

Model SRCM Operation

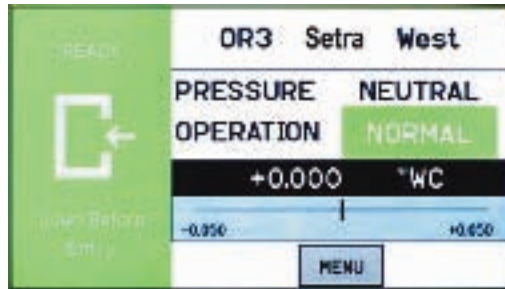


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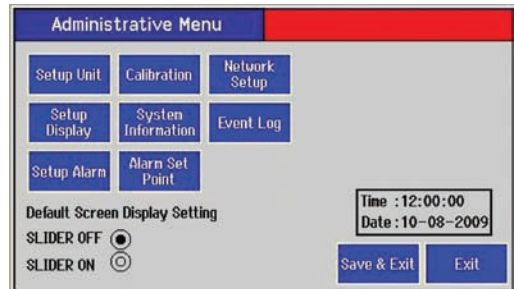
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Operation

The following pages describe how to operate the SRCM using the touch-screen interface. The screen has two basic functions. The primary mode of operation displays the Home screen, which shows the end-user pressure values, messages, text, and other data intended for visual pressure verification in the facility. The second mode of operation is the Administrative Menu screen, which permits setup, configuration, and changes to how the SRCM operates. After changes have been performed on the Menu screen, functions are saved and operation returns to the Home screen. *Note: If there is no user interaction with the touch screen for more than 1 minute, the screen will automatically return to the Home Screen. Many administrative settings can be written over the BACnet MS/TP network.*



Home Screen



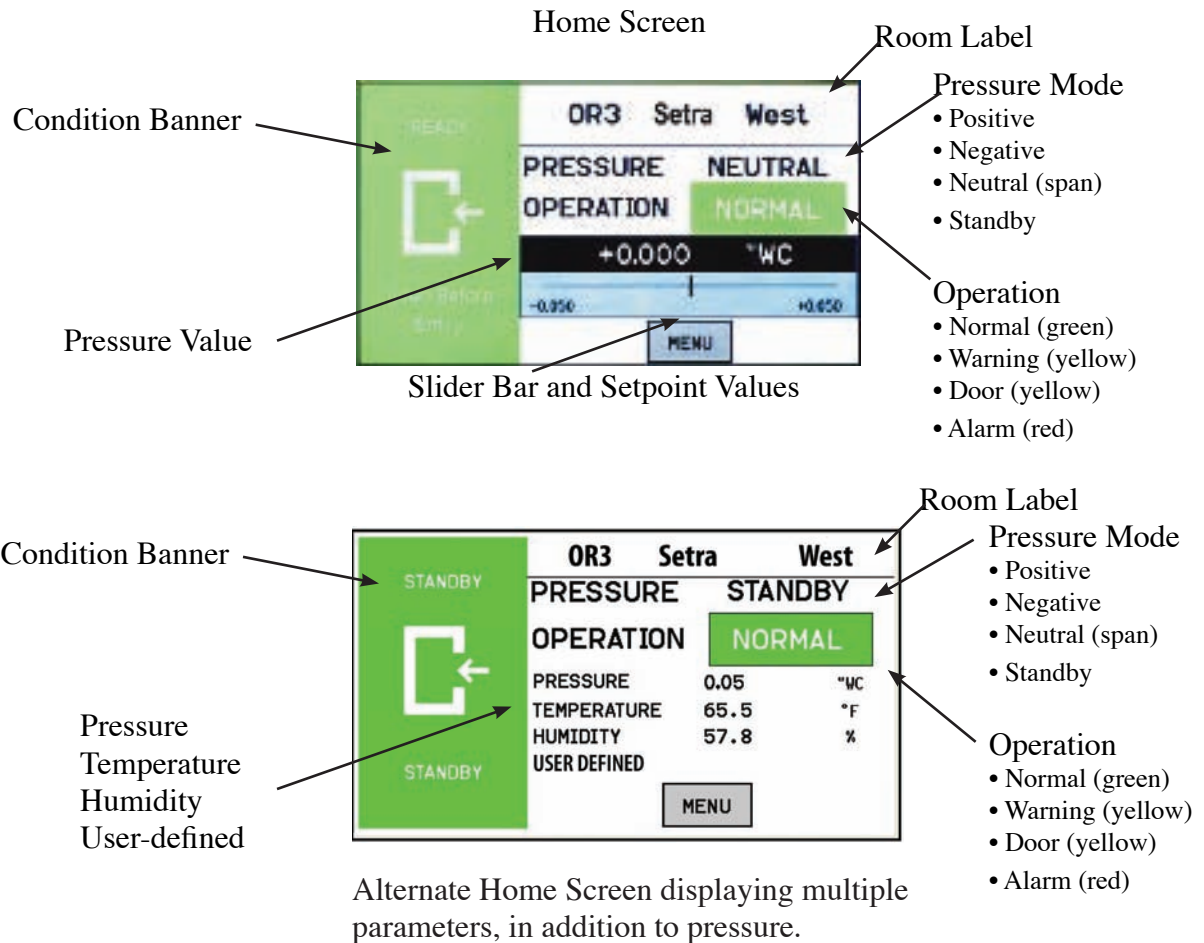
Menu Screen

NOTE: All settings of the SRCM can be password protected.

Home Screen

The default screen now has 2 possible modes. Now if the user wants to display other room variables in addition to Pressure they can switch to the screen below that shows up to 4 parameters per room. These can be Pressure, Temperature, Humidity, and user-defined. The User switches modes by selecting slider on/slider off on the bottom of the administrative menu.

The Home screen is the normal continuous operating mode of the SRCM. The Home screen shows a Condition Banner on the left one-third of the screen, and Operating Conditions on the right two-thirds of the screen. There are two possible home screens, one with a pressure only display with a slider bar representing the room pressure with respect to the alarm setpoints. The other alternate home screen can be used when there are multiple parameters other than pressure such as temperature and humidity as well as a fourth, which is user defined, that also can be displayed.



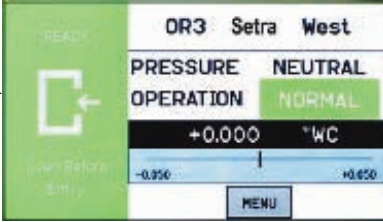
Condition Banner The Condition Banner is the left 1/3rd portion of the screen that can be configured by the end-user or facility manager to display a message to staff on the floor. The Condition Banner can be Green, Yellow, or Red or Blue, depending on the type of message desired outside the pressurized space. The Condition Banner is set up in the Setup Display-Condition Banner tab of the Administrative menu. The Condition Banner also has an option to display in full screen mode.

The Condition Banner will change to red in alarm state regardless of the current configuration. The banner may be changed manually, as required, by pressing the touch-screen anywhere within the banner color region.

User defined text →

ENTRY PERMITTED graphic (arrow is not intended to indicate direction of airflow)

User defined text →




The screenshot shows a green banner on the left with the text 'READY' at the top and 'Gown Before Entry' at the bottom. A white graphic of a door with an arrow pointing right is in the center. To the right of the banner, the screen displays 'OR3 Setra West', 'PRESSURE NEUTRAL', 'OPERATION NORMAL', and a pressure gauge showing '+0.000 "/>

Green Condition Banner—shows Entry Permitted graphic, and user defined text above and below graphic image. Use the GREEN banner to indicate room is safe to enter.

User defined text →

STOP graphic

User defined text →



The screenshot shows a red banner on the left with the text 'SURGERY IN PROGRESS' at the top and 'AUTOMATIC START Only' at the bottom. A white 'STOP' sign graphic is in the center. To the right of the banner, the screen displays 'OR3 Setra West', 'PRESSURE POSITIVE', 'OPERATION NORMAL', and a pressure gauge showing '+0.024 "/>

Red Condition Banner—shows Stop graphic, and user defined text above and below graphic image. Use the RED banner to indicate room is under critical use and entry

User defined text →

Warning graphic

User defined text →




The screenshot shows a yellow banner on the left with the text 'HEAVY USE WARNING' at the top and 'Prep Staff' at the bottom. A white warning triangle graphic is in the center. To the right of the banner, the screen displays 'OR3 Setra West', 'PRESSURE POSITIVE', 'OPERATION NORMAL', and a pressure gauge showing '+0.024 "/>

Yellow Condition Banner—shows Warning graphic, and user defined text above and below graphic image. Use the YELLOW banner to indicate room is under transient use and entry is restricted.

User defined text →

ENTRY PERMITTED graphic (arrow is not intended to indicate direction of airflow)

User defined text →



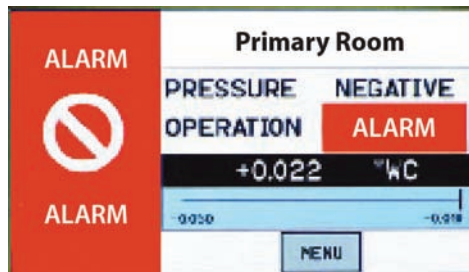
The screenshot shows a blue banner on the left with the text 'Ready' at the top and 'Gown Before Entry' at the bottom. A white graphic of a door with an arrow pointing left is in the center. To the right of the banner, the screen displays 'OR3 Setra WEST', 'PRESSURE NEGATIVE', 'OPERATION NORMAL', and a pressure gauge showing '+0.022 "/>

BLUE Condition Banner—shows Entry Permitted graphic, and user defined text above and below graphic image. Use the GREEN banner to indicate room is safe to enter.

Condition Banner – Touch Screen Operation – Once the messages of each of the four Condition Banners are defined in the Menu section, the user can cycle through all four conditions by simply touching the left one-third of the screen in any region. If passwords are enabled, the user will be prompted to enter their password before proceeding. Each of the four colored screens can have a unique message defined. See Section: Setup Display, page 11, for instructions on how to setup the Condition Banner.

Alarms Cause Condition Banner to Turn Red When alarm occurs the Condition Banner will behave as follows:

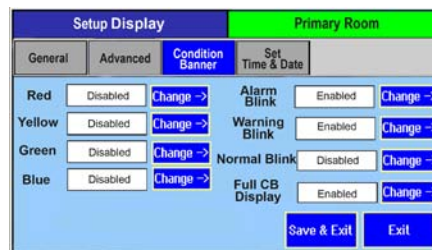
1. Condition Banner will turn to Red color and Blinks irrespective of the color mode selected by the user. User configured color mode: “Alarm Blink” & “Blink in Red” in the Setup Display screen will remain same. The operation field which displays the alarm state of the system will also blink. When system returns to normal user configured settings will be retained.
2. The Message text on the bottom of Condition Banner symbol and User defined text on top of the Condition Banner symbol will be displayed as “ALARM” temporarily as shown.



The Condition Banner can now be configured so that any of the Condition Banner colors can be set to blink when that condition occurs. For example if an alarm occurs the red color can be made to blink, similarly the yellow warning, green, and blue can also be set to blink.

Condition Banner Functions

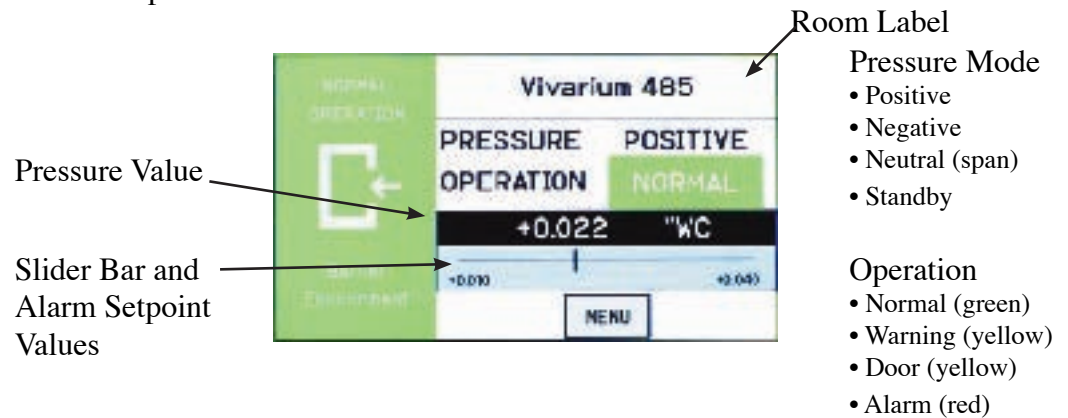
The Condition Banner configuration on the Display screen will have 3 options name-ly: Active, Standby, and No Action for all four colors (Red, Yellow, Green, and Blue).



