360° Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 50 user passwords with 2 access levels (administrator and restricted)
Communications protocol	BACnet® MS/TP (to BAS) 76.8k, 38.4k, 19.2k, 9600 baud, Metasys N2 open
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, or LPS
Power consumption	30 VA maximum



## ROOM PRESSURE CONTROLLER

FMS-2000C ROOM PRESSURE CONTROLLER - TRIATEK

### TECHNICAL SPECIFICATIONS

Optional input power supply	Universal 120 VAC/240 VAC-to-24 VAC, 30 VA step-down isolation transformer 24 VAC-to-24 VAC, 30 VA isolation transformer
Pollution degree	2
Display resolution	720 pixels x 1280 pixels
Pluggable screw terminal blocks	1.0 mm to 0.6 mm diameter (18 AWG to 22 AWG)
Display dimensions (height x width x depth)	134.62 mm x 88.9 mm x 29.72 mm
Mounted depth	14.73 mm
Controller dimensions (height x width x depth)	166.62 mm x 139.7 mm x 47.75 mm
Power supply enclosure dimensions (height x width x depth)	127 mm x 119.38 mm x 58.42 mm
Compliance	
United States	UL Listed to UL 61010-1; FCC 47CFR Part 15; BTL Listed
Canada	cUL Listed to CAN/CSA C22.2 NO. 61010-1; ICES-003
 Europe	CE (EMC Directive) to EN 61326-1
Australia and New Zealand	RCM Mark (Australian Radiocommunications Act) to EN 61326-1

# CRITICAL ENVIRONMENTS

## ROOM PRESSURE MONITOR

THIN MOUNT

### LB-FMS-2000M

ROOM PRESSURE MONITOR - JOHNSON CONTROLS

The LB-FMS-2000M Critical Environment Monitor is a BACnet® MS/TP differential pressure monitoring solution that displays and measures differential pressure. The monitor also displays temperature, humidity, air flow, air changes and CO<sub>2</sub> from the building management system (BMS) for up to four spaces.

The LB-FMS-2000M provides maximum room status awareness with color-coded visual alarms both on screen and with the 360° Safety Halo™ illuminated edge, which allows staff to easily monitor spaces down long corridors. The audible alarm can be muted with one tap to the screen to help reduce audible alarm fatigue. There are two password-protected access levels, one for administrators and one for restricted level users, such as nurses.



## FEATURES

- **Parameters:** Monitors pressure, temperature, humidity, air flow, air changes and CO<sub>2</sub> across four rooms
- **Protocols:** BACnet® MS/TP communication
- **Lighting:** 360° Safety Halo illuminated edge helps staff monitor spaces down long corridors
- **Design:** Intuitive user interface for fast and easy setup
- **Display:** 127mm diagonal, high definition, 720 pixels by 1280 pixels touch screen display that works with rubber, nitrile and latex gloves
- **Non-volatile memory:** Saves user settings in case of a power outage
- **Password protection:** Two access levels to prevent unauthorized access
- **Global release:** Offers a user interface that is translated to 17 languages
- **Alarms:** Visual and audible alarm for pressure

## ORDERING INFORMATION

CODES	DESCRIPTION
LB-FMS2M-BT10	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, one remote sensor, no power
LB-FMS2M-BT20	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, two remote sensors, no power
LB-FMS2M-BT30	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, three remote sensors, no power
LB-FMS2M-BT40	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, four remote sensors, no power



