

MONITOR SETTINGS

FMS-1655 LITE Isolation Room Pressure Monitor Settings

This form should be completed during the initial configuration for each room pressure monitor. Be sure to configure the unit for either Positive, Negative, or both using the Isolation Mode Configuration setup procedure.

Room Name / Number

Unit Model Number and Serial Number (ESN)

Alarm Limits

Positive Isolation High Alarm Setpoint

Positive Isolation High Warning Setpoint

Positive Isolation Low Warning Setpoint

Positive Isolation Low Alarm Setpoint

Negative Isolation High Alarm Setpoint

Negative Isolation High Warning Setpoint

Negative Isolation Low Warning Setpoint

Negative Isolation Low Alarm Setpoint

Audible Alert

Operating Mode (audible or silent)

Delay Time Base (secs or mins)

Delay Setting (0 – 60)

Alarm Quiet Period Starting Hour (0 – 23)

Alarm Quiet Period Ending Hour (0 – 23)

Engineering Units

Inches of Water or Pascals

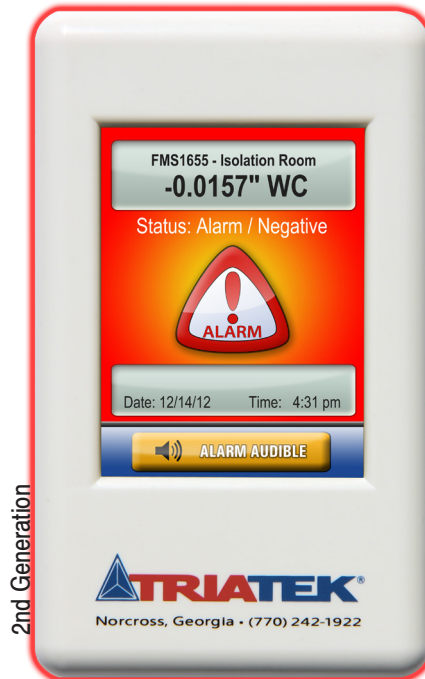
INSTALLATION AND WIRING MANUAL

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GENERAL

Specifications



Electrical

Pressure Range	±0.2500 "WC
Accuracy of Measurement	±0.5% FS
	*NIST Traceable / Individual certification available as option
Power Supply	Class 2, 24VAC ±10%, 30VA universal 120/240 to 24 VAC, 60/50 Hz, step-down isolation transformer provided
	Optional 24VAC .75A universal 100/240VAC, 60/50Hz wall adapter
Recommended Cable Type	Belden 1325A

Touchscreen User Interface

LCD Size	3.2" diagonal
LCD Type	Transmissive
Resolution	240 x 320 portrait
Viewing Area	50.60 mm x 66.80 mm
Color Depth	18-bit or 262K colors
Backlight Color	White
Luminous Intensity	min 2500 cd/m2
FMS-1655 LITE Surface Mount Enclosure	3"W x 5"H x 1.13"D
External Remote Sensor Housing	2.3"W x 4"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
FMS-1655 LITE with Flow Tube Cover Plate	approx. 3.5 lb.

Specifications

FMS-1655 LITE with Optional External Remote Sensor	approx. 4.0 lb.
FMS-1655 LITE Mounting Options	Surface
Flow Tube Cover Plate Mounting	Flush
Remote Pressure Sensor Mounting	Flush

Environmental

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

Part Number Guide: FMS1655-LITE -



- Blank = Surface mount with standard power supply
- F = Thin flush mount with standard power supply
- W = Plastic surface mount with wall adapter power supply
- FW = Thin flush mount with wall adapter power supply

GENERAL

Overview

The Triatek FMS-1655 LITE Room Pressure Monitor is an ultra-sensitive instrument used to monitor differential pressure in hospital rooms, isolation rooms, surgical suites, laboratories, and clean rooms. This unit is capable of measuring and displaying differential air pressures as low as 0.0001" WC (0.0249 Pa).

Key features of the FMS-1655 LITE include:

- Full-color touchscreen display with programmable display options and adjustable backlight
- Safety Halo™ edge lighting
- Intuitive user interface that simplifies setup and configuration of unit
- Graphical display that indicates room status
- Audible and visual alarms
- Multi-level password protection
- Zero calibration feature allows in-field recalibration of zero pressure reading
- Factory-calibrated analog output available for monitoring differential pressure remotely

The FMS-1655 LITE is equipped with a 3.2" full-color touchscreen display in portrait orientation (240 pixels by 320 pixels). The password-protected menu tree is intuitive and simplifies the setup and configuration of the unit. The menus incorporate touch-based interfaces such as sliders, radio buttons, and dialog pop-ups to facilitate the ease-of-use of the FMS-1655 LITE.

The display has a bright background color that changes to indicate the three different room statuses. The background colors indicate "**Normal**" when pressure is within defined limits, "**Warning**" when pressure is nearing an out-of-limits condition, and

"**Alarm**" when pressure is outside defined acceptable limits. The pressure ranges for these conditions are easily set by the user for the specific installation. The background color changes provide an at-a-glance conditions of the monitored room.

Alarm conditions may be defined by the user, in terms of desired differential pressure settings for the room being monitored. When an alarm condition occurs, it may be annunciated in three user-definable ways:

1. On the display
2. With an audible alarm
3. Safety Halo™ edge lighting

The alarm will automatically reset when the unit has sensed that the room differential pressure has returned to proper limits. The user may easily mute the audible alarm by touching the **Alarm Audible** button at the bottom of the touchscreen display.

The FMS-1655 LITE provides a single digital input that may be used for monitoring a door switch. The configuration of the door switch input is configured for normally-closed operation, and is active-high triggered. A SPDT magnetic door switch type is recommended for use with function.

