



# Multi-Room Monitoring Station (MRMS)

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## User's Guide



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# Section 1:

## Introduction

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### 1.1. Overview

The Setra's Multi-Room Monitoring Station (MRMS) is an elegant remote monitoring solution for Critical Care application requirements and reduces labor, installation cost and improves productivity. Using BACnet® MS/TP, the MRMS can remotely monitor up to 8 critical spaces equipped with other Setra Pressure and Condition Room Monitors such as Models SRPM or SRCM. The MRMS user interface is simple, intuitive and allows the user to access configuration setup menus using the backlit color TFT LCD (480 x 272 resolution) display with a resistive touch panel. The MRMS features an industry's first Auto-Discover function to automatically search and connect to SRPM or SRCM devices on a BACnet® network. A built-in audible and visual alarm alerts users to room status and room condition, while allowing for easy alert of a change in room condition.



### 1.1.1. Intended Use

The MRMS can be installed in a centralized location such as a nurse's station in healthcare applications or a centralized control room for applications within Pharmaceutical clean room, Biological Safety Labs, and Vivariums. The MRMS provides remote viewing and alarming capabilities for up to 8 critical spaces equipped with other Setra Room Pressure Monitors (SRPM) or Setra Room Condition Monitors (SRCM) that provided local differential pressure indication as well as other parameters such as temperature, humidity, etc.

Typical applications include:

Healthcare – Hospital Nurse's Station

Pharmaceutical, semiconductor, precision manufacturing and other clean rooms

Laboratories – BSL (Bio safety labs), radiation, vivarium, toxic metals and chemicals

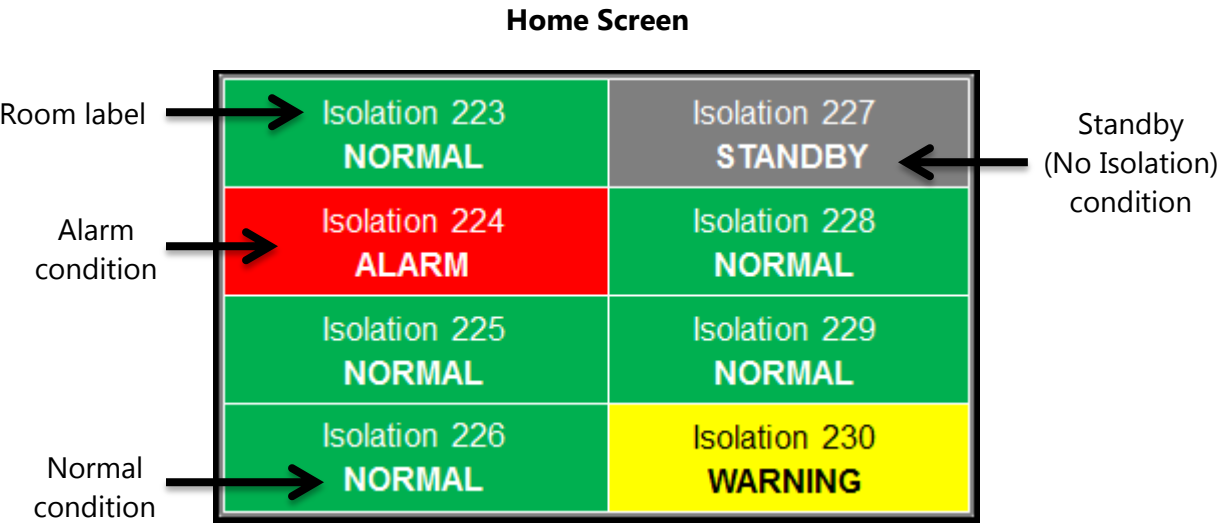
## 1.2. MRMS Functions

The MRMS can be configured to remotely monitor up to eight (8) SRCM and/or SRPM differential pressure monitors. The MRMS home screen shows the remote room label and indicates the status of the remote room, NORMAL, WARNING, ALARM, STANDBY or NO ISOLATION. Depending on the status of the room being monitor, the color of the room changes according to the table below.