- When Active is selected, the Occupancy Status object of the SRCM will be active.
- When STANDBY is selected, then the unit shall be put into STANDBY mode (No alarms will be generated) when the corresponding color condition is selected
- The No Action mode will take no action other than to display the Condition Banner screen that has been associated with the No Action mode.

Operating Condition Screen

The Operating Condition screen shows the user the active operating conditions of the pressurized space.



The Room Label at the top of the screen can be defined by the user to ensure the viewer understands which room is actively being monitored by the SRCM. See Changing Room Name page 10, to enter text for your specific room.

The **PRESSURE** indication shows the intended direction of airflow for the space. **POSITIVE** for airflow out of the space, **NEGATIVE** for airflow into the space, **NEUTRAL** for airflow conditions that may vary, and **STANDBY** for use when there is no need to verify the direction of airflow (alarms are disabled).

The **OPERATION** indication shows whether the pressurized space is within normal operating parameters (within alarm thresholds), or whether there is an alarm or warning condition. If operation is within alarm thresholds, a green **NORMAL** indication is shown. If operation is near either high or low alarm threshold limits, a yellow **WARNING** indication is shown.

If operation is at or beyond high or low threshold limits, a red **ALARM** indication is shown. If Audible Alarming is Enabled, a piezo buzzer will sound and a **SILENCE** menu button will appear. Pressing the **SILENCE** button will shut off the alarm for the period of time defined in the alarm configuration. Alarm operation can be configured to blink or sound an audible signal. See Section, Alarm Setup, page 15, for more about setting up **ALARM** and **WARNING** conditions.



In addition to pressure indication, OPERATION also displays whether a door is open. If a door switch is configured, an open door contact will display a yellow **DOOR** indication.

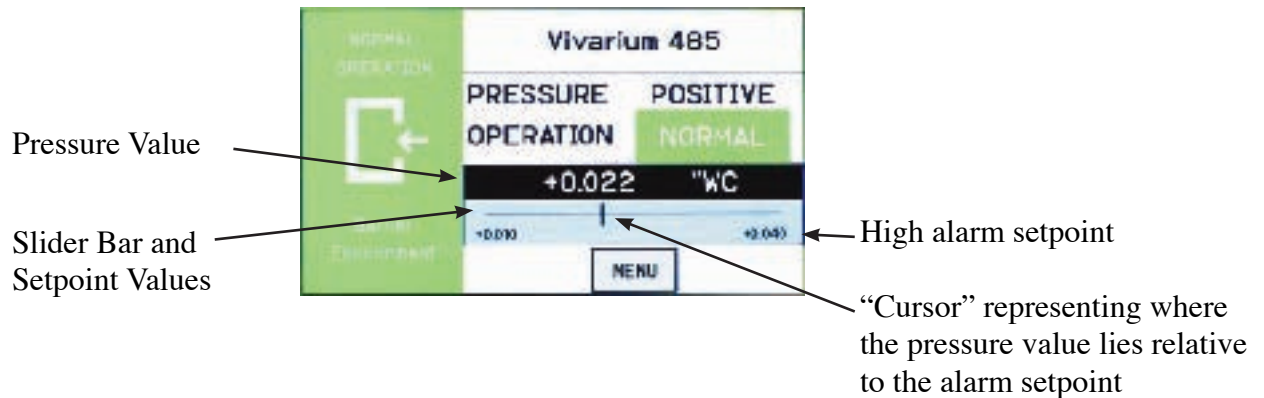


Pressure Value

A black banner displays the actual pressure reading from the space, in either Water Column inches ("WC) or Pascals (Pa). The resolution of display can vary, depending on desired configuration; either 2, 3, or 4 significant digits. The accuracy of measurement remains the same regardless of the number of digits chosen.

Slider Bar and Set Point Values

The blue banner below the pressure value shows where the current pressure reading is in relation to alarm setpoints. The value at the left of the blue banner is the low setpoint value, and the value on the right is the high setpoint value. The middle "I-beam" represents the current measured pressure value on the setpoint scale.



Slider Bar and Setpoint Values

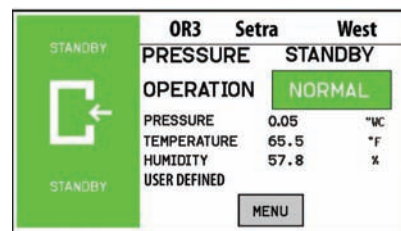
High alarm setpoint

"Cursor" representing where the pressure value lies relative to the alarm setpoint

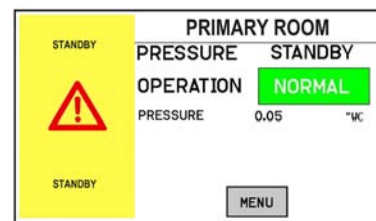
Slider Bar On/Off

If the user does not wish to see the actual slider bar, it can be turned off using the Menu screen. Operation of the pressure sensing and alarming is unaffected. See Section, Menu Screens, page 7

Slider bar is turned off, this displays when four parameters are configured



Slider bar is turned off, this displays when no parameters are configured - Pressure still displays



Active and Standby Modes

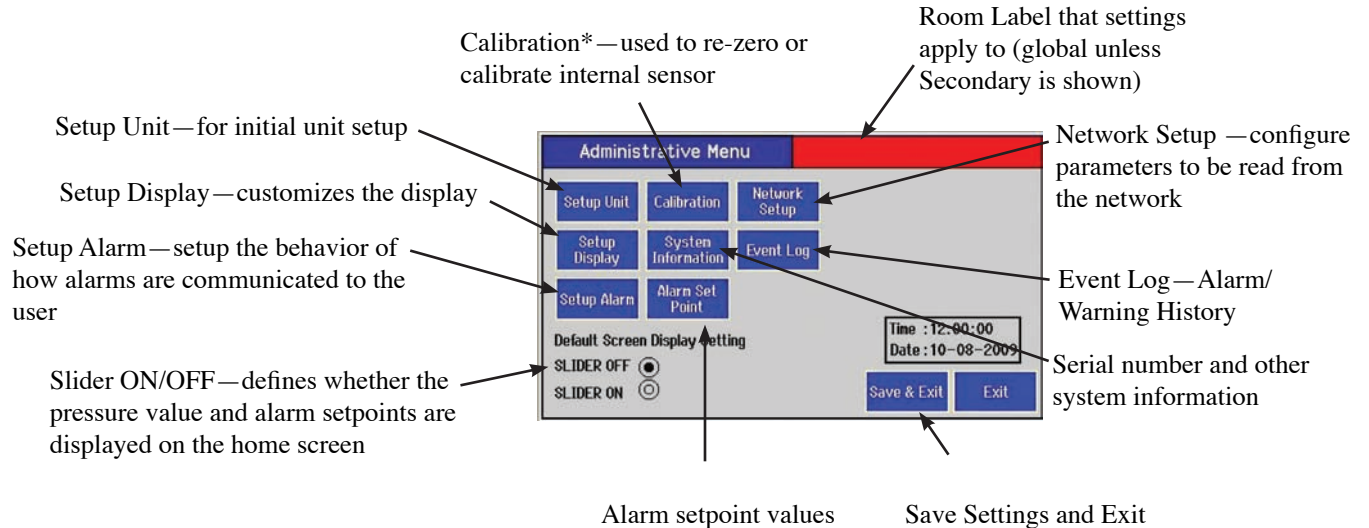
By pressing the touch-screen directly on the word POSITIVE (or NEGATIVE, NEUTRAL, or STANDBY), the user is able to change the condition of the room between ACTIVE and STANDBY modes. A pop-up menu appears to enable selection. If passwords are enabled, the user must first enter a password to proceed with the change.

In ACTIVE mode, the full function of the SRCM is active. In STANDBY mode, the SRCM will perform all functions except that alarming will be disabled (both audible and visual alarms). The STANDBY mode is designed to put the SRCM into a mode where room pressurization is not critical, such as cleaning, patient transfer, or longer-term unoccupied status. Note that this operation can be password protected so that only an Operator or a Supervisor can make this change. Passwords are set up in Setup Display Advanced tab.



Menu Screens

Pressing the MENU button on the Home screen brings up the Administrative Menu. If passwords are enabled, the user is required to enter the correct password before being authorized to make changes. From the Administrative Menu, the user can set all operating parameters of the SRCM. This includes initial setup, commissioning, calibration, Network setup, customizing the displays, and warning and alarm parameters. The menu structure is setup in such a way that the user can setup the unit by starting with the left column and working down, moving to the next column and working down until all setups have been made.



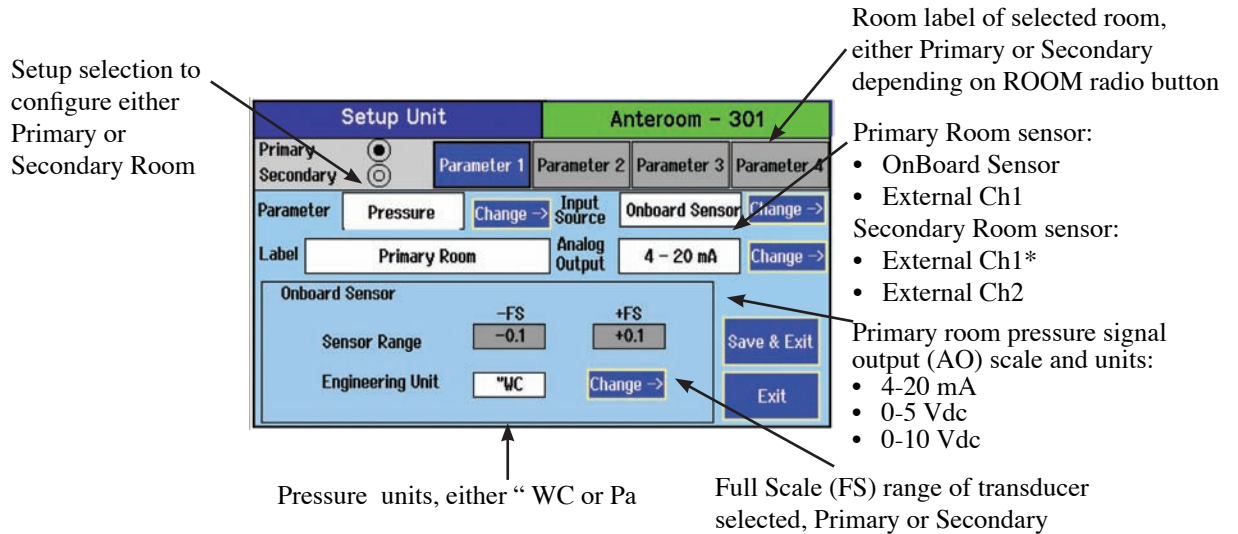
* Calibration is only required for highly accurate measurement needs such as those needed to comply with federally mandated regulations. See the SRCM Product Data Sheet for more information.

Upon initial installation, the Setup Unit screen should be used to define installation

Setup Unit

parameters specific to the job site.