The user may set up multiple multi-level passwords to prevent unauthorized or casual access to the FMS-1655 LITE configuration settings. Up to ten passwords of up to eight digits may be programmed, with each having one of four associated access levels. Administrators and facility management personnel may have unrestricted access, while general staff may be assigned restricted access passwords which limit the functionality of the user menus.

Room pressure selection of **Positive**, **Negative**, or **Neutral Isolation** may be protected using limited access passwords, thereby eliminating the need for keylock switches and keys. In some locales, it is prohibitive to allow an isolation room controller to switch between positive and negative modes of isolation. To accommodate this situation, the FMS-1655 LITE may be configured at the factory for either Positive-and Neutral-isolation modes only or Negative-and Neutral-isolation modes only.

The FMS-1655 LITE isolation monitor is powered by a supplied universal 120/240 VAC to 24 VAC isolation power supply that is fused at the secondary with a 1-amp slow blow fuse. This powers both the touchscreen display along with the connected differential pressure sensor module.

A 10 ft. length of 4-conductor cable is provided with the FMS-1655 LITE to interface the two modules. If the distance between the display and remote sensor modules exceeds 10 ft, then this cable may be substituted with the required length of 4 conductor, dual twisted pair, shield cable (Belden part no. 1325A).

The FMS-1655 LITE includes a remotely mounted sensor for measuring the differential pressure of the monitored room or space. This remote sensor must be installed in the wall between the monitored isolation room and the adjoining corridor or anteroom. Port P1 must be oriented towards the isolation room and Port P2 towards the corridor or anteroom. Please see the illustration on pages 6 - 7 for more details.

The FMS-1655 LITE incorporates an additional analog output signal that may

Installation

be used for monitoring the displayed differential pressure remotely. This capability allows an existing controller on the building management system (BMS) to make the differential pressure reading available over the network, even though the FMS-1655 LITE itself is not connected to the network. The factory-calibrated analog signal is available as either a voltage between 0 – 5 Vdc or as a current between 4 – 20 mA at the remote sensor connector. Refer to pages 6 and 7 for more information.

Remote Sensor Mounting Procedure

1. Cut an opening in the wall of the isolation room to receive the supplied single-gang “old work” low voltage mounting bracket (Figure 1) for the remote sensor module. Nominal dimensions for the cutout are 3.65” H x 2.15” W. Drill a 7/16” hole through the opposite wall for the flow tube.
2. Install the single-gang low voltage mounting bracket in the cutout. Route a length of supplied flow tube through the mounting bracket and through the 7/16” hole in the opposite wall.

Separate the backplate from the touchscreen display enclosure by turning the set screw at the bottom of the display enclosure fully clockwise to release the backplate. Pull the backplate bottom out slightly to clear the bottom edge of the display enclosure and slide the backplate down away from the tabs at the top of the enclosure. Disconnect the 3 and 4 pin connectors at the top of the display module PC board. Disconnect the gray harness from the backplate circuit board by pushing down on the white connector

tab and slide the harness connector out of CN1.

3. Confirm that the 4-conductor interface cable between the remote sensor module and the touchscreen display module has its red and black conductors securely attached to the +V and GND terminals, respectively. Route the end of the interface cable with the 3 and 4 pin connector down the wall to the anticipated location of the touchscreen display module.
4. Using a suitable length of 2 conductor 20 AWG cable, connect the output of the universal isolated power supply module to the 9-pin connector at the remote sensor module. The output of this power supply module is non-polarized, so the two red wires may be wired to the +Vin and GND terminals in either orientation. If the FMS-1655 LITE was shipped with a pluggable DC wall adapter power supply, then the positive lead (striped) must be connected to the +Vin terminal and the negative lead (solid) must be connected to the GND terminal.
5. To remotely monitor the differential pressure displayed at the FMS-1655 LITE touchscreen, a factory-calibrated analog output is available as voltage or current at the Vo and Io terminals, respectively. The designated output (Vo or Io) should be connected to the analog input of the remotely located controller and the ground terminal (GND) should be connected to the ground of the remotely located controller.
6. Attach the pluggable connector to the mating header on the remote sensor

module. Attach the end of the flow tube to the barbed fitting at back of sensor, and then secure the remote sensor module to the mounting bracket with two supplied 6-32 x 3/4” screws.

7. Install the louvered cover plate onto the installed sensor module using two supplied machine screws. On the opposite side of the wall (corridor side), attach the end of the flow tube to the barbed fitting of the flow tube mounting plate.
8. Press the mounting plate into place, allowing the excess tube length to go into the wall space. Secure the mounting plate with the supplied screws and wall anchors.
9. Install a louvered cover plate onto the mounting plate using two supplied machine screws.

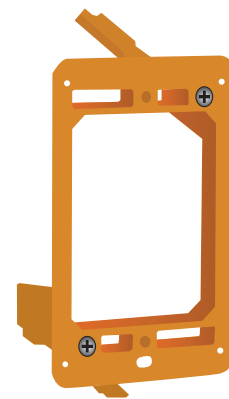


Fig 1. Single-gang, low-voltage mounting bracket.

MOUNTING/WIRING

FMS-1655 LITE Basic Programming

**Display Mounting Procedure
(surface mount)**

1. Cut an opening in the wall adjacent to the door of the isolation room for installing the supplied single-gang “old work” low voltage mounting bracket (Figure 1) for the touchscreen display module. Nominal dimensions for the cutout are 3.65” H x 2.15” W.
2. Install the single-gang low voltage mounting bracket in the cutout.
3. Pull the loose end of the interface cable from the remote sensor module through the cutout in the drywall, and then through the hole in the center of the display enclosure backplate (Figure 2).
4. Attach the backplate to the mounting bracket with two 6-32 x 3/4” screws, carefully aligning it using the two mounting slots on the backplate before tightening.
5. Connect the 2 loose ends of the interface cable (3- pin and 4-pin) to the corresponding headers at the top of the display module circuit board (see Figure 3). Confirm all 4 conductors of interface cable are securely attached at the terminal plugs.
6. Reconnect the gray harness to the backplate circuit board and attach the display enclosure to the backplate by inserting the tabs at the top of the display into the corresponding slots at the top of the backplate. Secure the display enclosure to the backplate by turning the slotted setscrew at the bottom of the enclosure counterclockwise until it is

flush with the enclosure bottom.