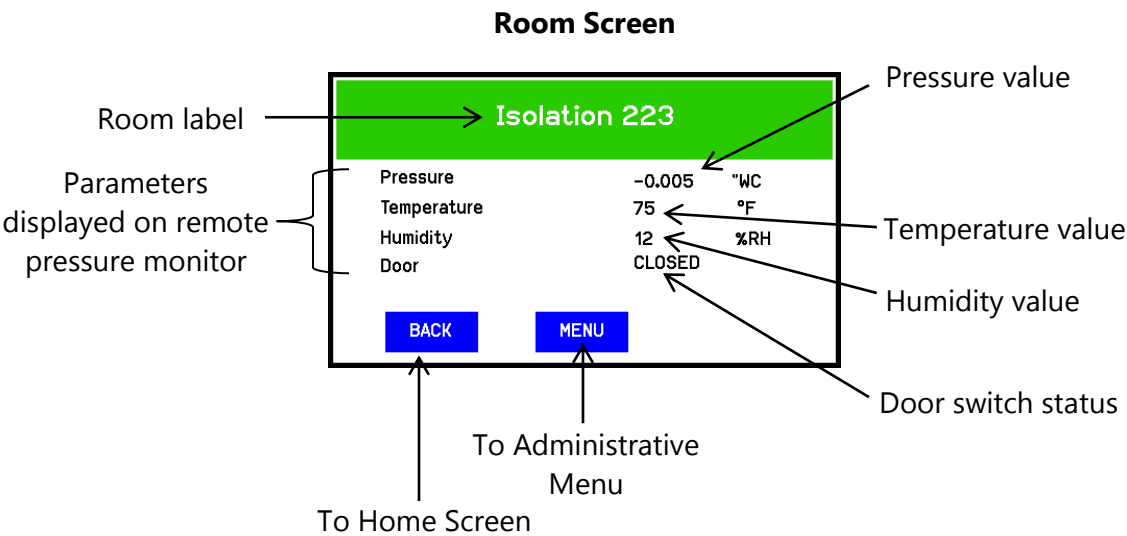
Color	Status
Green	Normal. Remote room pressure is within established alarm limits
Yellow	Warning. A door is open or remote room pressure is within alarm deadband <sup>1</sup>
Red	Alarm. Remote room pressure is outside alarm limits and alarm delay has expired. <sup>2</sup>
Grey	Remote room is in Standby or No isolation mode.

<sup>1</sup> Door alarm input should be enabled in remote SRCM/SRPM.

**User Interface:** LCD Display 480 x 272 TFT/WQVGA module, with LED backlight and 4-wire resistive touch-screen.



The individual room screen shows the condition of each individual room being monitored, including pressure, temperature, humidity or any user defined parameter defined on the remote SRCM. In the case of the SRPM, only the room pressure measurement is displayed.



**Room Auto Discover:** This function is used to scan and search for SRPM and SRCM devices on the BACnet® network. A list of devices found and their corresponding MAC address will be display after performing a Room Auto Discover search. Up to eight (8) rooms can be selected from the list and the room location is configurable.

**Audible Feedback:** A buzzer will sound when remote room is out of range and alarm delay has timed out. Volume can be adjusted to suit the facility and use of the space. Audible alarms can also be individually enabled or disabled for each room. This configuration is independent from the audible alarm configuration of the remote room pressure monitor.

**Security:** A one level password protection is available. This can be enabled or disabled. The Supervisor password protects the Administrative Menu which is used during the initial setup and maintenance configuration.

**USB Functionality:** An internal micro USB port performs 2 functions.

- Cloning (copy and paste) of setup configurations allows quick setups in facilities that have multiple units installed with similar setups. Simply setup one unit then download the configuration to a flash drive and upload to each of the other units.
- Field Upgrade. The firmware in the units can be upgraded in the field using a flash drive.

**French Language:** An option is available to show the Home screen parameters and keyboard in French language.

# Section 2:

## Rough-In Installation

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### 2.1 Required parts

The following components are required to mount and install the MRMS correctly:

- Triple gang - double deep metal electrical box (RACO 697 or Appleton M3-350) or equivalent, Qty: 1
- Green grounding screw, Qty: 1
- Power (18 AWG recommended) and signal wiring (22 AWG recommended), as needed.
- Transformer, 24 VAC
- EMT conduit (if required by local code)

### 2.2 Parts included

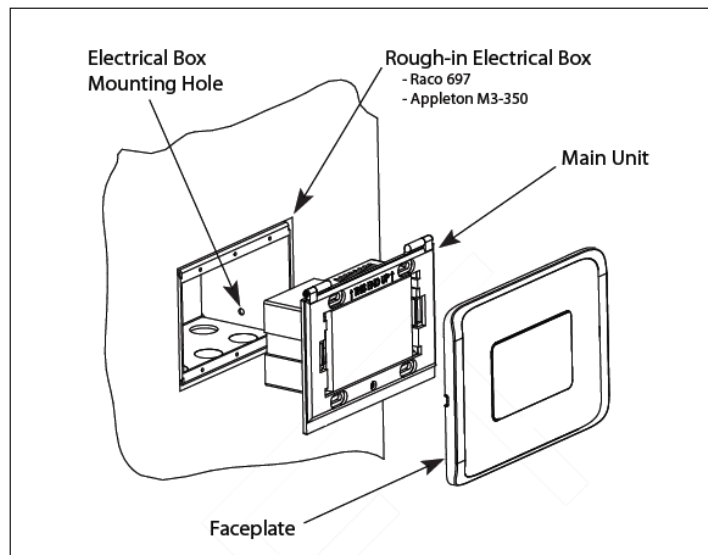
The following parts are included with your order:

- MRMS housing assembly, Qty: 1
- MRMS faceplate, Qty: 1
- Mounting screws, 6-32x1/2 Phillips head, Qty: 5
- Mating electrical connectors, Phoenix contact MC plug kit, Qty: 2 (Communications connector and power connector)
- Installation instructions, Qty: 1
- Quick start operation guide, Qty: 1

### 2.3 Installation

The MRMS is designed to be mounted in a standard triple gang-double deep electrical box RACO 697 or Appleton M3-350 or equivalent.





*Wall Mount Installation Overview*

**Note:** Secure the triple gang-double deep electrical box to the stud(s) using the mounting hole in the side of the electrical box (see figure above for mounting hole location). Drive the mounting screws from the inside of the electrical box into the wall studs to prevent sharp objects protruding into the electrical box.

### **2.3.1. Wiring recommendations**

- All circuits must conform to the requirements of an NEC Class 2 (dry) circuit.
- Use multiple transformers instead of larger transformers when more than 100 VA is required.
- Each pressurization zone should have either a dedicated single-phase primary circuit, or a secondary circuit disconnect.
- Use stranded wire for ease of installation.
- Follow good wiring practices:
- Locate cables away from sources of electrical interference (EMI/RFI).
- Do not run signal or communication cable in the same conduit or wire way as power cables.
- If signal cable must cross power cables place these at a 90-degree angle.
- Shield or drain wires, if required, should be wrapped with insulating tape to prevent contact with exposed conductors or contacts.
- Maintain a consistent color code or polarity all the way through the wiring system.
- Power supply and signal isolation on I/O devices vary from manufacturer to manufacturer. Verify the wiring device manufacturer's recommendations for isolating power and signal common connections and maintain polarity.
- Local and national electrical codes take precedence.

### 2.3.2. Wiring electrical box (Rough-In)

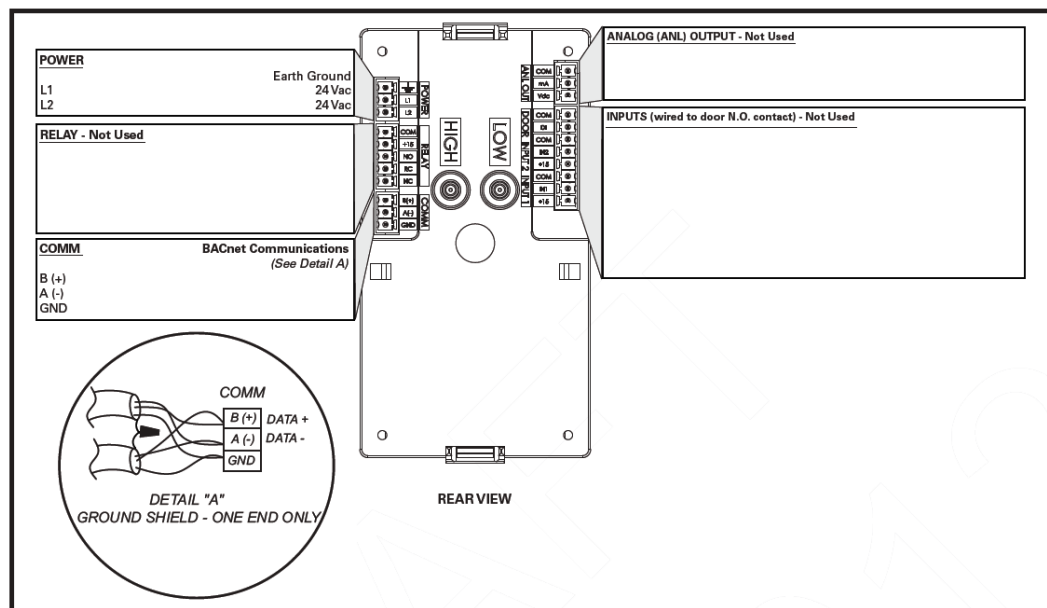
Wiring must be performed by a licensed Electrician according to local and state electrical codes.