The SRCM can take as input, the signal from two separate pressure transducers as well as temperature, humidity, and user defined (ex. CO²) inputs for up to two rooms. These are configured for either Primary Room or Secondary Room (an anteroom is an example of a secondary room). When two transducers are used, the Home screen display of the SRCM can toggle between each space to indicate the status of each room momentarily, cycling from one to the other a few seconds apart or the display can be locked on either of the two rooms.



*If Ch1 is selected for the Primary room, it will not be an available option for the Secondary room.

ROOM - Primary or Secondary

Use the radio button to select the setup parameters for either the Primary Room or Secondary Room.

Primary Room Sensor

Change, if necessary, to match sensor being used. OnBoard is the default, which uses the sensor manufactured on-board the unit. Alternatively, an external sensor (also known as "external transducer" such as a Setra 264 or Setra 267) may be used. If an external sensor is used, change this selection to ADC Ch1 (Analog Input 1) or ADC Ch-2 (Analog Input 2). The FS output and range of the external sensor will need to be entered. If the OnBoard Sensor is selected, a box is shown displaying the pressure range and engineering unit.

Secondary Room Sensor

Change, if necessary, to match sensor being used, if there is one present. None is the default. An external sensor (also known as "external transducer" such as a Setra 264 or Setra 267) may be used for the secondary room, or anteroom. If an external sensor is used, change this selection to ADC Ch1 or ADC Ch2, which use Analog Input 1 or Analog Input 2, respectively. The FS output and range of the external sensor will need to be entered.

Room Parameters

The SRCM can display up to four (4) parameters for each of 2 rooms. The parameters can be Pressure, Temperature, Humidity, and the fourth user defined (Ex., CO²). Start with the Primary Room and set up the Parameters to be monitored and displayed on the default or home screen. As Parameters and inputs are selected further selection of parameters and inputs will become self limiting (Ex., If Temperature is selected in Parameter 2, it is not available for selection in Parameter 3 or 4.)

Start with Parameter 1, this is the Room Pressure. Select the Input Source as OnBoard, ADC-Ch1 or ADC-CH-2.

Parameter 2, Select None, Temperature, or Humidity. Temperature is suggested. Select Source as ADC-Ch1, ADC-Ch2, or BACnet.

Parameter 3, Select None, Temperature or Humidity. Humidity is suggested. Select Source as ADC-Ch1, ADC-Ch2, or BACnet.

Parameter 4 Select None, User Defined.

Label

Touch the label box and using data entry keypad input the Room Label for the Primary Room. This will be displayed at the top of the default screen to identify the room that the parameters refer to. Use the Primary/Secondary Room radio buttons to select the secondary room (generally an anteroom) and label that room if desired

Primary Analog Output

This Analog Output (AO) is used to communicate the value of the differential pressure of the Primary Room to an external source such as a Building Management System (BMS). The value is scaled as either 4-20 mA, 0-5 Vdc, or 0-10 Vdc, selectable. A normalized pressure value is generated once every 100 milliseconds. The analog output is only available for the Primary room.

Engineering Unit

Units of measurement to show on the Home screen, selectable as either inches of Water Column ("WC) or Pascals (Pa). The unit are factory calibrated as "WC, if the unit is changed to Pa, the rang will be change to Pascals (Pa). This is selected from the Parameter 1 tab as it is associated with the primary room pressure.

Sensor Range

The SRCM is manufactured with an on-board differential pressure transducer. This transducer is manufactured to specifications for fixed minimum and maximum pressure measurement, known as the full-scale range of the transducer. When the on-board transducer is used exclusively, these values cannot change. Alarm setpoints cannot be set above the positive value or below the negative value. If a wider or narrower sensor range is required for the project, an external pressure transducer such as a Setra 264 or Setra 267 may be chosen to match the requirements. See more above under Primary Room or Secondary Room.

If an external transducer is used, the full-scale values and other parameters need to be configured into the SRCM so the unit understands the scale of measurement being received on the inputs Analog CH1 or Analog CH2.

Analog Inputs

The SRCM has 2 Analog Input Channels (ADC-CH1 and ADC-CH2)

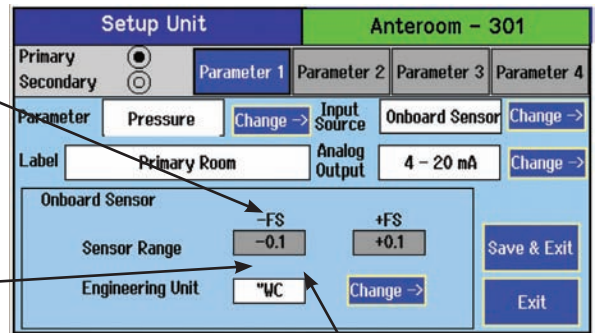
Note: If a 4-20 mA transmitter is used as an analog input then a 250 ohm resistor must be field installed and this will be translated into a 1-5 VDC input at the input terminals.

This takes an analog input from any transducer or transmitter: pressure, temperature or humidity. If an external transducer is used, the full scale values and parameters need to be configured into the SRCM so the unit understands the scale of measurement being received on inputs ADC CH-1 or ADC CH-2.

The following is an example using a pressure transducer to measure secondary room pressures. This is showing a pressure transducer with a range of ± 1 "WC and output of 4-20 mA over that range.

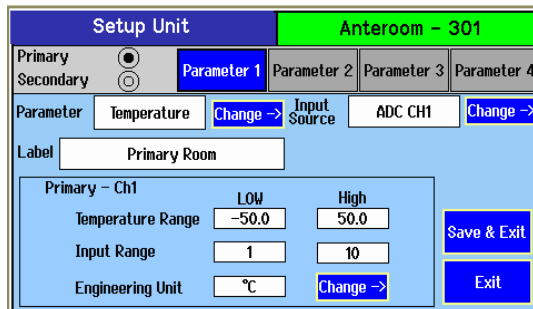
If selecting Analog Ch1 or Analog Ch2 for either Primary or Secondary Room, enter full-scale (FS) range that matches the transducer being used

Also enter voltage or milliampere range that matches the transducer being used



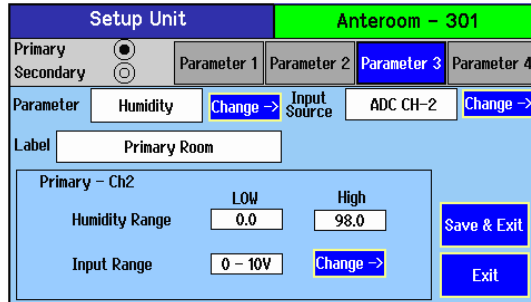
Select desired units of measure to display on the Home screen, either "WC or Pa. The unit of measure for the external transducer must be selected before entering range and output of the unit. After entering all data the units may be changed and the range will scale accordingly.

The following is an example using a temperature sensor to measure primary room temperature. This is showing a temperature range of $\pm 50^{\circ}\text{C}$ and output of 1-10 VDC over that range.



The following is an example using a humidity sensor to measure primary room rela-

tive humidity. The range is 0-98 %RH with a 0-10 VDC output.



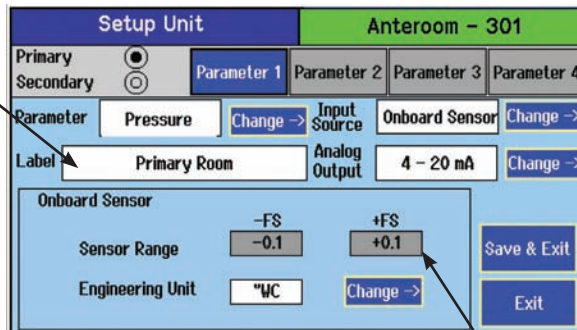
Changing Room Name

The room name shown on the top part of the Home screen is changed using the Room Label button. The Room Name entry box appears in the middle of the Setup Unit display. Depending on whether the Primary or Secondary ROOM radio button is enabled, the matching Room Name entry box appears. The maximum number of characters is 18.

Press anywhere in the Room Name selection box to bring up the on-screen keyboard to enter the room label text desired. It is not necessary to touch the white area next to the Label, simply start entering data using the keyboard entry. Be sure to press the Save button under the text entered before leaving this screen.

The Setup Display screen permits authorized users (based on password level)

Touch anywhere within the Room Name entry box to bring up the on-screen keyboard and enter text.



Press Save after text entry is complete.

Data Entry screen with QWERTY keyboard



Use CAP-ON button to switch between lower-case and upper-case lettering and other characters

When finished with data entry, select Enter to confirm, or ESC to cancel and return to the previous screen

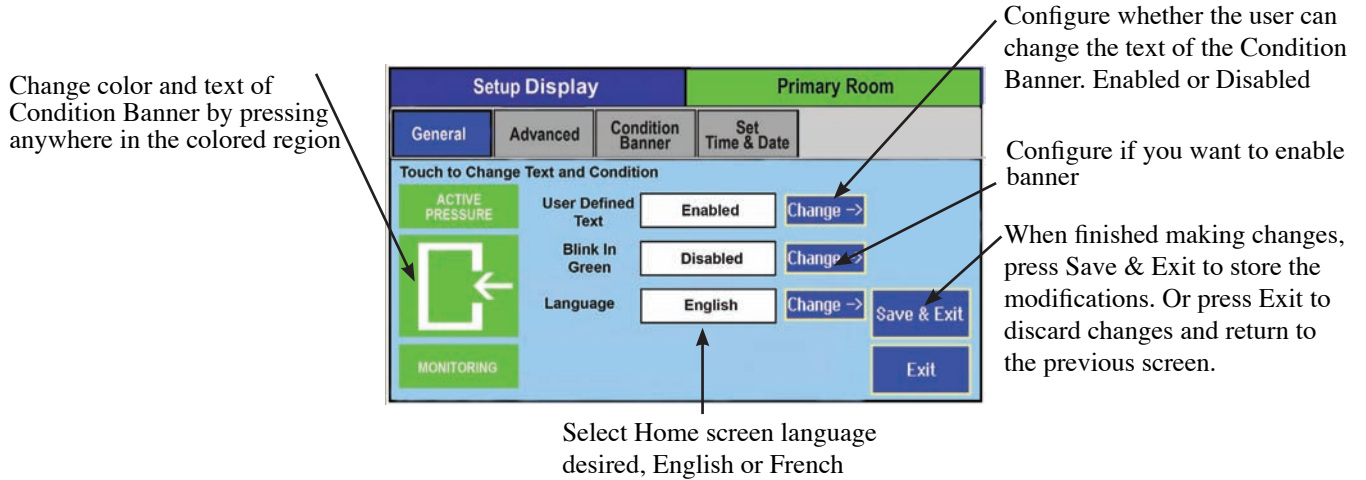
Setup Display

to configure Condition Banner messages and other Home screen options. There are four tabs for display customization; General, Advanced, Condition Banner, Set Time and Date.

General Tab — Customizing the Condition Banner

The General tab allows the user to define messages for each Condition Banner color. Pressing anywhere in the colored region of the Condition Banner changes each selection between GREEN, YELLOW, RED, and BLUE. By pressing on the colored region of text, the on-screen keyboard pops up, enabling data entry. If User Defined Text is Disabled, then data entry on the Condition Banner will not be permitted. Change user defined text to enabled to change the text of each banner.

There are four condition banner colors available, Green, Yellow, Red and Blue.



In the Setup Display General tab you can configure the text to be displayed above and below the center symbol by enabling the User defined text. If you want the banner to blink, Enable the Blink selection.

If any alarm occurs, the condition banner will turn to red and text above and below the center symbol will display ALARM

The Advanced tab allows the user to make refinements in how information is

Advanced Tab— Customizing the Operation Condition Screen

displayed on the Operating Condition section of the Home screen. The display contrast level is adjusted using Adjust Contrast Level, with selections from 1-4. After modifying this parameter, press Save & Exit to view the brightness and contrast on the Home screen display. Depending on the lighting and viewing conditions in the final space, different contrast levels can improve readability of the SRCM.

