

Room Pressure Control

D-1

**Stainless Steel
Cover Plate for
Flow Tube**



**Optional Remote
Room Pressure Sensor
with Stainless Steel
Cover Plate**



**Display & Alarm Unit
w/Internal Sensor**



FMS-1630 Single Room Isolation Monitor

Features & Benefits

- UL Listed - UL Canadian
- Monitor and/or Control
- Easy to Use by Staff
- Precision Measurements
- Adjustable Alarm Setpoints
- Easy to Read Display
- Thru-the-Wall Monitoring
- Optional Thru-the-Ceiling Sensor
- Complies w/CDC Guidelines
- Audible and Visual Alarm
- Spare Input for °F, °C, % RH, etc.
- Isolated RS-485 communication port with protocol (contact TRIATEK for details)

Applications

- Hospitals
- Laboratories
- Transplant Facilities
- Clean Rooms
- Research Areas
- Pharmaceutical Rooms
- Correctional Facilities

Related Products

- FMS-1610 Monitors Up To 4 Isolation Rooms

Overview

Isolation Room Pressure can be monitored or controlled with TRIATEK's FMS-1630 Series Isolation Monitor. This unit is a precision measuring system for ultra low pressure or flow. The FMS-1630 is ideal for other isolation applications such as laboratory and clean rooms. It has the required sensitivity to monitor or control room pressure to user specified levels.

TRIATEK's Isolation Monitor constantly monitors room pressurization using through-the-wall sensing to a reference area or hallway. Hospital patient rooms can be held to safe negative pressure for contagious isolation meeting the Center for Disease Control and Prevention Guidelines for TB Isolation, or pressurized for protective isolation.

Three Room Statuses: No Isolation, Negative Isolation, or Positive Isolation can be selected at the unit. The user simply turns

the key switch to program mode and presses the touchpad for the desired type of isolation, then turns the key back to normal mode.

Room pressurization conditions can be quickly observed by scanning the easy-to-read LCD digital display and the LED room status indicators. The digital display shows the room pressure reading to 0.0001"WC or in Metric Units. It also includes a user programmable descriptor of up to eight characters. Room status LED indicators reflect three conditions for the room — NORMAL, CAUTION, and ALARM. Our versatile display can also reflect flow in feet per minute (FPM) or standard cubic centimeters per minute (scm) where flow is desired.

Alarm status can be annunciated locally with both audible alarm and visual display. In addition, two alarm relay contacts are provided for transmission of alarm conditions to a remote location or console. The

relay output and room status indicators have user adjustable setpoints.

The FMS-1630 provides a linear proportional current or voltage output signal for remote control or monitoring applications. If desired, the unit can be set for floating point control by simply programming in PID constants. Parameters are stored in non-volatile memory to avoid any loss of information during power outages.

TRIATEK's FMS-1630 Isolation Monitors are available with either one internal sensor or one external remote sensor. The two wire remote sensor can be located adjacent to the FMS-1630 or up to 4000 feet away. The remote sensor is factory mounted in a single gang junction box with stainless steel louvered cover for convenient flush installation in the wall.

An additional input can be monitored on the LCD display such as humidity, temperature or other room variable, if desired.