Use only the knockouts at the back of the rough in box. The front knockouts will be inaccessible once the MRMS is installed. Strain relief tubing and wires, and seal box as required.



*Tripe gang electrical box rough wiring and plumbing*

### 2.3.3. Wiring (Finish)



*Rear view of the MRMS showing wiring connections*

The back of the MRMS has electrical connectors labeled with their function. The mating electrical connectors (supplied) are color coded, keyed, and labeled with the matching function.

**Power, labeled POWER, L1, L2, ground symbol**

Starting with the 3-pin Power connector, connect the 24 VAC lines to L1 and L2. Connect a ground wire, GND, from a ground lug in the 3 gang box to the GND on the connector. The MRMS operates at 18-32 VAC, 50/60 Hz and 10 W max. power consumption.

*Do not turn on power until all other connections have been made.*

**COMM BAcnet communication**

See Section 5

**Analog Output, labeled ANL OUTPUT, RELAY, INPUT1, INPUT2**

*Not used*

Next, connect all the electrical connectors matching the wiring connector with the mates on the back of the unit.

Then, mount the unit cover to the electrical box using four of the supplied mounting screws. Leaving screws slightly loose adjust the cover so that it is square. Securely tighten so that the back of the cover is tight to the finish wall surface.

Finally, mount the front cover assembly.

# Section 3:

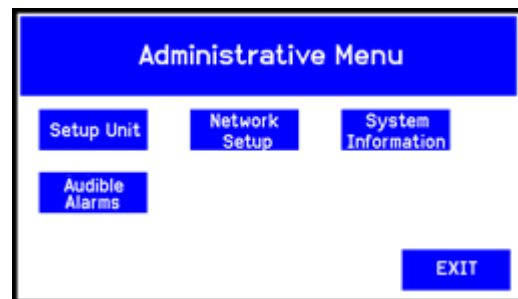
## Operation

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This section describes how to operate the Multi-Room Monitoring Station (MRMS) 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 temperature control, and other data intended for visual pressure verification and climate control in the facility. The second mode of operation is the Administrative Menu (Menu) screen, which permits setup and configuration for the MRMS units. After changes have been performed on the Menu screen, functions are saved and operation returns to the Home screen. Many administrative settings can be written over the BACnet MS/TP network.

Isolation 223 <b>NORMAL</b>	Isolation 227 <b>STANDBY</b>
Isolation 224 <b>ALARM</b>	Isolation 228 <b>NORMAL</b>
Isolation 225 <b>NORMAL</b>	Isolation 229 <b>NORMAL</b>
Isolation 226 <b>NORMAL</b>	Isolation 230 <b>WARNING</b>

Home Screen



Administrative Menu

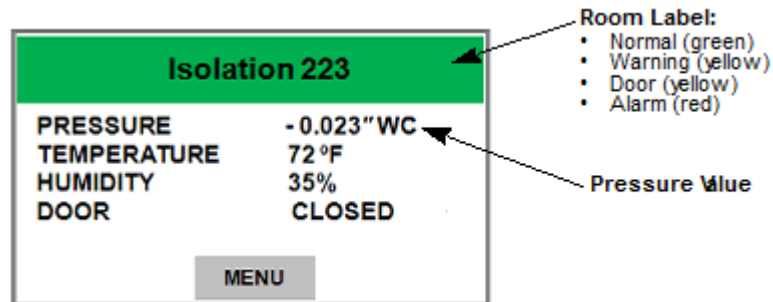
### 3.1 Touchscreen operation

The user can choose any room to view the specific variables of that room by simply touching the room identification on the screen. If there is no user interaction with the touch-screen for more than ten seconds, the screen will automatically revert to the Home screen.

## 3.2 Home Screen

When in the Home screen, the MRMS will show the rooms that have been configured for monitoring. At a glance, the user can see if any room is in a normal state (green), warning state (yellow) or alarm state (red). If the user wants to view room status, all they have to do is touch the main display screen on the room they want to view. The display shows more details about the room while retaining the status shown on the Home screen.

The following room display screen status.



### 3.2.1. Room Label

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 Central Display. Each of the four colored screens are defined as:

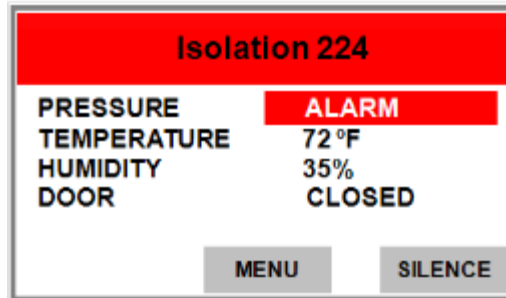
- Green - Pressure, is in normal condition
- Red - Pressure is in alarm condition
- Yellow - Pressure is in warning condition or door switch is open.
- Gray - Room is in standby mode.