Primary Pressure Resolution
The number of significant digits displayed for the pressure value (1-4)

Define Supervisor and Operator passwords. Enable or Disable use of passwords

Contrast level of Home screen. Adjust from 1-4 for readability in varying lighting conditions

Display Averaging. Select a value from 1-40

What Pressure To Display:

- Primary Only
- Secondary Only
- Toggle

When finished making changes, press Save & Exit to store the modifications. Or press Exit to discard changes and return to the previous screen

Display Averaging (tenths of seconds)

This function is used to improve the stability of the pressure value displayed on the Home screen, so significant digits do not change rapidly. It is used more often in environments where the user requires higher display resolution (4 digits) but the ambient pressure is unstable. By increasing the number, the effective number of measured data points is increased and a weighted average is developed. Input the number in tenths of a second for the response time of the display to a pressure change. There is no ratcheting of the display or a deadband. The pressure change is very smooth. For example, entering 10 equates to the display reaching final value in 1 second. Entering 2 equates to final value in 2 seconds.

Display Averaging does not affect the Analog Output response time, only the apparent stability of the pressure display. Display Averaging also does not affect Alarm Thresholds or Alarm Delay.

What Pressure To Display

This function defines what pressure value is shown on the Home screen under normal operating conditions. This can be Primary Only, Secondary Only, or Toggle, depending on what room is most important for visual pressure verification.

If this is set to Primary Only, then the Home screen will show the pressure value read by the primary pressure transducer (either on-board, or the alternate primary transducer configured from a separate transducer, if one is used). If a secondary transducer is in use, and an alarm condition occurs in the secondary room, the display will toggle and remain on the secondary room and pressure value as long as the alarm condition is present in that space.

If this is set to Secondary Only, then the Home screen will show the pressure value read by the secondary pressure transducer (anteroom for example). In this case, if an alarm condition occurs in the primary room, the display will toggle and remain on the primary room and pressure value as long as the alarm condition is present in that space. If no Secondary Room is configured on the Setup Unit screen, attempts to choose Secondary Only will result in the error “Secondary room source is NONE.”

If this is set to Toggle, then the Home screen will show the pressure value for both rooms, alternating back and forth momentarily (approximately 10 seconds apart). If an alarm condition occurs in either room, the display will toggle to the appropriate room and pressure value and remain on that room as long as the alarm condition is present. If both rooms are in alarm, then the alarm condition and pressure values will toggle.

Pressure Resolution

This setting shows the number of digits after the decimal point for the default screen pressure displays. This setting affects the primary and secondary room settings.

Supervisor and Operator Passwords

The password function provides security against changed configurations by unauthorized users. This is accomplished by using two levels of password protection. These can be enabled or disabled.

The image shows two side-by-side screenshots of a 'Set/Change Password' interface. The left screenshot is for 'Vivarium 485' and the right is for 'Vivarium 486'. Both screens have a blue header with the title 'Set/Change Password' and a green bar with the unit name. Below the header, there is a dropdown menu for 'Set/Change Password For'. The left screen has 'Supervisor' selected, and the right screen has 'Operator' selected. Both screens have three input fields: 'Enter Old Password', 'Enter New Password', and 'Confirm Password'. The 'Enter New Password' field has a small '(Must be changed)' label to its right. At the bottom of each screen are two buttons: 'Save & Exit' and 'Exit'.

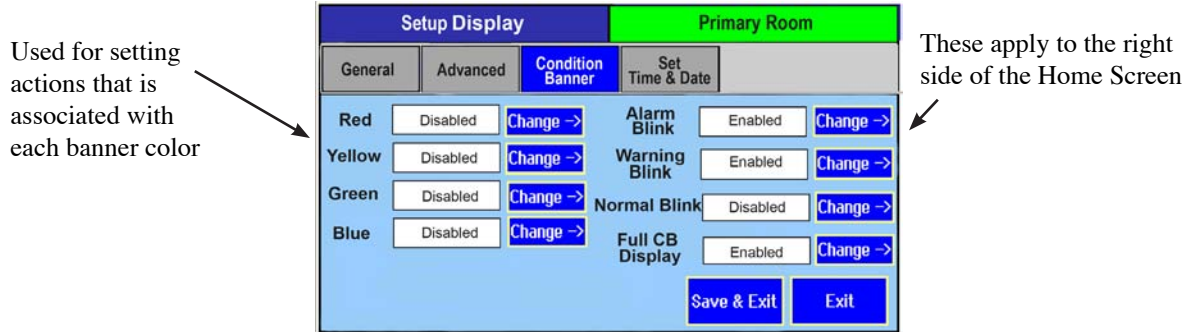
The Operator level allows access to change between Active and Standby room modes, but no other changes.

The Operator is the person that has day-to-day interaction with the monitor to change operating modes from Active` mode to Standby (where no alarms are active), the operator can also respond to local audible and visual alarms. This can be a Nurse or a Lab Technician. The SRCM was designed to make interaction with the unit as easy as possible for the Operator. Changes to messages and to the room mode requires simply touching active areas of the display. If Operator Password is enabled then a password will be needed before the change can be made.

The Supervisor Level allows full access to all menus. The Supervisor has access to all levels of the menu structure. This mode is used during initial configuration and follow-on reconfiguration.

NOTE: The master Supervisor password is 351, and will work for any condition where a user may need to reset passwords.

Condition Banner Tab- Customizing Blinking Screens - The Condition Banner can be used for control function as well as pure communication. There are three choices for each color: Active, Standby, and No Action.



The Condition Banner tab allows the user to choose whether certain parts of the screen blink or not. Blinking components on the Home screen are intended to draw more attention to the Condition Banner or the OPERATION indicators, for the purpose of making exception conditions more noticeable to staff concerned with room pressurization status.

Alarm Blink	Defines the behavior of the red ALARM indicator on the Home screen. Normal Blink is used for the green NORMAL indicator.
Warning Blink	Applies to the yellow WARNING, DOOR indicator.
Blink in Red/Green/Yellow/Blue	Applies to the Condition Banner messages and icon on the left one-third of the Home screen.
Full CB Display	If this is selected the left 1/3rd of the condition banner will become full screen after 15 seconds. If an alarm is in progress or occurs while the Condition Banner is full screen, the standard default screen will display. Touching the display will return it to the 1/3rd, 2/3 standard display mode. This is useful when users want a very simple interface. Touching the screen at any time will momentarily display the Home screen.
Save & Exit	Saves the selections made on this screen.

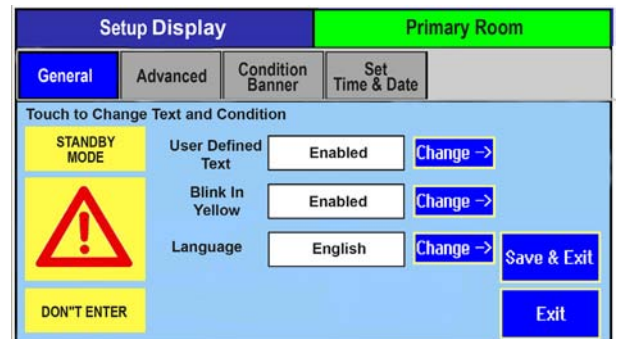
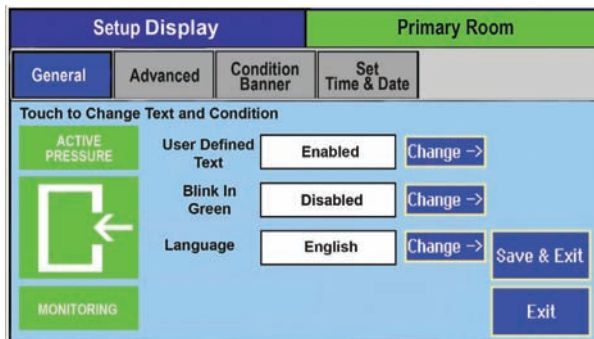
Full Screen Condition Banner and Active Standby Mode Application

Customers may want a minimal user interface and want to switch between Active and Standby Modes and clearly convey the status of the room.

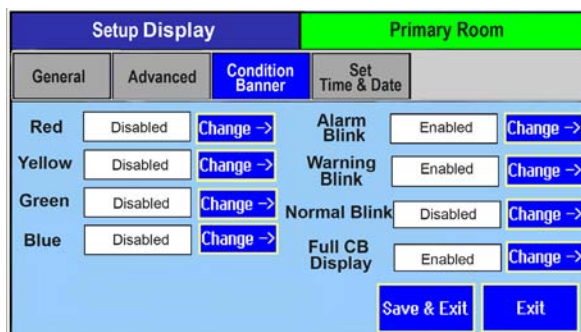
Note: Any color can be associated with any action: Active, Standby, or No Action.

The following example uses GREEN for Active and YELLOW for Standby.

1. On the setup Display/General tab set User defined Text to Enabled.
2. Tap the condition banner screen until the green screen is displayed. Setup the desired green screen text message to be displayed in the Active mode. Text can be entered so that it displays in the boxes above and below the center "Clear to Enter" symbol. Touch the top box and enter the desired text using the Data Entry keypad. Save by pressing the Enter button when complete. Perform the same steps for the bottom box.
3. Setup the desired yellow screen text message in the Setup Display/General tab. Text can be entered so that it displays in the boxes above and below the center "Warning Triangle" symbol. Touch the top box and enter the desired test using the Data Entry keypad. Save by pressing the Enter button when complete. Perform the same steps for the bottom box.



4. Setup the Condition Banner to display Full Screen rather than 1/3 left of screen display that is the default "as shipped" setup. To do this go to the Setup Display/Condition Banner tab and set the full CB (Condition Banner) Display to Enabled. Press Save and Exit.



5. With this setup the unit is in Active Mode. The Full Screen Display will look like the following with the text that was specified in step 2:



6. If the User changes the Standby by touching the section to the right of the PRESSURE, then the display will show up in yellow with the text that was specified in step 3.



7. This feature can be combined with password protection

Set Time & Date Screen

The Set Time & Date tab is used for setting the time and date of the SRCM. This time and date is used to time stamp the event log. See Event Log Section.

Note: If power is lost to the unit, the time, and date need to be reset. If BACnet is used and is connected to the network, the time and date will automatically be retrieved.

The date format is DD-MM-YYYY.

Setup Alarm

The Setup Alarm screen permits authorized users (based on password level) to configure alarm behavior, such as the duration of alarms, methods of clearing alarm condition, and how alarms are acknowledged. It also sets the room mode to positive, negative or neutral room.