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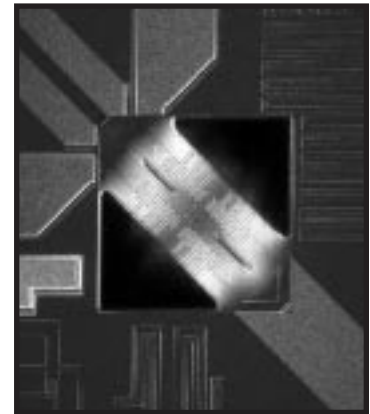
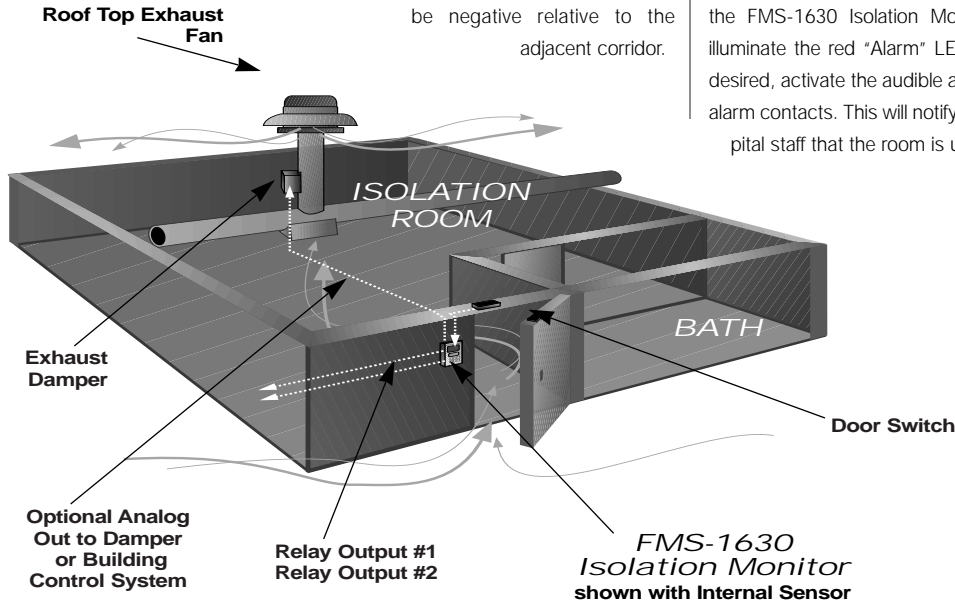
Due to continuous product improvement, TRIATEK reserves the right to change product specifications without notice.

FMS 1630 Isolation Monitor Application

The negative pressure in the isolation room shown here is created by the exhaust air flow being greater than the supply air flow. This causes the pressure in the isolation room to be negative relative to the adjacent corridor.

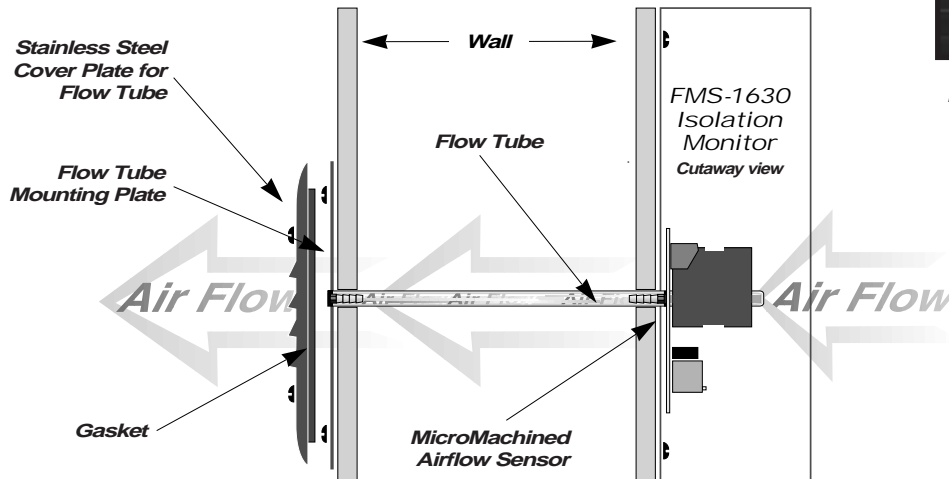
The FMS-1630 Isolation Monitor continuously monitors the room pressure to assure it is kept at safe levels. If the negative pressure in the isolation room reaches a user defined minimum the FMS-1630 Isolation Monitor will illuminate the red "Alarm" LED, and if desired, activate the audible alarm and alarm contacts. This will notify the hospital staff that the room is unsafe.