7. Finally, apply power to the monitoring system by applying line power to the power supply module. If the unit was shipped with the 24VDC wall adapter power supply, power up the system by plugging it into an available electrical receptacle, preferably located at a location above the ceiling tile directly above the surface mounted display.



Fig 2. Route interface cable through center hold at display enclosure backplate.

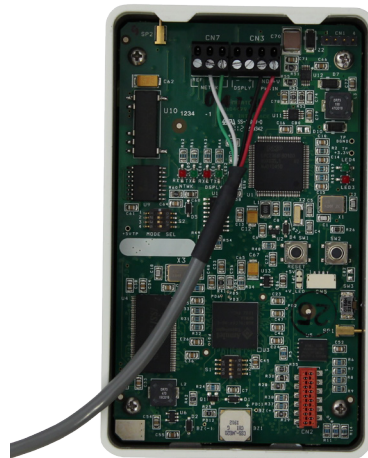


Fig 3. Interface connected to 4-pin header at top of display module.

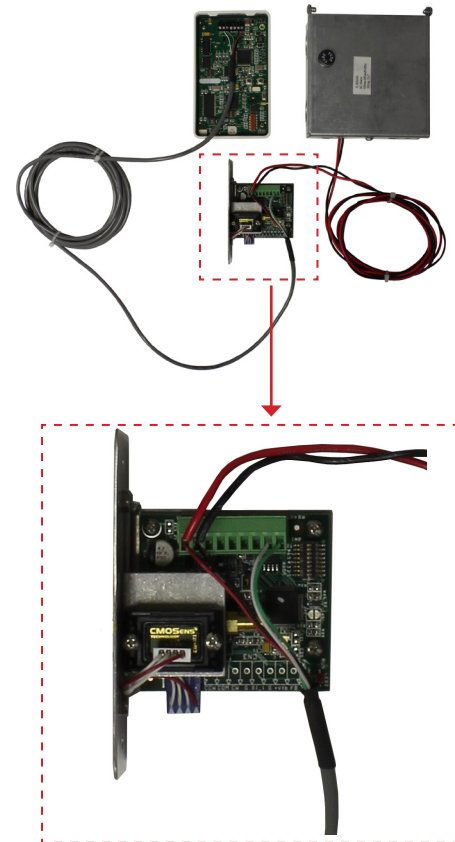
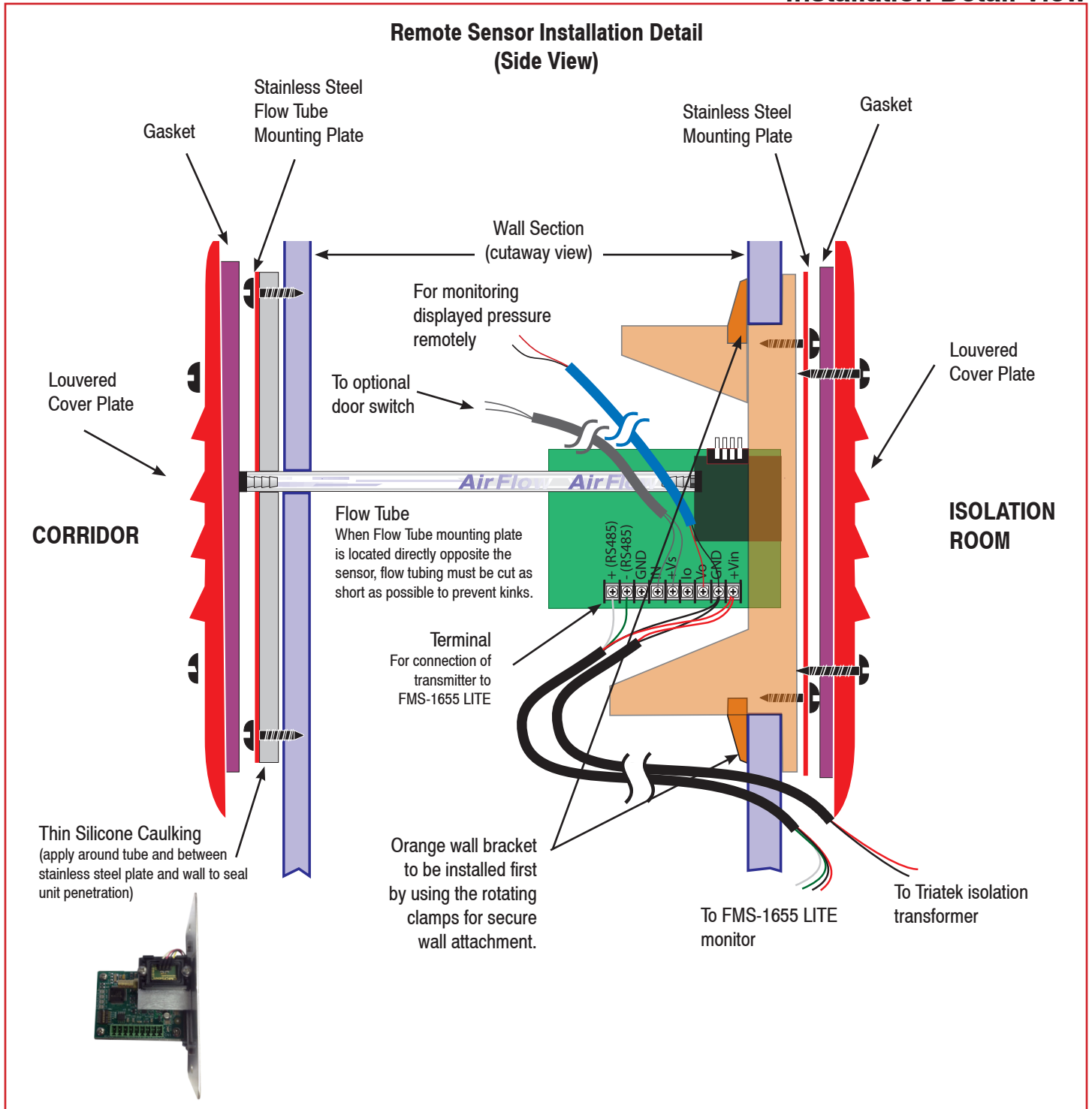