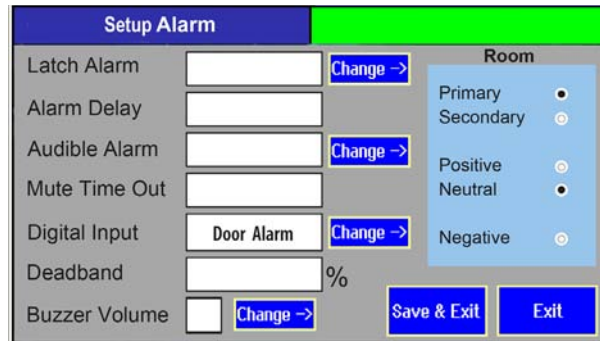
<p>Latch Alarm</p>	<p>If enabled, causes the display of red ALARM on the Home screen to remain, even if room pressurization returns to NORMAL. Latch Alarm enabled requires that an alarm event be acknowledged and that the pressure returns to within the normal range. This is useful because it forces recognition that an alarm event occurred. The alarm will still be on even if the pressure returns to normal range. Only when the alarm is acknowledged will alarming cease. When disabled, the alarm will be silenced when the pressure returns to normal range without requiring acknowledgement.</p> <p>When a Latch Alarm occurs, the Home screen displays a RESET button to the right of the Menu button. Press the RESET button to acknowledge and reset the Latch Alarm condition.</p>
<p>Alarm Delay</p>	<p>Time between when the pressure went outside alarm setpoints and when the unit goes into alarm mode. This is useful in preventing false alarms. For example, if Alarm Delay is set to 20 seconds, the staff has 20 seconds to open a door, enter the room and close the door before the alarm sounds (if audible alarms are enabled). Alarm Delay also applies to alarms annunciated to a remote annunciator via the SRCM Digital Output (hardware configuration).</p>

Audible Alarm	Enables or disables the audible buzzer. Regardless of whether audible alarming is enabled or disabled, the red ALARM condition will show on the Home screen, annunciate to an SRAN, and propagate to a configured Digital Output. If an alarm occurs and the audible alarm is enabled, a new SILENCE button will appear on the Home screen so that the operator can silence the audible alarm. The audible alarm is silenced only for the period of time defined by Mute Time Out.
Mute Time Out	Sets the time (in seconds) that the alarm will remain silent after pressing the SILENCE button before the audible alarm resumes again. This assumes that the room pressure condition is still outside the normal setpoint operating limits. Mute Time Out can be set from 0 to 9998 seconds. Entering a value of 9999 will silence the audible alarm “forever,” as long as a new alarm condition does not occur.
Digital Input (DI)	Used for monitoring the door status, open or closed. The DI is a Normally-Closed dry contact. A door jamb or valve pressure switch must be wired to the terminals labeled DOOR in the rear of the unit. When the door opens the contact will open, and this will show a yellow DOOR Warning on the Home screen. The Door Alarm will suppress alarms if they are generated at the same time that the door is open.
Deadband	is adjustable from 0 to 10% and represents the region within the setpoint range where yellow WARNING is displayed on the Home screen to indicate that the pressure is near ALARM limits. If set to 0, no WARNING will occur, only ALARM when the pressure value reaches setpoints. If set to any other value, WARNING will be displayed if the pressure value reaches that percentage of total pressure setpoint range. When the unit goes outside of the deadband range the alarm will occur. The alarm will remain until the pressure returns within the alarm limit range (or acknowledged Latch alarm) minus the setpoint.
Buzzer Volume	The buzzer volume can be adjusted from one—four, with four being the highest sound level. The alarm buzzer is disabled using audible Audible Alarm disable function.

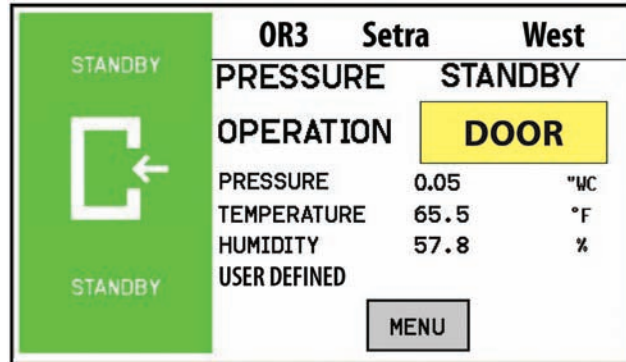
Alarms Disabled when Door Open & Buzzer for Door Warning

The SRCM is able to configure the Room status to disable the Alarms when Door is open. This function is used when there will be high traffic through the area and the user wants to disable any alarms that are occurring as the result of the door being open. The alarms will be re-enabled once the Door is closed.

In the Alarm Setup screen, select the digital input choice to Door Alarm.



As shown in the screen below, the DOOR indication (to the right of OPERATION) will be highlighted to indicate that the door is open but that STANDBY (to the right of PRESSURE) will indicate that the room is in STANDBY mode.



If the door opens when the unit is in alarm, unit will continue to operate in alarm state instead of clearing the alarm.

Alarm Set Point For each space, Primary Room or Secondary Room, this screen is used to define the alarm setpoints. When the room is then set to Positive, Neutral, or Negative, the setpoints and conditions configured here are in effect for alarm and warning conditions.

Alarm Matrix The SRCM has a great deal of flexibility to define alarm conditions. Alarms and warnings can be configured for primary and secondary rooms, and for the door. Room display can toggle between Primary and Secondary. The following table outlines what will occur in terms of priority and display under normal and alarm conditions.

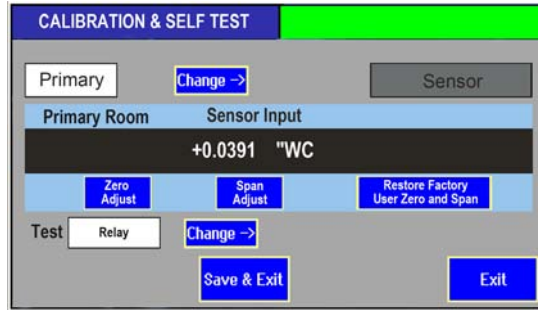
N=Normal; A=Alarm

Toggle	High Priority		Display Text (Maximum eight)	Background	Remarks
	Primary Pressure	Secondary Pressure			
Disabled	N	N	Normal	Green	Displays primary pressure or secondary pressure based on the selection in the setup display screen.
Disabled	N	A	Alarm	Red	Shows Alarm for secondary room if secondary room is selected for the display. If the pressure to display is selected as Primary, display switches to the secondary room to show the alarm.
Disabled	N	A	Alarm	Red	Shows Alarm for secondary room if secondary room is selected for display. If the pressure to display is selected as Primary, display switches to the secondary room to show the alarm.

Toggle	High Priority		Display Text (Maximum eight characters)	Background	Remarks
	Primary Pressure	Secondary Pressure			
Disabled	A	N	Alarm	Red	Shows Alarm for secondary room if secondary room is selected for display. If the pressure to display is selected as Primary, display switches to the secondary room to show the alarm.
Disabled	A	A	Alarm	Red	Display toggles between primary and secondary room.
Disabled	A	A	Alarm	Red	Display toggles between primary and secondary room.
Enabled	N	N	Normal	Green	Toggle between primary and secondary room.
Enabled	N	A	Alarm	Red	Shows secondary alarm. Display stops toggling.
Enabled	N	A	Alarm	Red	Shows secondary alarm. Display stops toggling.
Enabled	A	N	Alarm	Red	Shows primary alarm. Display stops toggling.
Enabled	A	N	Alarm	Red	Shows primary alarm. Display stops toggling.
Enabled	A	A	Alarm	Red	Display toggles between primary and secondary room.
Enabled	A	A	Alarm	Red	Display toggles between primary and secondary room.

Calibration and Self-Test

This page is used for calibration of the internal pressure transducer sensor and testing operation of hardware circuitry. Calibration is only required for highly accurate measurement needs such as those needed to comply with federally mandated regulations. Calibration should only be performed by qualified personnel.



1. Select Primary or Secondary room. When selected, the gray box to the right will indicate if the calibration will be applied to the on-board sensor or the external sensor (Analog Ch1 or Analog Ch2). The indicated pressure is shown.
2. Calibration of the on-board sensor requires that the faceplate be removed and the captive screw holding the display cover must be loosened (at the bottom-center of the display bracket).
3. Lift the cover to expose the clear and red tubing connecting the on-board sensor to the pressure fittings in the rear of the unit.
4. Remove the tubing from the high and low ports (red and clear tubing). This disconnects the sensor from the room pressure.



5. After calibration, replace the red and clear tubing.

Zero Adjust	Pressing Zero Adjust button will bring up a “Is zero pressure applied?” message. If yes, press OK. If the zero measurement is within 10% of the factory zero measurement stored in the unit, the zero value will be reset. <i>Note: Zero Adjust should only be performed after the unit has been operating for 30 minutes in the installed location.</i>
Span Adjust	This requires the use of a Pressure Calibrator, such as a Setra Model 869 or equivalent. Connect tubing from the Calibrator to the low and high ports identified near the PCBA markings. Apply Full Range pressure, for example ± 0.1 ” WC range, use 0.1” WC. When pressure reaches Full Range pressure, press OK button. The output at Full Range must be within 10% of the factory calibration to allow re-adjustment.
Restore Factory User Zero and User Span	If the unit has been miscalibrated in the field, the factory zero and span settings can be restored.
Test	The Buzzer, Relay and Internal Memory checksum can be tested and verified.

System Information

The System Information screen reports Model Number, Serial Number, Firmware Revision, Network Status, Last (Factory) Calibration Date and Technical Support Contact.

The screenshot shows a 'System Information' screen with the following data:

Model Number	SRCM0R1WBA2HNS
Serial Number	4539480
Firmware Revision	Host 219 BACnet: 1.13
Network Status	Connected
Last Calibration Date	13-Dec-2010
Technical Support	<input type="text"/>

Buttons at the bottom: Restore Factory Default, Save & Exit, Exit.

Technical Support	Any string 30 characters or shorter can be entered in this field by pressing anywhere in the white text entry box to enable the pop-up keyboard. Enter an email address, name, or phone number as needed.
Restore Factory Default	Restores the default settings for all configuration and setup screens. All configured settings, including alarm thresholds and audible alarming, that were modified after installation will be lost if this function is used. Primary and Secondary Room Labels will show “???” Normal operation of pressure measurement will not be affected.

USB Configuration

Cloning

The SRCM has a USB port built in for the purpose of duplicating configurations when multiple units are being setup with similar configurations. To use this function, a USB 2.0 thumb drive of capacity 256 megabytes or larger must be used. The thumb drive must have at least 100K or free memory available. The USB port should only be accessed by qualified personnel.

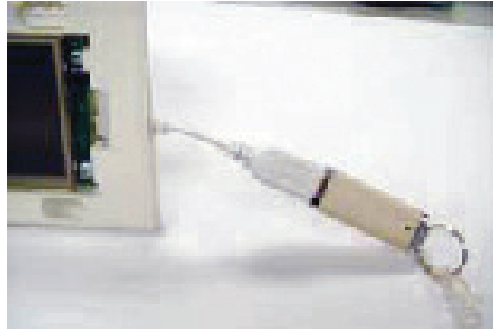
Setra recommends the Kingston DataTraveler 112, 4GB (minimum) flash drive along with the aid of a short mini-USB adapter cable from Tensility International Corporation, P/N 10-00003. No PC is required.

Manufacturer	Model	Size (GB)	Comment
Kingston	DataTraveler	1	No issue
		256 MB	No issue
	DataTraveler	4	To make Kingston work, format as: <ul style="list-style-type: none"> • Fat 32 • Must have volume label • Do not use quick format
	DataTraveler	8	
	DataTraveler 112	4	Passes out of the box without formatting
Sandisk	Cruzer	2	To make Sandisk work, format as: <ul style="list-style-type: none"> • Fat 32 • Must have volume label • Do not use quick format
		4	
		16	

To access the USB port, first remove the faceplate cover and set it aside. The USB port is located on the right side of the touch-screen display driver board, and is accessed by removing the security screw and flipping up the display housing. A mini-USB 5-pin Male to USB A Female cable (from Tensility International Corporation, P/N 10-00003) is required to connect a standard USB 2.0 compliant thumb-drive to the SRCM USB port.

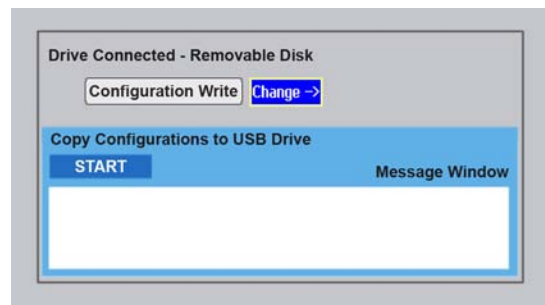
To make use of the cloning feature, first setup one SRCM with a configuration that represents most other SRCM units that will be used during installation. Configure the “master” unit with all parameters needed, including alarm thresholds, condition banners, blinking operations, I/O configuration and so on. Make sure the Save & Exit function is used to properly save your configuration. This “master” setup will then be downloaded to the thumb drive and for use uploading to other units.