A programmable delay is provided to eliminate alarms caused by sudden pressure changes. An optional door switch input can be provided to lengthen the alarm delay time while a door is open. Hospital personnel can easily see the isolation room pressure and can quickly determine if the room is safe or unsafe by reading the digital display.



Patented MicroMachined Airflow Sensor
Magnified View

How it Works



The heart of TRIATEK's FMS-1630 Series Isolation Monitor is a patented MicroMachined Airflow Sensor. This sensor operates on the theory of heat transfer due to mass air flow directed across the surface of the sensing element. This mass air flow is converted by the FMS-1630 micro-processor into a pressure measurement. The unique design of the sensor provides the capability to sense the direction of air flow for positive, nega-

tive (as shown above) or bi-directional pressure measurement.

The sensor design is based on the most recent advances in silicon chip microstructure technology. It consists of a thin-film, thermally isolated bridge structure containing heater and temperature sensing elements. The bridge structure provides a sensitive and fast response to the flow of air over the silicon chip.

A specially designed sensor hous-

ing precisely directs and controls the airflow across the sensing microstructure. The sensor uses temperature-resistive films laminated within a thick film of dielectric material. These are suspended in the form of two bridges over an etched cavity in the silicon, (see magnified view above right). The chip is located in a precisely dimensioned airflow channel to provide a reproducible flow response. Highly effective thermal isolation for the heater

and sensing resistors is attained by the etch cavity air space beneath the flow sensor bridges. The small size and thermal isolation of the sensor are responsible for the remarkably fast response and high sensitivity to flows.

The FMS-1630 is available with the sensor internally mounted in the Isolation Monitor unit as shown above or externally in a single gang junction box for remote sensing applications (not shown).

Easy to Read Liquid Crystal Display

1st line can be programmed for display of values such as pascals, 4-20 ADC, 0-10 VDC, etc.

2nd line displays isolation room selection of "NO ISO", "POS ISO" or "NEG ISO" along with user defined eight character descriptor. The unit will flash "ALARM" if room is in alarm condition.

3rd line displays the actual room pressure. A "-" sign will be in front of the pressure reading to indicate that the room is negative.

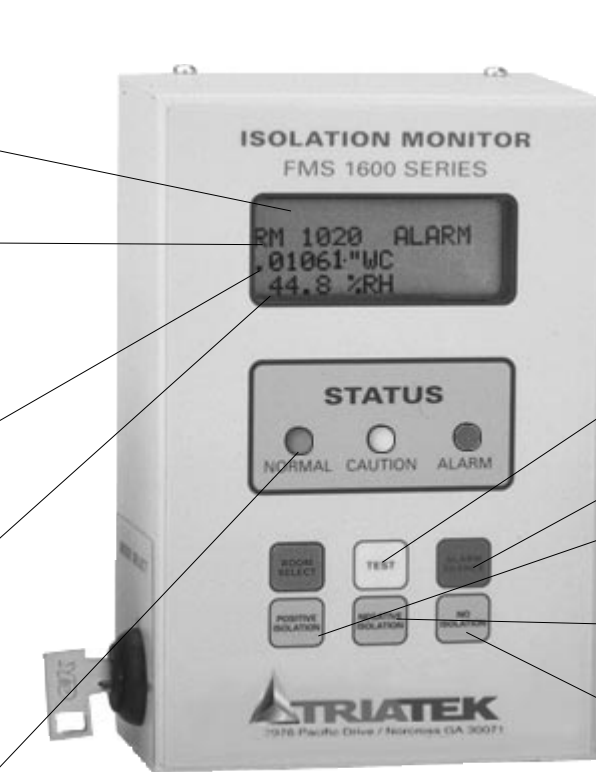
4th line displays user defined optional transmitter value such as temperature or relative humidity.

Room Status Indicators

Normal LED (green) illuminates when isolation room is safe.