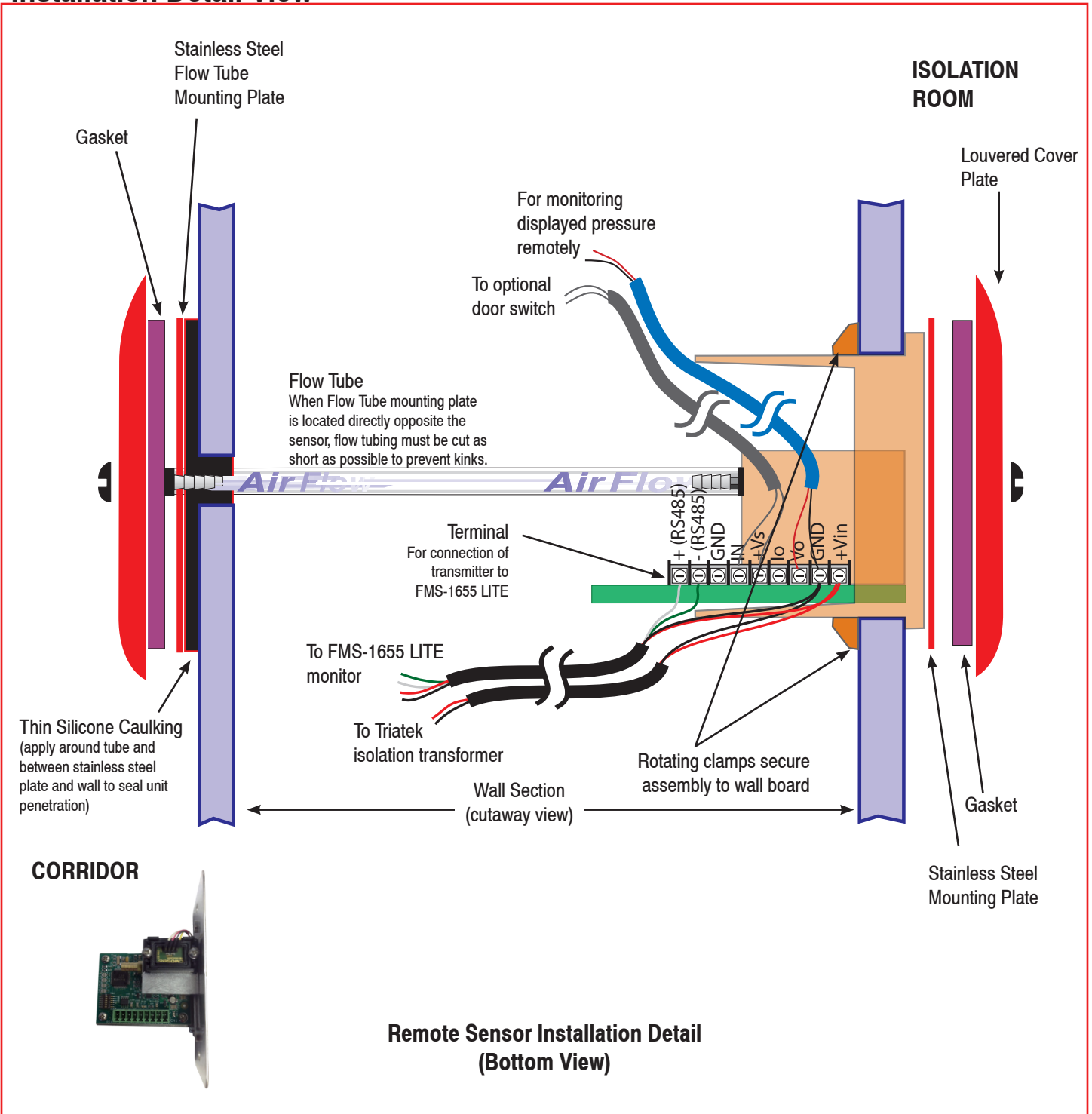
Fig 3a. Basic FMS Assembly with close up of wall sensor connections.

Installation Detail View



MOUNTING/WIRING

Installation Detail View



FMS-1655 LITE Basic Programming

FMS-1655 LITE Basic Programming

After the FMS-1655 LITE unit has been properly installed, apply power to the unit. Upon power up, the Safety Halo™ status indication bezel will cycle through seven colors (red, green, blue, yellow, magenta, cyan, and white), followed by three action icons (normal, caution, alarm), and finally, the Triatek splash screen indicating serial numbers, firmware version numbers, and sensor calibration date. This splash screen remains displayed for approximately 10 seconds and disappears to reveal the main display screen. This splash screen can be redisplayed using the **About this FMS** option in the **Diagnostics Menu**.

Main Display Screen

All FMS-1655 LITE units come shipped from the factory in the neutral isolation mode. The neutral isolation mode will be represented on a blue background (Figure 4). Information displayed on the main screen includes the following:

- Name of monitored room (up to 25 characters)
- Current isolation mode (positive, negative, or neutral)
- Current differential pressure reading in selected engineering units (default is "WC")
- Current time and date

While in neutral isolation mode, the background color of the main display screen is blue. However, while in either positive or negative isolation modes, the background

color actively represents that current status of the monitor. A green background indicates that the current differential pressure is within allowable limits of the desired setpoint.