## ROOM PRESSURE MONITOR

LB-FMS-2000M ROOM PRESSURE MONITOR - JOHNSON CONTROLS

### TECHNICAL SPECIFICATIONS

Intended use	Indoor use
Overvoltage category	II
Altitude	Up to 2000 m
Pressure range	± 62 Pa
Alarm range	± 62 Pa
Display range	± 62 Pa
Accuracy	± 0.5% full scale
Air flow sensor type	Digital differential pressure sensor features no offset, zero drift and is hysteresis free
Monitoring capability	Up to 4 independent spaces
I/O Resources	One digital input for a door switch for each remote pressure sensor. One remote monitoring output for each remote pressure sensor.
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10% to 95% relative humidity, non-condensing
Mounting	Thin mount for shallow wall cavities, surface mount for mounting to standard single-gang wall box
Alarm indication	Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 50 user passwords with 2 access levels (administrator and restricted)
Communications protocol	BACnet MS/TP (to BAS) 76.8k, 38.4k, 19.2k, 9600 baud
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, or LPS isolated power supply
Power consumption	30 VA maximum
Optional input power supply	Universal 120 VAC/240 VAC-to-24 VAC, 30 VA step-down isolation transformer 24 VAC-to-24 VAC, 30 VA isolation transformer
Pollution degree	2
Displayed resolution	720 pixels x 1280 pixels
Pluggable screw terminal blocks	1 mm to 0.6 mm diameter
Display dimensions (height x width x depth)	134.62 mm x 88.9 mm x 29.72 mm
Mounted depth	14.73 mm
Power supply enclosure dimensions (height x width x depth)	127 mm x 119.38 mm x 58.42 mm
Compliance	
	United States UL Listed to UL 61010-1; FCC 47CFR Part 15; BTL Listed
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# CRITICAL ENVIRONMENTS

## ROOM PRESSURE MONITOR

THIN MOUNT

### FMS-2000M

ROOM PRESSURE MONITOR - TRIATEK

The FMS-2000M Critical Environment Monitor is a BACnet® MS/TP differential pressure monitoring solution that displays and measures differential pressure.

The monitor also displays temperature, humidity, air flow, air changes and CO<sub>2</sub> from the building management system (BMS) for up to four spaces.

The FMS-2000M provides maximum room status awareness with color-coded visual alarms both on screen and with the 360° Safety Halo™ illuminated edge, which allows staff to easily monitor spaces down long corridors. The audible alarm can be muted with one tap to the screen to help reduce audible alarm fatigue. There are two password-protected access levels, one for administrators and one for restricted level users, such as nurses.



## FEATURES

- **Parameters:** Monitors pressure, temperature, humidity, air flow, air changes and CO<sub>2</sub> across four rooms
- **Protocols:** BACnet MS/TP communication
- **Lighting:** 360° Safety Halo illuminated edge helps staff monitor spaces down long corridors
- **Design:** Intuitive user interface for fast and easy setup
- **Display:** 127mm diagonal, high definition, 720 pixels by 1280 pixels touch screen display that works with rubber, nitrile and latex gloves
- **Non-volatile memory:** Saves user settings in case of a power outage
- **Password protection:** Two access levels to prevent unauthorized access
- **Global release:** Offers a user interface that is translated to 17 languages
- **Alarms:** Visual and audible alarm for pressure

## ORDERING INFORMATION


CODES	DESCRIPTION
LB-FMS2M-BT10	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, one remote sensor, no power
LB-FMS2M-BT20	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, two remote sensors, no power
LB-FMS2M-BT30	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, three remote sensors, no power
LB-FMS2M-BT40	FMS-2000M Critical Environment Monitor with BACnet®/N2, thin mount, four remote sensors, no power



## ROOM PRESSURE MONITOR

FMS-2000M ROOM PRESSURE MONITOR - TRIATEK

### TECHNICAL SPECIFICATIONS

Intended use	Indoor use
Overvoltage category	II
Altitude	Up to 2000 m
Pressure range	± 62 Pa
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Monitoring capability	Up to 4 independent spaces
I/O Resources	One digital input for a door switch for each remote pressure sensor. One remote monitoring output for each remote pressure sensor.
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10% to 95% relative humidity, non-condensing
Mounting	Thin mount for shallow wall cavities, surface mount for mounting to standard single-gang wall box
Alarm indication	Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 50 user passwords with 2 access levels (administrator and restricted)
Communications protocol	BACnet MS/TP (to BAS) 76.8k, 38.4k, 19.2k, 9600 baud
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, or LPS isolated power supply
Power consumption	30 VA maximum
Optional input power supply	Universal 120 VAC/240 VAC-to-24 VAC, 30 VA step-down isolation transformer 24 VAC-to-24 VAC, 30 VA isolation transformer
Pollution degree	2
Displayed resolution	720 pixels x 1280 pixels
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Power supply enclosure dimensions (height x width x depth)	127 mm x 119.38 mm x 58.42 mm
Compliance	
United States	UL Listed to UL 61010-1; FCC 47CFR Part 15; BTL Listed
Canada	cUL Listed to CAN/CSA C22.2 NO. 61010-1; ICES-003
 Europe	CE (EMC Directive) to EN 61326-1
Australia and New Zealand	RCM Mark (Australian Radiocommunications Act) to EN 61326-1