Caution LED (yellow) illuminates when isolation room is approaching unsafe condition.

Alarm LED (red) flashes when isolation room is unsafe.



Audible Alarm

Audible alarm notifies hospital staff that isolation room is unsafe according to hospital criteria. User can select a time delay before audible alarm will be

activated. Audible alarm feature can be disabled. Alarm Silence touchpad provides user with capability to silence audible alarm.

Alarm Relay Visual Display

Digital display informs user if relay outputs are active. User can disable feature if desired.

Easy User Interface

Test Touchpad provides diagnostic test of audible alarm, LEDs and digital display.

Alarm Silence Touchpad is pressed to silence audible alarm.

Positive Isolation Touchpad provides capability to easily select positive isolation parameters for room. Key switch must be set to "ON".

Negative Isolation Touchpad provides capability to easily select negative isolation parameters for room. Key switch must be set to "ON".

No Isolation Touchpad provides capability to easily select no isolation parameters for room. This feature is used when room is vacant. Key switch must be set to "ON".

More Features

Programmable Display This feature provides the capability to select user defined characters to display engineering units, area, room, etc., enabling staff to accurately determine the condition of each room. This display is also used as the main menu for menu driven program changes.

Spare Analog Input This feature provides the capability to monitor and display a second user defined variable or show a second representation of the pressure in other engineering units such as pascals, 0-10VDC, 4-20 mADC, etc. Audible and visual alarms and the relay outputs can be activated by this input also.

Proportional or P.I.D. Output This feature provides a 4-20 mADC, 0-5 or 0-10 VDC output. The analog output can be either proportional for trans-

mission to a data logger or building automation system, or a P.I.D. output for control of the isolation room exhaust damper or variable speed exhaust fan.

Relay Outputs This feature provides two SPDT relays which can have programmable make and break set-points. One of the relays can be used to signal loss of power at the FMS-1630, if desired.

Relay Status Display This feature provides a visual display to identify which relays are activated (in alarm condition). This feature can be disabled if desired.

Relay Delay This feature provides the capability to delay the relay contact closure for a programmable amount of time. This means the alarm must be present longer than the delay time in order for the relay to be activated.

Audible Alarm Delay This feature provides the capability to delay the audible alarm for a programmable amount of time. This means the alarm must be present longer than the delay time in order for the audible alarm to be activated.

Door Switch Input This feature provides the capability to monitor a door switch to determine if the isolation room door is open or closed. If the door is open an alarm delay time is activated giving hospital staff additional time for moving of patient or other activities that require the door to be open while a patient is in the isolation room.

Key Switch This feature provides the capability for the key holder to select either PROGRAM or NORMAL modes. In program mode the user can easily select the type of isolation by

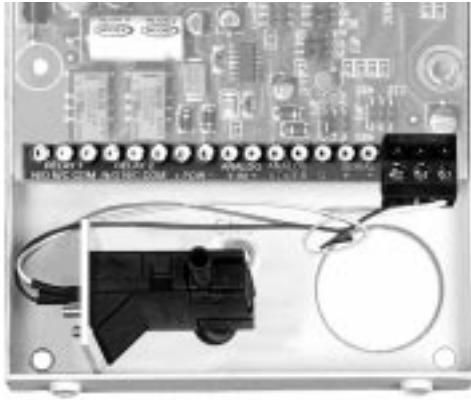
pressing the desired touchpad (POSITIVE ISOLATION, NEGATIVE ISOLATION or NO ISOLATION). These three selections are ideal for isolation rooms that are vacant from time to time or where requirements change from one type of isolation to another

Diagnostic Test This feature provides the capability to test the units LCD, audible alarm and Status LEDs.

Non Volatile Memory All system parameters are stored in non volatile memory to prevent any loss of data from power outages.