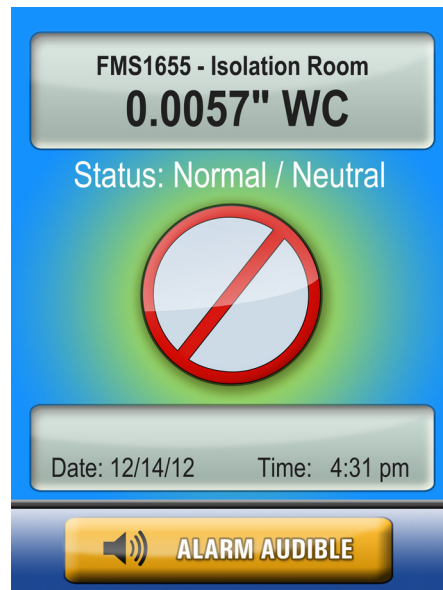


Fig 4. Main display shows isolation mode, room status and differential pressure.

A yellow background indicates one of two conditions: 1) door to monitored space is open (if door switch is enabled), or 2) current differential pressure has drifted outside of the allowable limits of the desired setpoint and are in the caution range.

A red background indicates that the current differential pressure has reached a critical condition and is outside of the allowable limits of the desired setpoint.

The FMS-1655 LITE incorporates a full-color touchscreen and includes an extensive easy-to-use menu system that allows the user to quickly setup the monitor for immediate use. Also integrated into the FMS-1655 LITE

display are several hotspots that provide quick access to various settings. Refer to page 11 for details on using these hotspots as display settings shortcuts. Touching the screen anywhere other than one of the reserved hotspots invokes the menu system, unless one or more security passwords have been entered.

Configuring Room Pressure Monitor

Configuring the FMS-1655 LITE settings is extremely easy using the intuitive user menus integrated in the touchscreen display. Within minutes, the FMS-1655 LITE may be configured to start displaying the real-time differential pressure of the isolation room being monitored.

Setting Up Alarm Limits

To determine the various setpoints at which the unit status changes from normal to warning, and from warning to alarm, the alarm limits must be configured accordingly.

Alarm limits are only in effect while the unit is in either positive or negative isolation mode, as the alarms are disabled while neutral isolation mode is active.

In order to specify the alarm limits for positive or negative isolation mode, set the isolation mode accordingly by selecting the **Room Setup** option from the **Unit Setup** menu, and then select the **Isolation Mode** option from the **Set Isolation Mode** menu. Select the desired isolation mode from the resulting configuration popup window and press "OK."

PROGRAMMING

FMS-1655 LITE Basic Programming

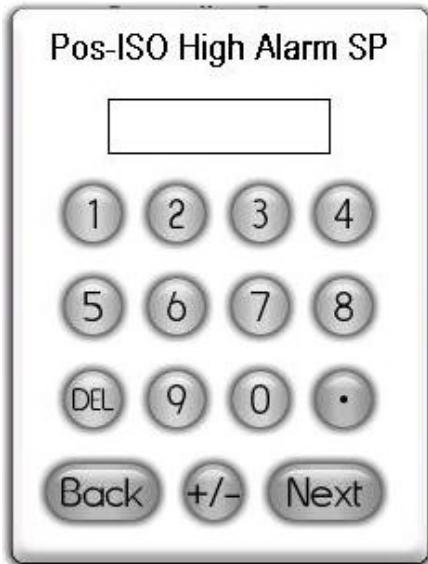


Fig 5. Enter high alarm setpoint for positive isolation mode using keyboard popup.

To begin specifying the alarm and warning setpoints, select the **Alarm Limits** option from the **Unit Setup** menu. The user is prompted to sequentially enter the high alarm and warning limits, followed by the low warning and alarm limits, in that order. For example, if positive isolation mode was selected above, then the configuration popup shown in Figure 5 will be displayed, prompting the user to enter the positive isolation high alarm setpoint using the keypad.

These limits should be specified to identify the differential pressure range which is considered normal, as well as the range which indicates a warning condition, and the range which is considered critical and indicates an alarm condition.

The figure on page 12 shows the relationship of these four alarm setpoints and how they

relate to the normal operating differential pressure of the monitored isolation room.

Configuring Alarm Buzzer

The FMS-1655 LITE alarm resources provide support for both visual and audible alerts. The audible alert option on the **Unit Setup** menu allows the alarm buzzer settings to be easily configured. Selecting this option invokes the configuration screen shown in Figure 6.

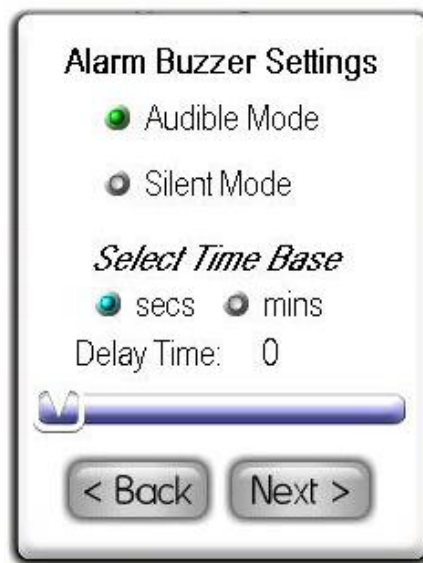


Fig 6. Alarm buzzer may be configured for audible or silent mode.

The alarm buzzer may be selected for one of two modes of operation: audible or silent mode. If audible mode is selected, a delay may be specified in seconds or minutes. If silent mode is selected, then the alarm buzzer will not sound whenever the unit encounters an alarm condition. If audible mode is selected, the user may specify an alarm quiet period. This feature allows the audible alerts to be suppressed between the specified

hours every day, thereby eliminating the potential for nuisance alarms. Hospitals may take advantage of this feature to minimize nuisance alarms during non-visiting hours in patient rooms.