USB Configuration Cloning



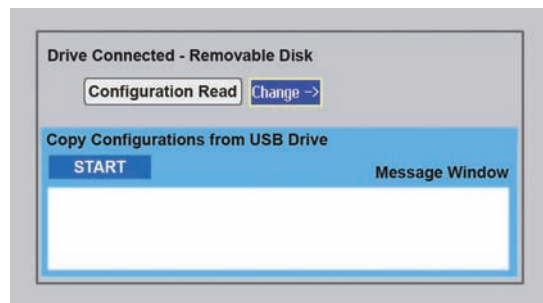
As soon as the thumb drive is connected to the SRCM it will be recognized and bring up a Drive Connected menu.

- Select Configuration Write to transfer the master SRCM configuration from the unit to the thumb drive.



- Select START to initiate the copy operation.

Remove the thumb drive and cable and move to the first “slave” unit to be configured. With power applied to that unit, connect the thumb drive and cable. Select Read and START to write the master configuration to the new slave unit.



A Write Process Successful message will appear if the configuration has been written to memory. Review the various Menu screens of the slave unit and subsequent units to confirm the proper configuration is stored. In most cases the only change that will be required to clone SRCM units is Primary and Secondary Room labels that match the location of installation.

Updating Firmware

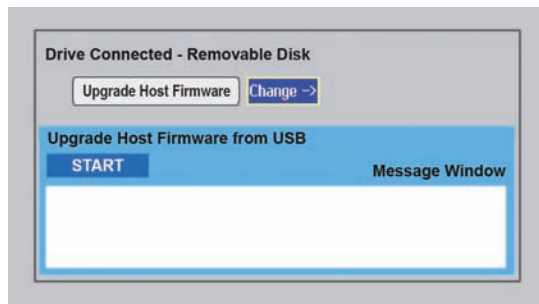
Note: Before updating firmware, perform USB Configuration Cloning. Refer to USB Configuration Cloning on previous page.

The USB port can be used for upgrading the SRCM firmware in the field.

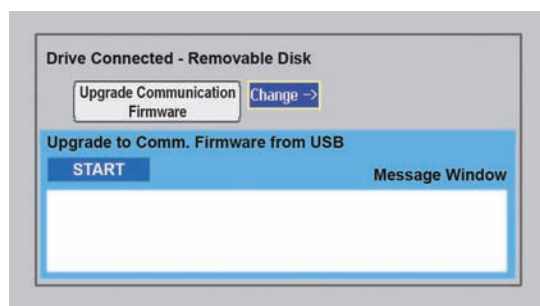
To upgrade the firmware you must first download the firmware for the latest versions of the hex file for the host controller, the USB hex file and the BACnet hex file, these are EMS1009.hex, usb.hex and BACnet.hex. Place the new files on the thumb drive. Plug in the USB adapter cable, shown on previous page, and the flash drive.

The SRCM will automatically detect the USB drive bring up a window.

1. Press the Change button.
2. Scroll to the Upgrade Host Firmware screen shown here.

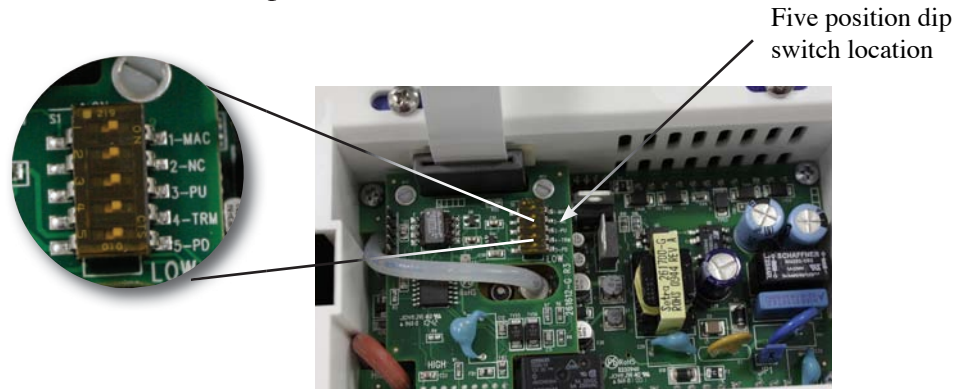


3. After the host firmware has been updated, change to the Upgrade Communication Firmware screen and press START.

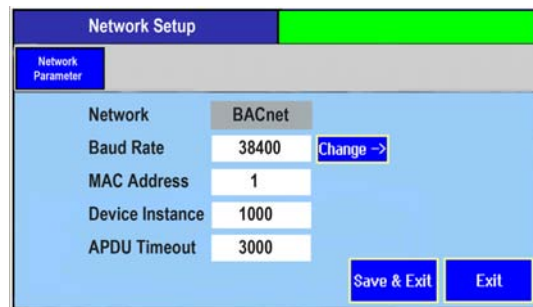


Network Setup

The BACnet setup screen is enabled by pushing position 1 switch (labeled MAC) to the on (right) position. After configuration the switch must be moved to the off (left) position.



The Network Setup screen gives the option for the user to configure the Network and other parameters which have to be read from the network.



BACnet configuration requires the user to configure the following parameters.

1. Baud Rate - User can select any one of the 4 standard Baud rates for RS485 communication from 9600, 19200, 38400 and 76800 by using the change button. Auto baud features is not supported.
2. MAC Address - User can enter Medium Access Control address specific to this device by touching on this field. User can enter a value from 0 to 127 as this unit is a BACnet master, address 128 to 254 reserved for 254 and 255 reserved for Broadcast.
3. Device Instance - The Device instance number must be unique within a BACnet internetwork to identify each device. Instance numbers are defined as 22 bit long, in decimal instance number ranges from 0 to 4194,3,03. FFFFNDD is the network addressing scheme, here FFFF represents the Facility code. N is the number of the network in the building and DD ranges from 0 to 99 to represent the individual device on the network.

4. APDU Timeout - Indicates the amount of time in milliseconds between retransmissions of the APDU requiring acknowledgement for which no acknowledgement has been received. The default value for this property will be 3,000 ms and max can be 65535.

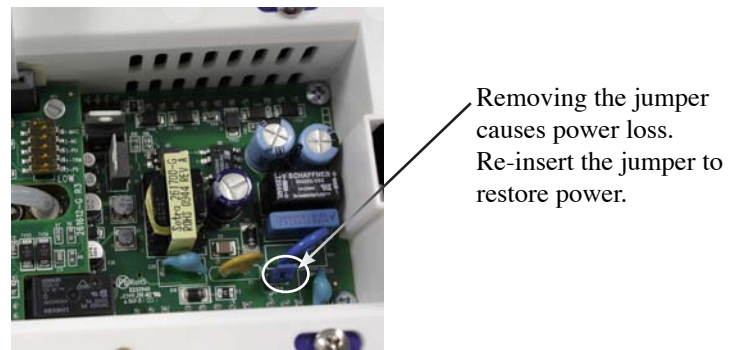
Save and Exit to save settings or cancel to cancel setting changes.

Once this is complete disable the BACnet setup by moving the dip switch position 1 to off (left) position.



Press Save and Exit.

5. After the unit returns to the main menu screen, disconnect the power to the unit and reconnect in order to boot up with the proper MAC address and Device Instance. The power can also be cycled by removing Jumper JP1 and then reconnecting.



The unit can also be configured through the BACnet interface as well as through the Touch Screen User Interface.

Event Log

The SRCM can be enabled with an audit trail of changes made to the configurations/ modes of the system by Supervisor and Operator. When the Supervisor / Operator changes any configuration through the menu, the action is captured and stored in a string covering the User profile, Screen name where the parameter is changed. Parameter name and Value to which it is changed. There will be 5 such instances stored in non-volatile memory of the unit. Any power failure in the unit will lose the data and it will be the responsibility of BMS system to log these strings after polling from the RCM unit through BACnet. RCM unit will store these strings as different instances of Character String Object.

The value to which the parameter is changed will not be logged for parameters like User Defined Condition Banner text, Room Label, Message Text, etc., which needs more memory. Other parameters whose variables are enumerated, real and integer will be logged till the value to which it is changed.

The string length of each instance of configuration change will be 50 Bytes in data memory area of the controller.

Event Log		
Date	Time	Event

Clear History

Exit

Controlling Temperature

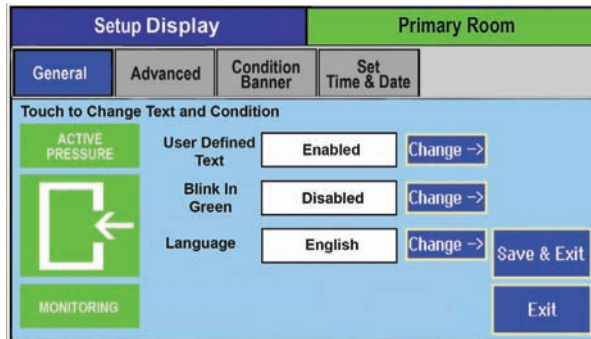
The SRCM can be used for controlling the temperature of the primary and secondary rooms. Each of the rooms to be controlled must have the Temperature Parameter setup for each of the rooms with the source as BACnet. Input the Object Instance and Device Instance so that the SRCM can map to the temperature Present Value.

To verify the correct mapping press the READ button to read the Present Value.

The screenshot displays the 'Setup Unit' interface for 'OR3 Setra West'. It features a top navigation bar with 'Setup Unit' and 'OR3 Setra West'. Below this, there are radio buttons for 'Primary' (selected) and 'Secondary'. Four parameter slots are visible: 'Parameter 1', 'Parameter 2', 'Parameter 3', and 'Parameter 4'. 'Parameter 3' is currently selected. The 'Parameter' dropdown is set to 'Temperature', and the 'Input Source' is 'BACnet'. A 'Label' field contains 'OR3 Setra West'. The 'Object Type' is 'Analog Input' and the 'Object Instance' is '1'. The 'Property' is 'Present Value' and the 'Device Instance' is '1'. At the bottom, there are 'Read', 'Result' (input field), 'Save & Exit', and 'Exit' buttons.

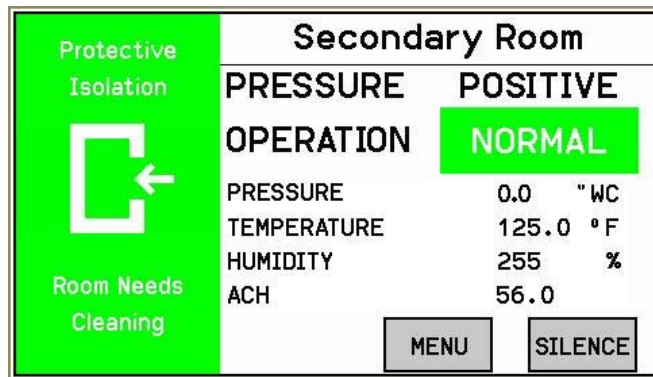
French Language Support on Default Screen & Data Entry Screen

The home screen can be setup to show French Language words using the Setup Display Menu

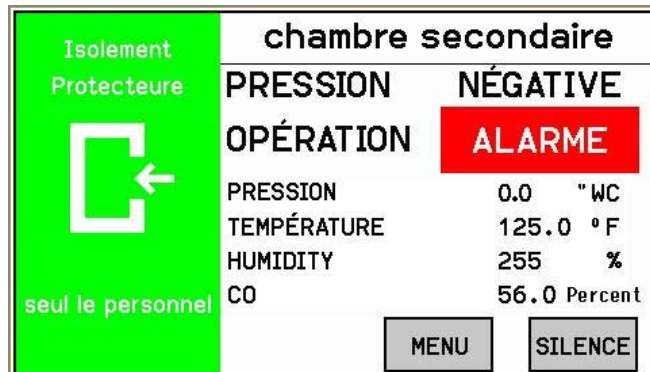


The following screens show the difference between English and French Home screens.

Default screen for English version.



Default screen for French version.