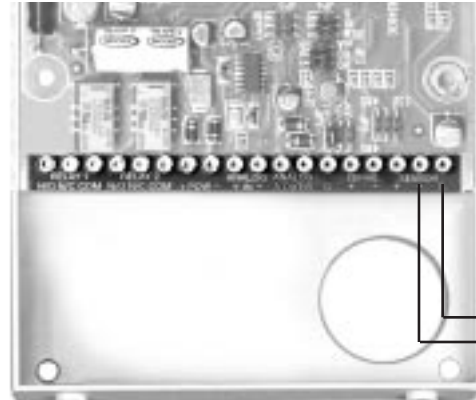
Password Protection This feature provides the capability to select a password to prevent unauthorized users from access to the units parameters.

Typical Wiring



Removable Connector for easy installation of field wiring.

FMS-1630 Series
with Standard Internal Sensor



To External Remote Sensor

FMS-1630 Series
with Optional External Remote Sensor

Specifications

Electrical

Optional External Remote Sensor Distance Up to 4000 feet
 Optional External Remote Sensor Wiring .18-22 AWG, twisted shielded copper pair
 Power Supply 24 VAC/DC ±10%, 10 VA
 (Step-Down Isolation Class 2 Transformer provided, 120 to 24 VAC, 60 Hz.)
 System Accuracy
 Pressure Range Accuracy @ 72°F ± 5°F
 0 - .0100 ± .0001" WC
 0 - .0500 ± .0005" WC
 0 - .1000 ± .001" WC
 0 - .2000 ± .002" WC
 NIST Traceable / Individual certification available as option
 Pressure/Flow Input Up to 0.2" W.C. See pressure range below
 Spare Analog Input Jumper Selectable 4-20 mADC, 0-5 or 0-10 VDC.
 Door Switch Input Dry Contact
 Relay Rating (2 each) 2.0 A @ 24 VDC/VAC
 Analog Output Linear Proportional to pressure or PID Floating Point Control
 DC current or voltage (see Analog Output below)
 Serial Communications RS-485

Mechanical

LCD Display 4-Line x 16 characters per line
 LCD Character Height 0.19 inches
 Dimensions
 FMS-1630 Housing 4.0"W x 6.0"H x 2.0"D
 Optional External Remote Sensor Housing 2.0"W x 3.0"H x 2.7"D
 Stainless Steel Cover Plate for Flow Tube 2.7"W x 4.5"H x 0.2"D
 Stainless Steel Cover Plate for Remote Sensor 2.7"W x 4.5"H x 0.2"D
 Shipping Weight
 FMS-1630 w / Flow Tube Cover Plate Approximately 3.5 lb
 FMS-1630 w / Optional External Remote Sensor Approximately 4.0 lb
 Mounting
 FMS-1630 Surface
 Flow Tube Cover Plate Flush
 Optional External Remote Room Pressure Sensor Flush

Environmental

Operating Temperature 32° to 125° F
 Operating Humidity 10% - 95% RH, Non-condensing

Ordering Instructions

FMS-1630-□-□-□

Analog Output

0 = 4-20 mADC (< 825 Ohm)
 1 = 0-5 VDC (> 500 Ohm)
 2 = 0-10VDC (> 1K Ohm)
 3 = 4-20 mADC (non-powered)
 Custom Ranges Available

Pressure Range

001 = -0.0100 to +0.0100"WC (-2.4910 to + 2.4910 Pa)
 005 = -0.0500 to +0.0500" WC (-12.46 to +12.46 Pa)
 010 = -0.1000 to +0.1000" WC (-24.91 to +24.91 Pa)
 020 = -0.2000 to +0.2000" WC (-49.82 to +49.82 Pa)

Internal or Remote Sensor

0 = Standard Internal Sensor
 1 = Optional External Remote Sensor

Each FMS-1630 includes the Isolation Monitor, sensor, 1 foot of tubing, and fused 120 VAC to 24 VAC transformer in a double gang junction box configured for the above part number.



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