Selecting Displayed Units

The FMS-1655 LITE displays differential pressure readings in one of two units: inches of water column (in WC) or Pascals (Pa). The **Engineering Units** option on the **Unit Setup** menu allows the displayed units to be selected by the user. Selecting this option invokes the **Select Engineering Units** selection screen. If the engineering units selection is changed, the corresponding alarm setpoints are automatically converted to the newly selected units.

Configuring Display Options

The **Display Setup** menu provides support for configuring all of the display settings on the FMS-1655 LITE. Options are available for configuring the main display, setting the system time and date, adjusting the display brightness, and setting the Safety Halo™ function. The **Display Options** menu item allows the main display to be configured as required by the specific application. If desired, the user may individually enable or disable the display of the isolation mode, room status, and the time/date at the bottom of the screen.

The Safety Halo™ option on the **Display Setup Menu** allows the user to disable or enable this function as well as setting the intensity of the Safety Halo™ brightness. A nightly auto-dim feature can be set to dim the Safety Halo™ brightness to a user-set level at specified hours every day.

FMS-1655 LITE Basic Programming

The set time & date option on the **Display Setup** menu allows the user to specify the current time and date that may be displayed at the bottom of the main display. The FMS-1655 LITE will maintain the time and date as long as the unit is not powered down.

The set brightness option on the **Display Setup** menu allows the intensity of the display backlighting to be adjusted from very dim to very bright. The brightness settings are saved in nonvolatile memory and remain in effect through a power cycle.

Adding Password Security

Access to the FMS-1655 LITE menu system can be protected from unauthorized tampering through the multi-level security passwords. Up to ten individual passwords may be entered in the system, each with a specific access level. A password entry may be created by selecting the **Passwords Setup** option from the **System Setup** menu, and then selecting add password. The user is prompted to enter a minimum of four and up to eight numeric digits.

Once a password has been specified, the user is prompted to specify one of four access levels: Unrestricted, Standard, Basic, and Restricted. All password entries are saved to non-volatile memory, and remain in effect through a power failure. In the event that a password has been forgotten, there is a factory-default "back door" password that will provide unrestricted access to the user menu system. Please consult with the factory for more information regarding this password.

Note: An unrestricted password must be created first before any restricted passwords can be set.

Zero Calibrating Sensor

The FMS-1655 LITE may be zero calibrated following installation to ensure that the monitored pressure approaches zero when the door to the monitored room is opened. To perform a zero calibration of the unit, either open the door to the monitored room or cap one port on the remote sensor before proceeding.

Select the zero calibration option on the **Diagnostics** menu to begin the procedure. Once the reading stabilizes, click the OK button to proceed. Exit to the main display and verify that the reading goes to zero. If not, repeat the above procedure.

Remotely Monitoring Differential Pressure Reading

The FMS-1655 LITE provides a factory-calibrated analog output signal linearly that represents the differential pressure displayed at the touchscreen. This output may be connected to an available analog input on a controller that is connected to the BMS, thereby allowing the FMS-1655 LITE's differential pressure to be monitored from the BMS front-end.

There are two factory-calibrated analog output signals available at the terminal strip on the remote sensor module: Vo and Io. The voltage output signal spans from 0 to 5 Vdc and linearly represents the differential pressure range from -0.2500" WC to +0.2500" WC. The current output spans from 4 to 20 mA and linearly represents the same differential pressure range.

CLEANING THE DISPLAY

Cleaning the FMS-1655 LITE Display

- The cloth may be used dry, or lightly dampened with a mild cleaner or ethanol.
- Be sure the cloth is only lightly dampened, not wet. Never apply cleaner directly to touch panel surface; if cleaner is spilled onto touch panel, soak it up immediately with absorbent cloth.
- Cleaner must be neither acid nor alkali (neutral pH).
- Wipe the surface gently; if there is a directional surface texture, wipe in the same direction as the texture.
- Never use acidic or alkaline cleaners, or organic chemicals such as: paint thinner, acetone, toluene, xylene, propyl or isopropyl alcohol, or kerosene.



The diagram shows a touchscreen display with the following information: "FMS1655 - Isolation Room", "0.0017" WC", "Status: Normal / Positive", a green checkmark icon, "Date: 12/14/12", "Time: 4:31 pm", and a yellow "ALARM AUDIBLE" button with a speaker icon. The TRIATEK logo and contact information are at the bottom.

Tapping the current room name text brings up an alphanumeric keyboard to quickly change the name of the monitored room.

Tapping the *Status* line brings up the *Isolation Mode* popup to quickly change the monitored mode of isolation.

Tap anywhere else on the screen enters the *Main Setup Menu* if no password is stored. Otherwise, a password must be entered before the *Main Setup Menu* can be accessed.

Tapping *Date* brings up the *Date Entry* popup to quickly change the current displayed date.