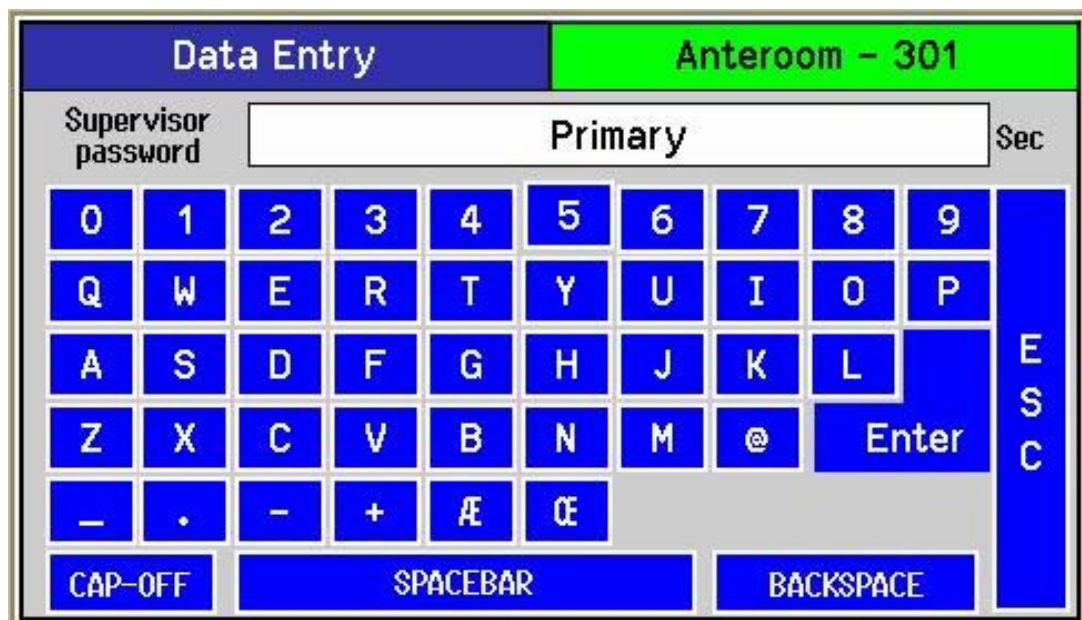


On the default screen the following changes will be made for the French version.

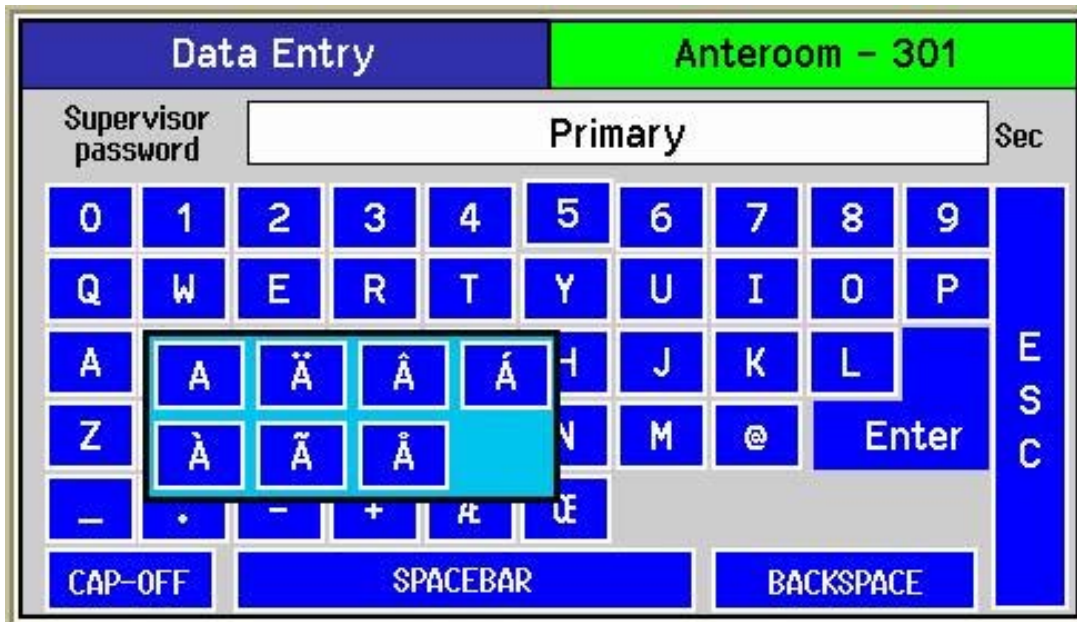
PRESSURE	PRESSION
OPERATION	OPÉRATION
NEGATIVE	NÉGATIVE
NEUTRAL	NEUTRE
STANDBY	ATTENTE
DOOR	PORTE
WARNING	ALERTE
ALARM	ALARME
TEMPERATURE	TÈMPERATURE
SILENCE, NORMAL, HUMIDITY, RESET do not change	

When the language is selected as French in the setup display screen, French characters entry in the data screen will be enabled. Whenever user press N (same for all French characters like A, E, I, O, U, C) child screen will pop up which will contain all corresponding French characters. In this case child screen will contain French characters corresponding to N. When user presses any of these characters, that character will be taken as input and the child screen will disappear. If user does not want to enter any character, child screen will disappear when user presses N in the main screen.