# CRITICAL ENVIRONMENTS

## FUME HOOD CONTROLLERS

### SURFACE MOUNT

## LB-HMS1655

FUME HOOD CONTROLLERS - JOHNSON CONTROL



Johnson Controls® LB-HMS1655 and the LB-HMS1655L Fume Hood Controllers control and monitor the airflow and exhaust of fume hoods to protect scientists from toxic vapors and dusts during experiments. The Fume Hood Controllers use a closed-loop system to regulate air entering and exiting the fume hood. It communicates with a sidewall sensor and sash position sensor to monitor the airflow with a higher degree of reliability.

The Fume Hood Controllers incorporate a user-friendly touchscreen with intuitive menus. The color-coded 360° Safety Halo™ allows users to easily monitor any fume hood from across the lab. The lighting instantly updates as conditions change, and immediately alerts users of unsafe conditions with both visual and audible alarms. The home screen simultaneously displays the current fume hood status, sash height, face velocity, air flow rate, time, and date.

The LB-HMS1655 and the LB-HMS1655L Fume Hood Controller reports on the sash height as well as any obstructions in front of an open sash, unlike other systems that only report on sash height alone.

## FEATURES LB-HMS1655

- BACnet® MS/TP and Metasys N2 compatible
- BTL Listed
- Includes 360° Safety Halo
- User-friendly touchscreen with intuitive menus
- Visual and audible alarms
- Easy to install and customize using the integrated HMS Setup Wizard
- Password protection with four access levels
- Multiple alarms for sidewall and sash position sensors
- Zone Presence Sensor support
- Non-volatile memory
- Multi-trigger emergency purge option
- Available in plastic surface mount



## FUME HOOD CONTROLLERS

### LB-HMS1655 FUME HOOD CONTROLLERS - JOHNSON CONTROLS

## FEATURES LB-HMS1655L

- LonWorks® compatible for easy BAS integration
- 360° Safety Halo
- User-friendly touchscreen with intuitive menus
- Visual and audible alarms
- Easy to install and customize
- Password protection with four access levels
- Multiple alarms for sidewall and sash position sensors
- Zone Presence Sensor support
- Non-volatile memory
- Multi-trigger emergency purge option
- Available in plastic surface mount

## ORDERING INFORMATION

CODES	DESCRIPTION
LB-HMS1655	Fume Hood Controller
LB-HMS1655-S	Fume Hood Controller
LB-HMS1655L	Fume Hood Controller
LB-HMS1655L-S	Fume Hood Controller

## TECHNICAL SPECIFICATIONS

Face velocity range	0 m/s - 1m/s
Alarm range	0 m/s - 1m/s
Display range	0 m/s - 1m/s
Accuracy	± 0,005 m/s at 0,3 m/s - 0,7 m/s, ± 0,02 m/s outside this range
Sidewall sensor	Digital ultra-low differential pressure
Sash position sensor	Vertical height up to 1250mm
Control resolution	± 0,005 m/s
Control capability	Sash position with sidewall sensing feedback for closed-loop control
Analog inputs	
	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)
<i>LB-HMS1655</i>	2 thermistor inputs (NTC Type 2 or 3, 10 kohm at 25°C)
<i>LB-HMS1655L</i>	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)