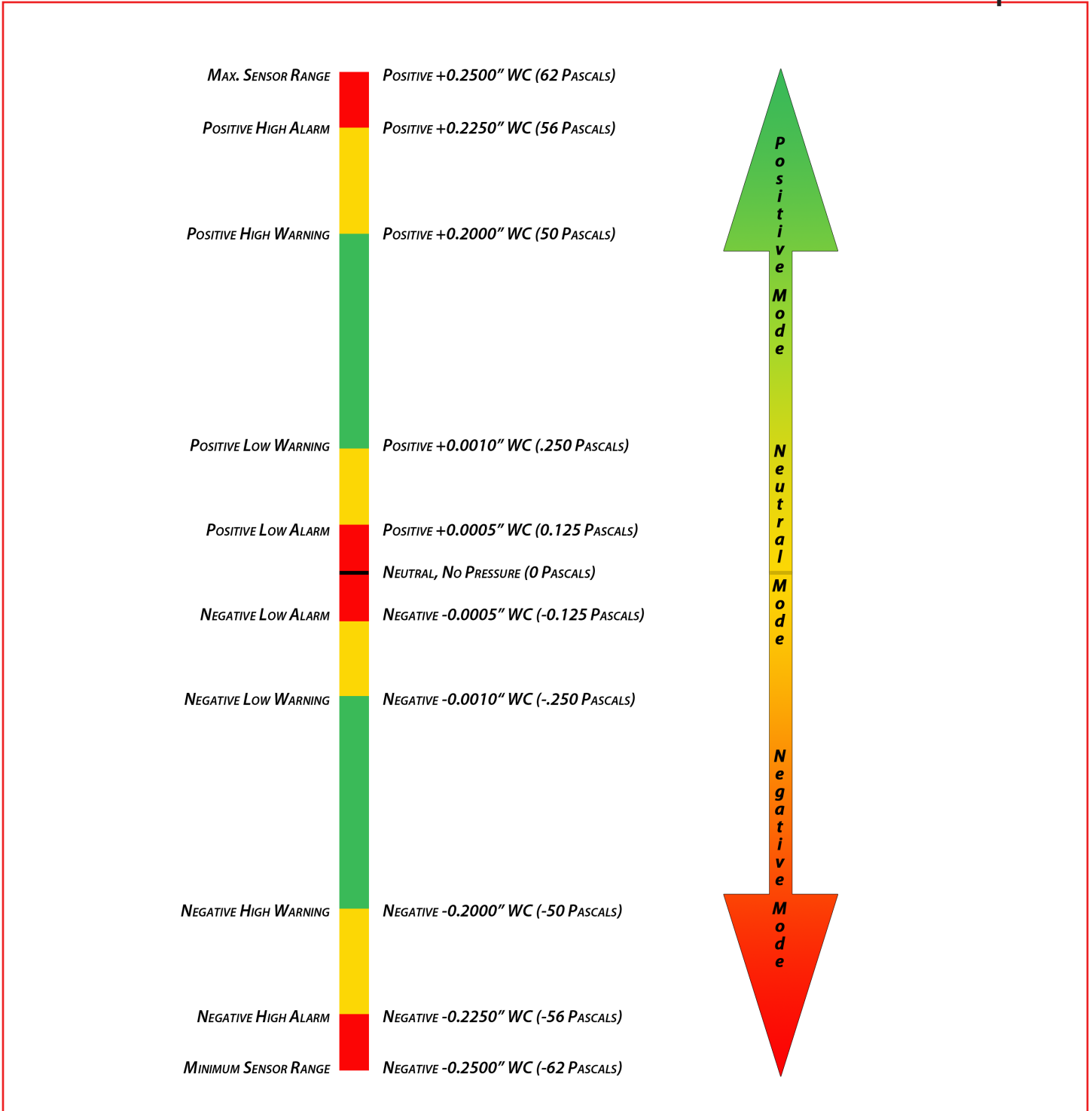
Tapping the units brings up engineering units selection popup to quickly change pressure measurement units.

Tapping *Time* brings up the *Time Entry* popup to quickly change the current displayed time.

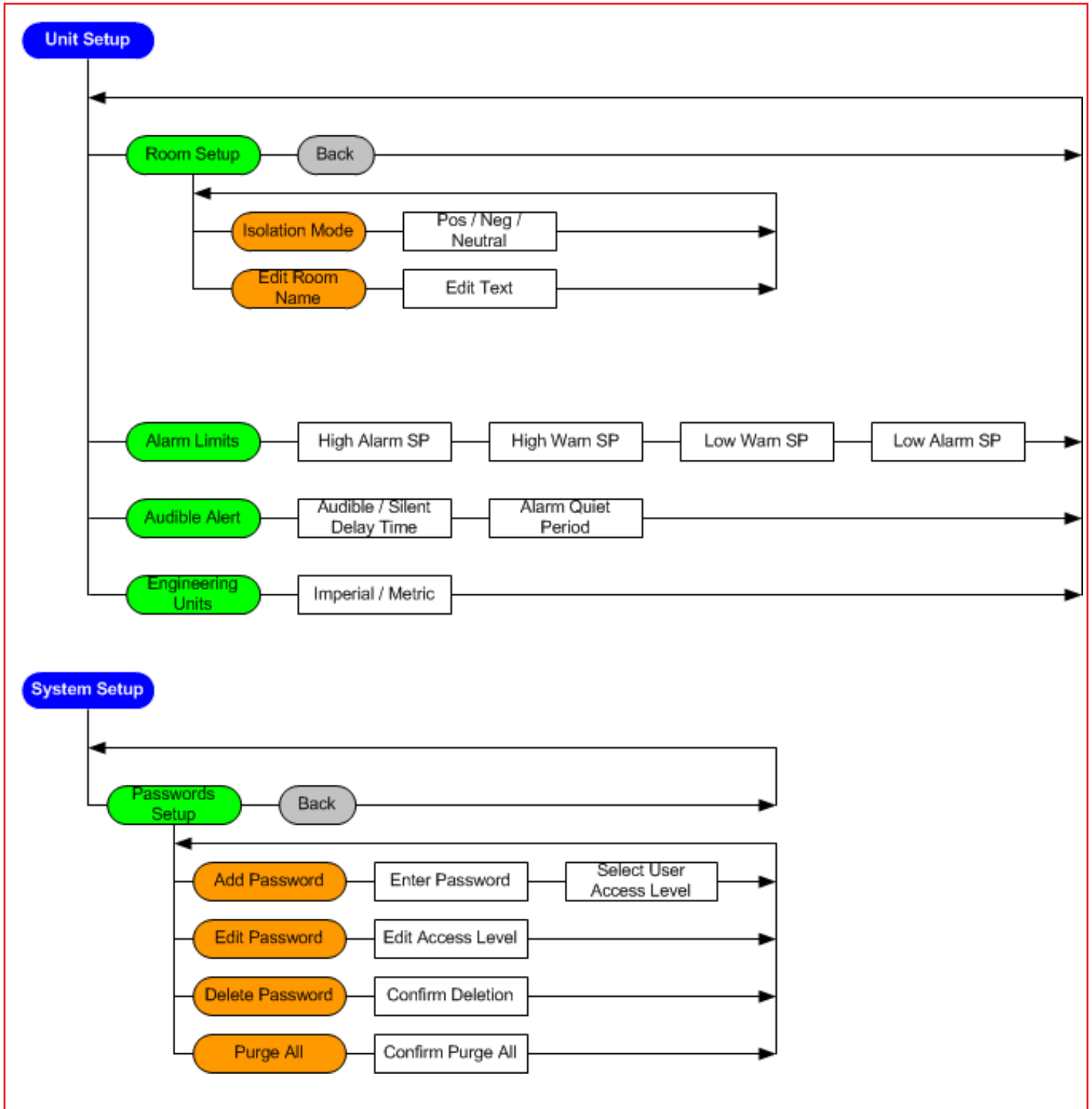
Tap *ALARM AUDIBLE* to toggle mode of audible alarm. It automatically reverts back to audible mode when the alarm condition is removed.