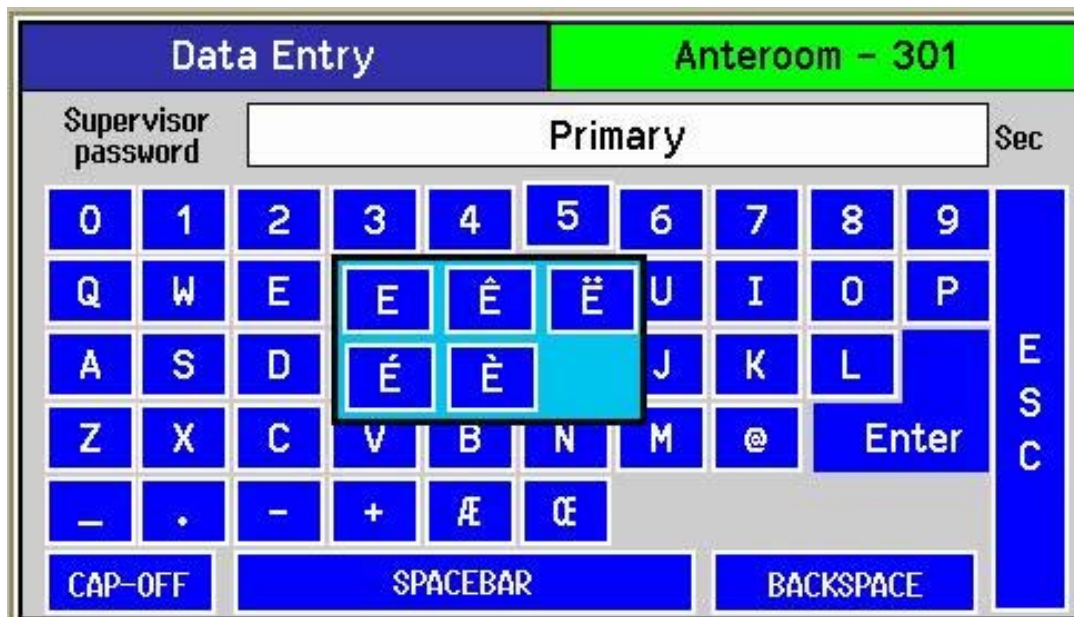
Data Entry Screen for French Version



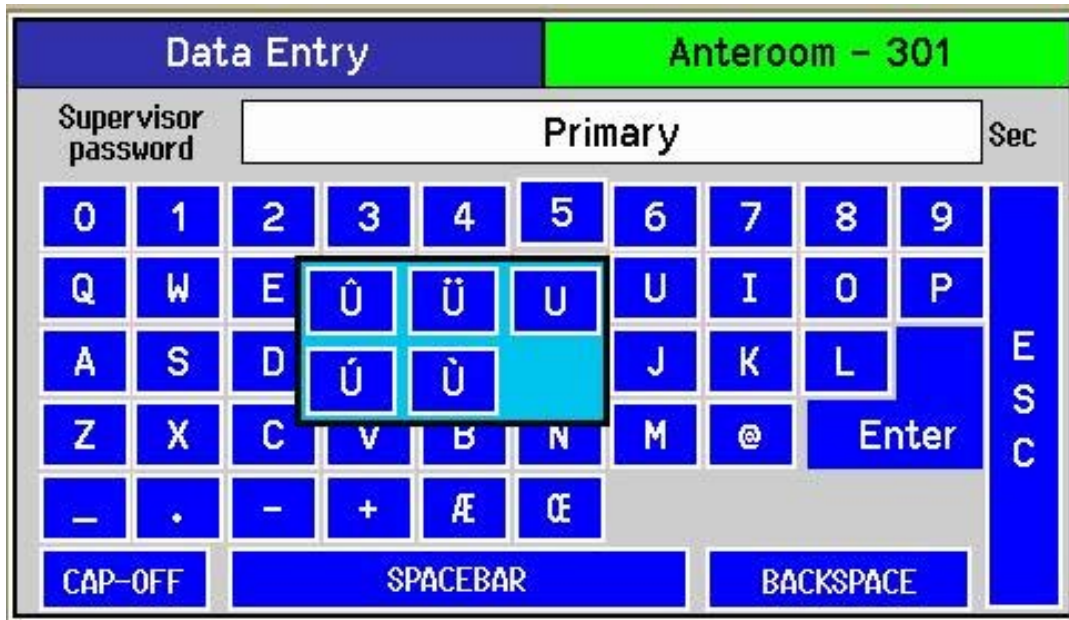
French Version—Letter A



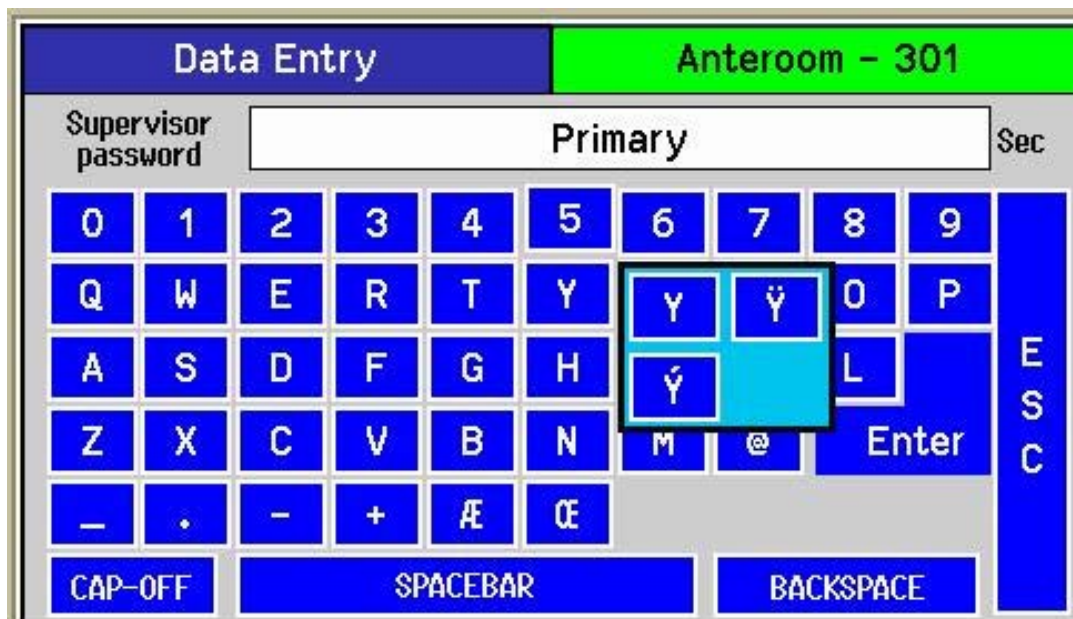
French Version—Letter E



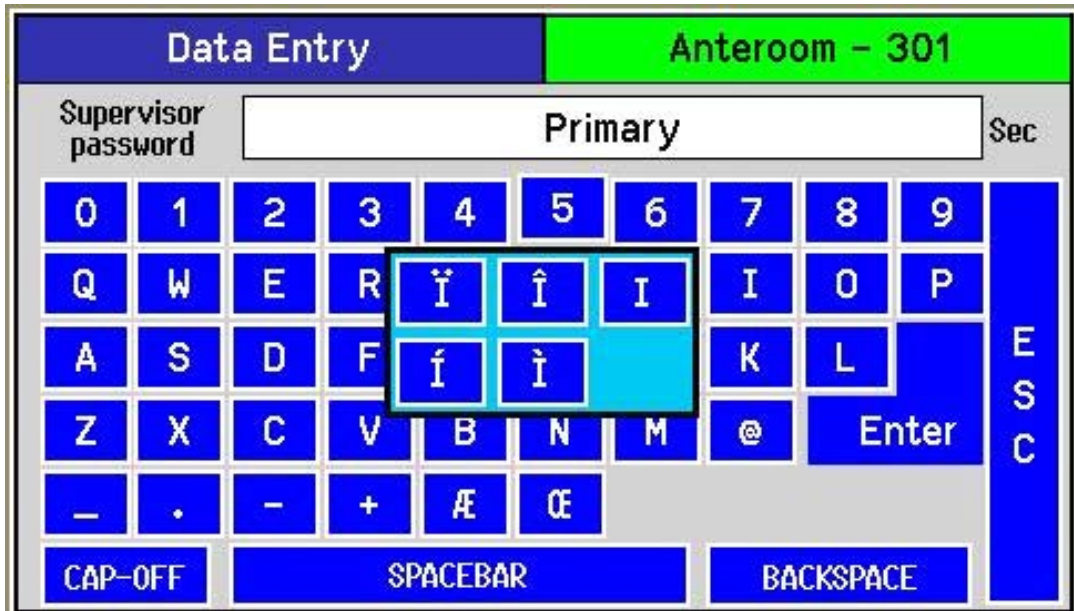
French Version—Letter Y



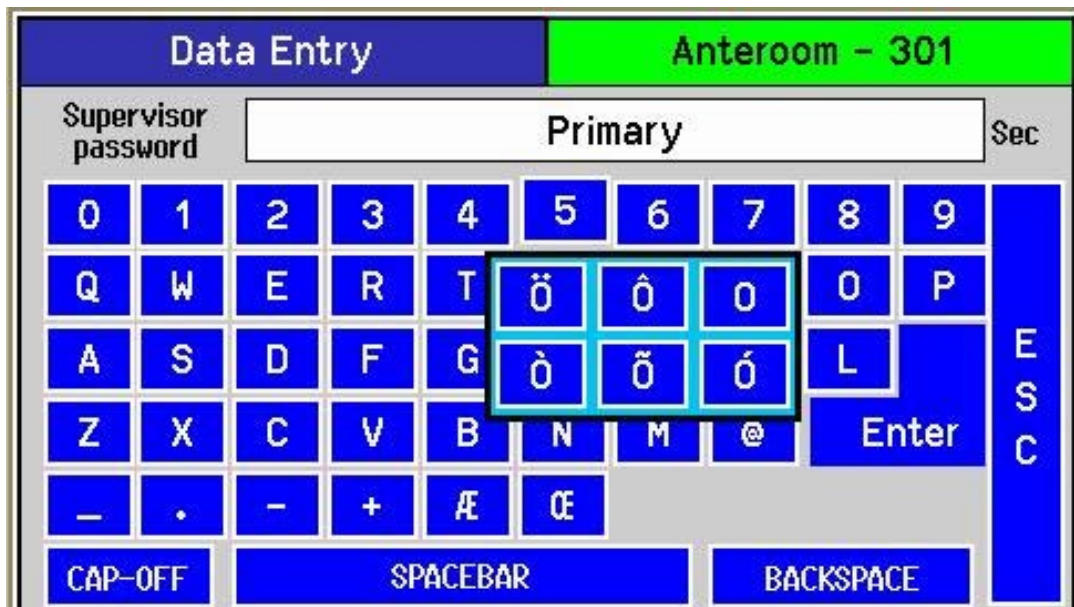
French Version—Letter Y



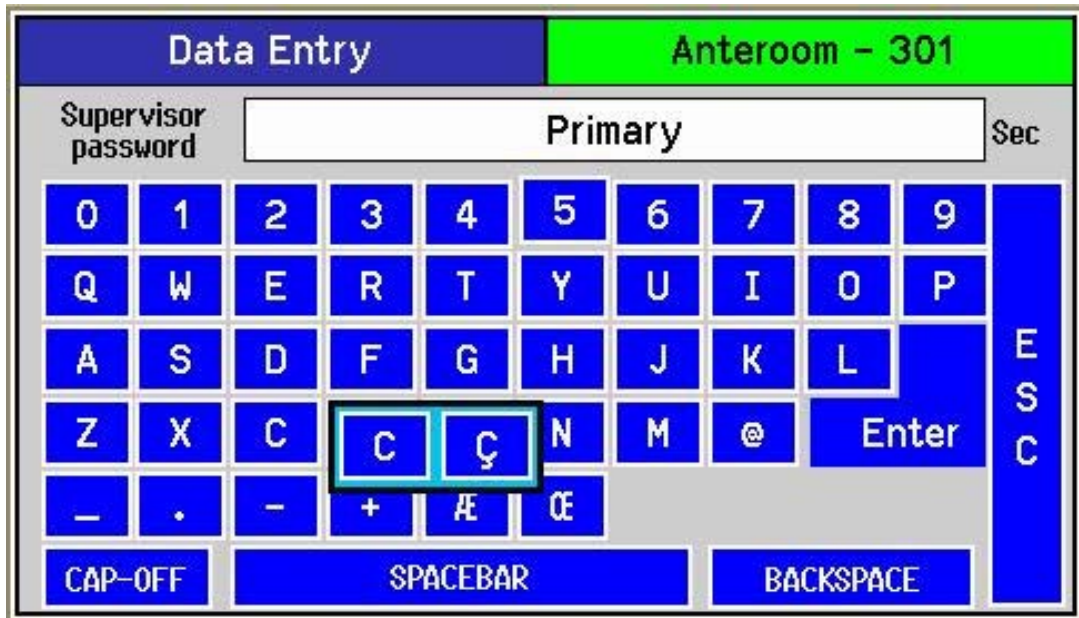
French Version—Letter I



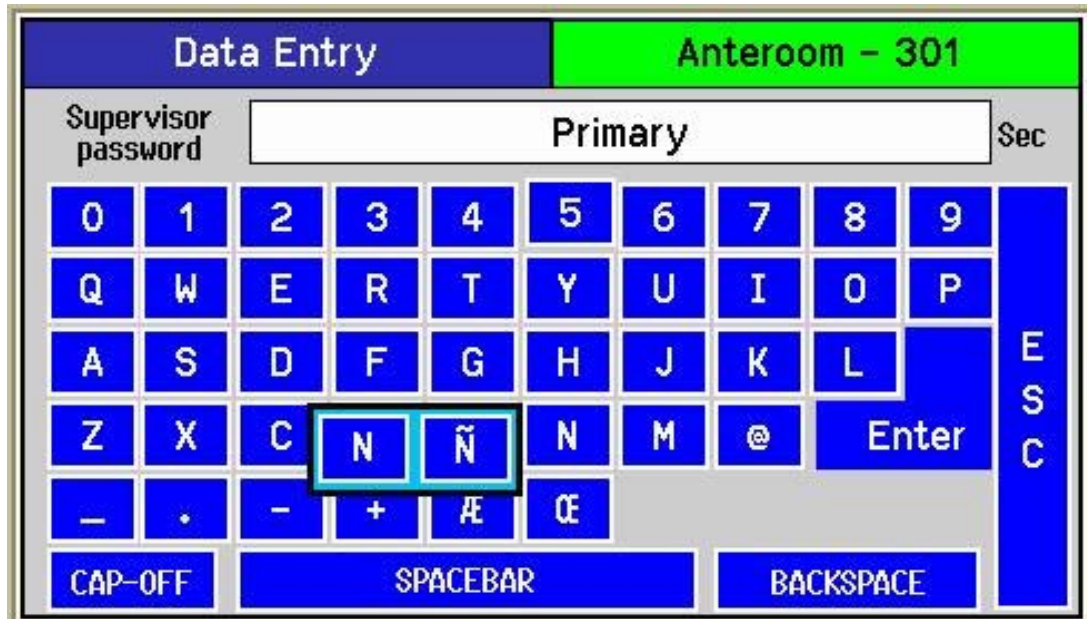
French Version—Letter O



French Version—Letter C



French Version—Letter N



Troubleshooting

Error/Trouble Condition	Possible Cause	Solution
Display shows: "Factory Calibration has been lost. Return to Factory for Calibration".	Non-recoverable EEPROM checksum error of factory calibration data, ER01.	Return unit to factory for calibration.
Display shows: "Setup information has been lost. Loading Default Values Please Wait...".	Recoverable EEPROM checksum error of unit setup configuration, ER02.	Unit will auto recover by rebooting and then displaying message: "Setup information has been lost, default configuration loaded. User should reconfigure." User should press OK/Cancel (User Acknowledgement) so that device enters into default screen.
User cannot enter into menus because of password protection.	User has lost password.	Use default password "351".
SRCM does not come online	Two or more controllers have the same MAC address.	Modify each duplicate address to a unique number.
	The MS/TP network has too many devices.	Do not exceed the maximum number of devices and maximum length allowed by the EIA-485 specifications.
	Too many devices were installed without any repeaters.	Repeaters need to be installed as specified in this document.
	The MS/TP cable runs are broken.	Locate the break and correct the wiring.
	MS/TP connections at the module were reversed.	Respect polarity of the wires on a MS/TP network.
	The SRCM does not have power.	Apply power to the SRCM.

RETURNING PRODUCTS FOR REPAIR

When returning a product to Setra Systems, the material should be carefully packaged and shipped prepaid to:
Setra Systems, Inc.
159 Swanson Road
Boxborough, MA 01719-1304
Attn: Repair Department

To assure prompt handling, please refer to return instructions on our Web site at http://www.setra.com/tra/repairs/cal_rep.htm.

WARRANTY AND LIMITATION OF LIABILITY

SETRA warrants its products to be free from defects in materials and workmanship, subject to the following terms and conditions: Without charge, SETRA will repair or replace products found to be defective in materials or workmanship within the warranty period; provided that:

- a) the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of instructions furnished by SETRA;
- b) the product has not been repaired or altered by anyone except SETRA or its authorized service agencies;
- c) the serial number or date code has not been removed, defaced, or otherwise changed; and
- d) examination discloses, in the judgment of SETRA, the defect in materials or workmanship developed under normal installation, use and service;
- e) SETRA is notified in advance of and the product is returned to SETRA transportation prepaid.

Unless otherwise specified in a manual or warranty card, or agreed to in writing and signed by a SETRA officer, SETRA pressure, humidity, and acceleration products shall be warranted for one year from date of sale.

The foregoing warranty is in lieu of all warranties, express, implied or statutory, including but not limited to, any implied warranty of merchantability for a particular purpose.

SETRA's liability for breach of warranty is limited to repair or replacement, or if the goods cannot be repaired or replaced, to a refund of the purchase price. In no instance shall SETRA be liable for incidental or consequential damages arising from a breach of warranty, or from the use or installation of its products. No representative or person is authorized to give any warranty other than as set out above or to assume for SETRA any other liability in connection with the sale of its products.

For all CE technical questions, contact Setra Systems, USA. EU customers may contact our EU representative Hengstler GmbH, Uhlandstr 49, 78554 Aldingen, Germany (Tel: +49-7424-890; Fax: +49-7424-89500).



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