## FUME HOOD CONTROLLERS

### LB-HMS1655 FUME HOOD CONTROLLERS - JOHNSON CONTROLS

## TECHNICAL SPECIFICATIONS

Analog outputs	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)
Digital inputs	
<i>LB-HMS1655</i>	4 active-high or active-low (0 VDC - 5 VDC or 0 VDC - 24 VDC or 0 VAC - 24 VAC)
<i>LB-HMS1655L</i>	4 active-high or active-low (0 VDC - 5 VDC or 0 VDC - 24 VDC)
Relay outputs	3 sets of N.O. contacts (1 A at 24 VDC)
Communication protocols	
<i>LB-HMS1655</i>	BACnet MS/TP, Metasys N2 open
<i>LB-HMS1655L</i>	LonWorks® FTT-10A
Operating temperature	0°C to 50°C operating
Operating humidity	10% - 95% relative humidity, non-condensing
Exterior dimensions	Plastic surface mount housing: 76mm x 127mm x 29mm
Mounting styles	Surface (no cutout required)
Power requirements	24 VAC ± 10%, 30 VA
Password protection	Up to 10 user passwords with 4 access levels
Display	
<i>LB-HMS1655</i>	18 bit (262 K) color thin-film-transistor (TFT), 3.2 in. diagonal, resistive touchscreen, 2500 cd/m2
<i>LB-HMS1655L</i>	18 bit (262 K) color TFT, 3.2 in. diagonal, resistive touchscreen, 2500 cd/m2
Alarm indication	360° Safety Halo visual indication Industry standard status colors with action icons
Alarm silence	Touchscreen, auto-reset
Warranty	Three year parts warranty from date of manufacture
Compliance	
<i>LB-HMS1655</i>	cSGSus Listed for US and Canada in contract number 800130. FCC Part 15, ICES-003, BTL Listing
<i>LB-HMS1655L</i>	cSGSus Listed for US and Canada in contract number 800130. FCC Part 15, ICES-003

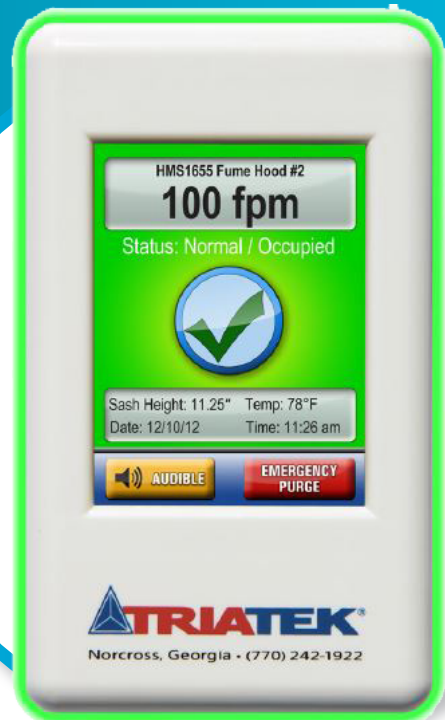
# CRITICAL ENVIRONMENTS

## FUME HOOD CONTROLLERS

### SURFACE MOUNT

## HMS1655

### FUME HOOD CONTROLLERS - TRIATEK



Triatek® HMS1655 and the HMS1655L Fume Hood Controllers control and monitor the airflow and exhaust of fume hoods to protect scientists from toxic vapors and dusts during experiments.

The Fume Hood Controllers use a closed-loop system to regulate air entering and exiting the fume hood. It communicates with a sidewall sensor and sash position sensor to monitor the airflow with a higher degree of reliability.

The Fume Hood Controllers incorporate a user-friendly touchscreen with intuitive menus. The color-coded 360° Safety Halo™ allows users to easily monitor any fume hood from across the lab. The lighting instantly updates as conditions change, and immediately alerts users of unsafe conditions with both visual and audible alarms. The home screen simultaneously displays the current fume hood status, sash height, face velocity, air flow rate, time, and date.

The HMS1655 and the HMS1655L Fume Hood Controller reports on the sash height as well as any obstructions in front of an open sash, unlike other systems that only report on sash height alone.

## FEATURES LB-HMS1655

- BACnet® MS/TP and Metasys N2 compatible
- BTL Listed
- Includes 360° Safety Halo
- User-friendly touchscreen with intuitive menus
- Visual and audible alarms
- Easy to install and customize using the integrated HMS Setup Wizard
- Password protection with four access levels
- Multiple alarms for sidewall and sash position sensors
- Zone Presence Sensor support
- Non-volatile memory
- Multi-trigger emergency purge option
- Available in plastic surface mount



## FUME HOOD CONTROLLERS

### HMS1655 FUME HOOD CONTROLLERS - TRIATEK

## FEATURES LB-HMS1655L

- LonWorks® compatible for easy BAS integration
- 360° Safety Halo
- User-friendly touchscreen with intuitive menus
- Visual and audible alarms
- Easy to install and customize
- Password protection with four access levels
- Multiple alarms for sidewall and sash position sensors
- Zone Presence Sensor support
- Non-volatile memory
- Multi-trigger emergency purge option
- Available in plastic surface mount