Hot-Spot Features of FMS-1655 LITE Touchscreen Display

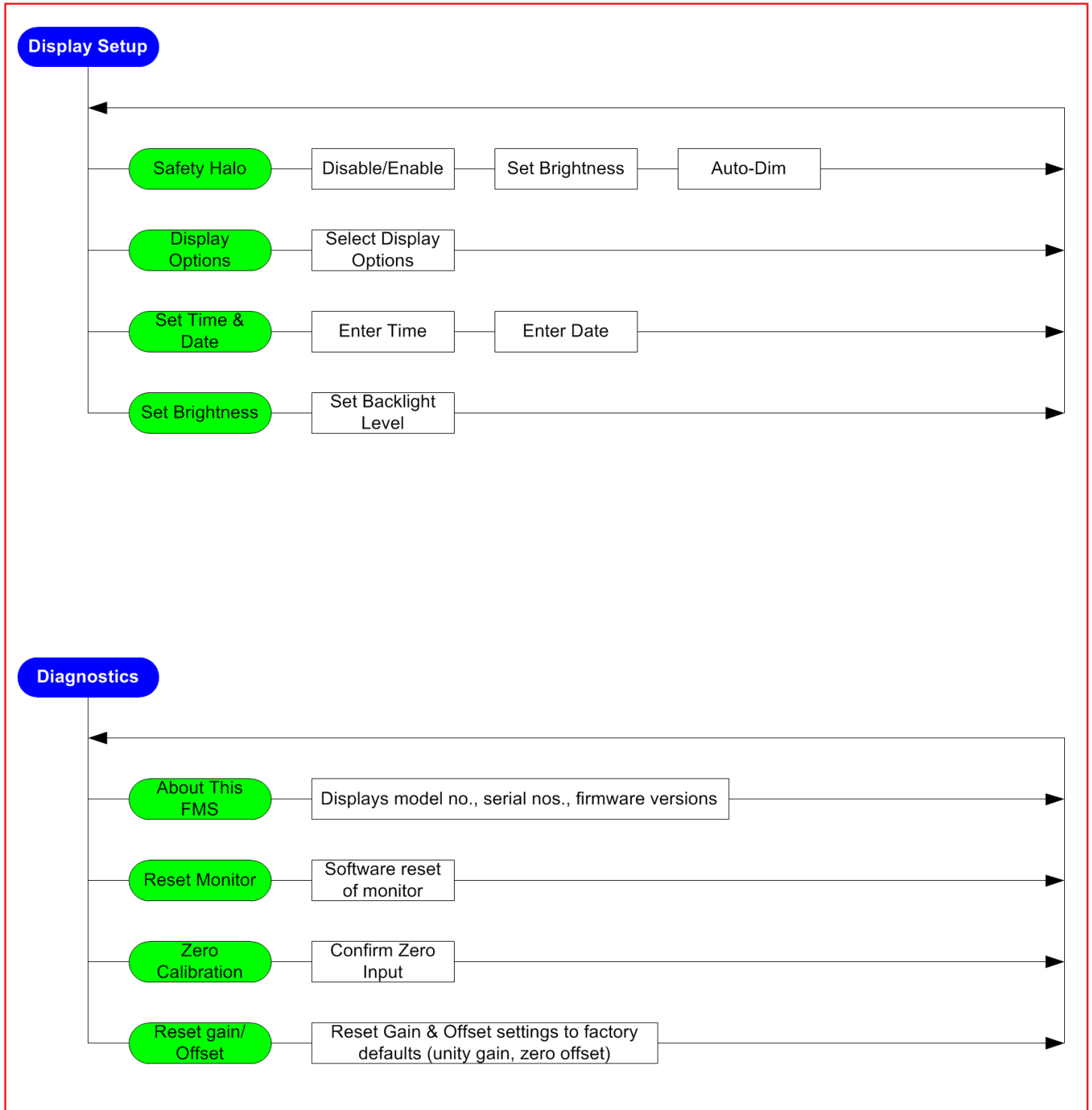
Alarm Setpoints



SETUP MENU TREE



SETUP MENU TREE



Headquartered in Norcross, Georgia, Triatek has been on the forefront of designing and manufacturing innovative airflow solutions for critical environments since 1985. Triatek provides complete end-to-end solutions for healthcare facilities and laboratories including Venturi valves, room pressure controllers, fume hood controllers, monitors, sensors, actuators, and more all designed to seamlessly integrate into a facility's building automation system.



Triatek's customer service is unparalleled. Our product support system includes on-site installations, phone support, repairs, calibrations, and in-depth training sessions.

From our knowledgeable engineers and sales team to our talented field technicians, Triatek goes above and beyond to ensure our products are installed correctly and our customers' critical environments are working properly.

Laboratories



Classrooms



Vivariums



Hospitals