## ORDERING INFORMATION

CODES	DESCRIPTION
HMS1655	Fume Hood Controller
HMS1655-S	Fume Hood Controller
HMS1655L	Fume Hood Controller
HMS1655L-S	Fume Hood Controller

## TECHNICAL SPECIFICATIONS

Face velocity range	0 m/s - 1m/s
Alarm range	0 m/s - 1m/s
Display range	0 m/s - 1m/s
Accuracy	± 0,005 m/s at 0,3 m/s - 0,7 m/s, ± 0,02 m/s outside this range
Sidewall sensor	Digital ultra-low differential pressure
Sash position sensor	Vertical height up to 1250mm
Control resolution	± 0,005 m/s
Control capability	Sash position with sidewall sensing feedback for closed-loop control
Analog inputs	
	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)
<i>HMS1655</i>	2 thermistor inputs (NTC Type 2 or 3, 10 kohm at 25°C)
<i>HMS1655L</i>	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)



## FUME HOOD CONTROLLERS

### HMS1655 FUME HOOD CONTROLLERS - TRIATEK

## TECHNICAL SPECIFICATIONS

Analog outputs	4 universal (4 mA - 20 mA, 0 VDC - 5 VDC, 0 VDC - 10 VDC)
Digital inputs	
<i>HMS1655</i>	4 active-high or active-low (0 VDC - 5 VDC or 0 VDC - 24 VDC or 0 VAC - 24 VAC)
<i>HMS1655L</i>	4 active-high or active-low (0 VDC - 5 VDC or 0 VDC - 24 VDC)
Relay outputs	3 sets of N.O. contacts (1 A at 24 VDC)
Communication protocols	
<i>HMS1655</i>	BACnet® MS/TP, Metasys N2 open
<i>HMS1655L</i>	LonWorks® FTT-10A
Operating temperature	0°C to 50°C operating
Operating humidity	10% - 95% relative humidity, non-condensing
Exterior dimensions	Plastic surface mount housing: 76mm x 127mm x 29mm
Mounting styles	Surface (no cutout required)
Power requirements	24 VAC ± 10%, 30 VA
Password protection	Up to 10 user passwords with 4 access levels
Display	
<i>HMS1655</i>	18 bit (262 K) color thin-film-transistor (TFT), 3.2 in. diagonal, resistive touchscreen, 2500 cd/m <sup>2</sup>
<i>HMS1655L</i>	18 bit (262 K) color TFT, 3.2 in. diagonal, resistive touchscreen, 2500 cd/m <sup>2</sup>
Alarm indication	360° Safety Halo visual indication Industry standard status colors with action icons
Alarm silence	Touchscreen, auto-reset
Warranty	Three year parts warranty from date of manufacture
Compliance	
<i>HMS1655</i>	cSGSus Listed for US and Canada in contract number 800130. FCC Part 15, ICES-003, BTL Listing
<i>HMS1655L</i>	cSGSus Listed for US and Canada in contract number 800130. FCC Part 15, ICES-003



# CRITICAL ENVIRONMENTS

## CENTRAL MONITORING STATION

### SURFACE & THIN MOUNT

# LB-CMS1655

## CENTRAL MONITORING STATION - JOHNSON CONTROLS

The Johnson Controls® LB-CMS1655 Central Monitoring Station provides at-a-glance monitoring for up to four rooms or four fume hoods, or a combination of rooms and hoods. The LB-CMS1655 is commonly used at nurses' stations, or in large laboratories where monitoring multiple spaces is required.

The LB-CMS1655 creates a centralized location for easily accessing critical information like room pressure, isolation mode, exhaust air flow, face velocity, and alarm status of multiple spaces and/or fume hoods. By displaying vital information on a single screen, users are able to make informed decisions more quickly, ensuring their critical spaces are kept safe.

The LB-CMS1655 is protocol-independent but can be connected into any building automation system.

If any monitored parameter is outside its prescribed range, the LB-CMS1655 activates an audible and visual alarm, alerting staff to the alarm condition. It features the patented Safety Halo™ 180° edge lighting, which enables staff to monitor spaces down long corridors with a simple glance. The green, yellow, and red visual alarms also aid in reducing audible alarm fatigue, as the audible alarm can be easily silenced with the tap of a finger.

## FEATURES

- Audible alarm and patented Safety Halo visual alarm
- Intuitive menus; easy to set up
- Critical environment-specific design; complies with ANSI/ASHRAE/ASHE standards, US Centers for Disease Control and Prevention (CDC) guidelines, and United States Pharmacopeia (USP) requirements
- Easy-to-read full color LCD touchscreen
- Monitor up to four fume hood controllers or room pressure controllers; no additional power is required
- Stainless steel thin flush mount or plastic surface mount options available
- Password protected with four access levels to prevent unauthorized access
- Protocol-independent, can connect to any BAS





## FUME HOOD CONTROLLERS

LB-CMS1655 CENTRAL MONITORING STATION - JOHNSON CONTROLS

## ORDERING INFORMATION

CODES	DESCRIPTION
LB-CMS1655-T	Central Monitoring Station - Thin Mount
LB-CMS1655-S	Central Monitoring Station - Surface Mount

## TECHNICAL SPECIFICATIONS

Monitoring capacity	Up to 4 LB-FMS-2000 or 4 LB-HMS1655S; or a combination of up to 4 LB-FMS-2000 and LB-HMS1655S
Interface cable	Belden 132A, 18 AWG minimum
Operating temperature	0°C to 50°C
Operating humidity	10% - 95% relative humidity, non-condensing
Mounting options	Stainless steel thin flush mount, plastic surface mount
Alarm indication	Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 10 user passwords with 4 access levels
Communications protocol	Protocol-independent
Dimensions	Stainless steel flush mount thin housing: 142mm x 215mm x 19mm Plastic surface mount housing: 76mm x 127mm x 29mm

# CRITICAL ENVIRONMENTS

## CENTRAL MONITORING STATION

### SURFACE & THIN MOUNT

# CMS1655

## CENTRAL MONITORING STATION - TRIATEK

The Triatek® CMS1655 Central Monitoring Station provides at-a-glance monitoring for up to four rooms or four fume hoods, or a combination of rooms and hoods. The CMS1655 is commonly used at nurses' stations, or in large laboratories where monitoring multiple spaces is required.

The CMS1655 creates a centralized location for easily accessing critical information like room pressure, isolation mode, exhaust air flow, face velocity, and alarm status of multiple spaces and/or fume hoods. By displaying vital information on a single screen, users are able to make informed decisions more quickly, ensuring their critical spaces are kept safe.

The CMS1655 is protocol-independent but can be connected into any building automation system.

If any monitored parameter is outside its prescribed range, the CMS1655 activates an audible and visual alarm, alerting staff to the alarm condition. It features the patented Safety Halo™ 180° edge lighting, which enables staff to monitor spaces down long corridors with a simple glance. The green, yellow, and red visual alarms also aid in reducing audible alarm fatigue, as the audible alarm can be easily silenced with the tap of a finger.

## FEATURES

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- Easy-to-read full color LCD touchscreen
- Monitor up to four fume hood controllers or room pressure controllers; no additional power is required
- Stainless steel thin flush mount or plastic surface mount options available
- Password protected with four access levels to prevent unauthorized access
- Protocol-independent, can connect to any BAS





## FUME HOOD CONTROLLERS

CMS1655 CENTRAL MONITORING STATION - TRIATEK

## ORDERING INFORMATION

CODES	DESCRIPTION
CMS1655-T	Central Monitoring Station - Thin Mount
CMS1655-S	Central Monitoring Station - Surface Mount

## TECHNICAL SPECIFICATIONS

Monitoring capacity	Up to 4 FMS-2000 or 4 HMS1655S; or a combination of up to 4 FMS-2000 and HMS1655S
Interface cable	Belden 132A, 18 AWG minimum
Operating temperature	0°C to 50°C
Operating humidity	10% - 95% relative humidity, non-condensing
Mounting options	Stainless steel thin flush mount, plastic surface mount
Alarm indication	Safety Halo color coded visual, audible alarm
Alarm silence	Touchscreen, auto-reset
Password protection	Up to 10 user passwords with 4 access levels
Communications protocol	Protocol-independent
Dimensions	Stainless steel flush mount thin housing: 142mm x 215mm x 19mm Plastic surface mount housing: 76mm x 127mm x 29mm