Isolation 223 <b>NORMAL</b>	Isolation 227 <b>STANDBY</b>
Isolation 224 <b>ALARM</b>	Isolation 228 <b>NORMAL</b>
Isolation 225 <b>NORMAL</b>	Isolation 229 <b>NORMAL</b>
Isolation 226 <b>NORMAL</b>	Isolation 230 <b>WARNING</b>

When touching the individual room label on the main screen, the display will bring up more details about the room - while retaining the status shown in the main screen.

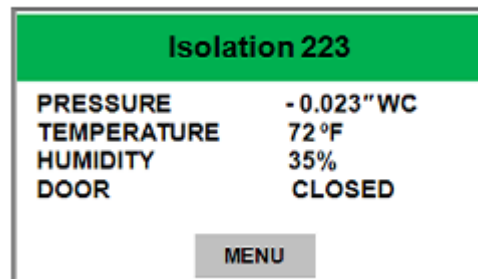
### 3.2.2. Alarm condition causes Room label to turn red

When a pressure alarm occurs the Room Label will turn to red color. When system returns to normal, the user configured settings will be retained.



## 3.3 Room Screen

The Room screen shows the active operating conditions of the pressurized space.

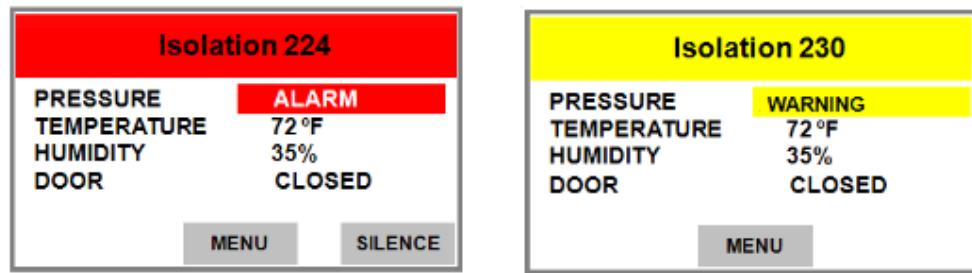


The Room Label at the top of the screen can be defined by the user to ensure the viewer understands which room is actively being monitored by the MRMS. See Auto Discover Results menu in Network Setup menu to enter text for your specific room.

The PRESSURE indication shows the intended direction of airflow for the space. POSITIVE for airflow out of the space and NEGATIVE for airflow into the space.

The 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, the green room label is shown. If operation is near either high or low alarm threshold limits, a yellow WARNING indication is shown.

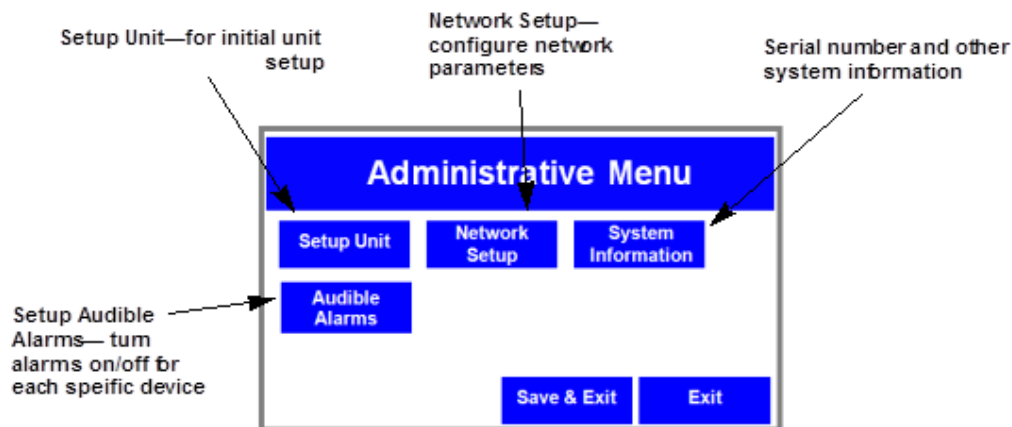
If operation is at or beyond high or low threshold limits, a red ALARM indication is shown. If Audible Alarming is Enabled, a piezo buzzer will sound and a SILENCE menu button will appear. Pressing the SILENCE button will shut off the alarm for the period of time defined in the alarm configuration. Alarm operation can be configured to sound an audible signal.



In addition to pressure indication, the Room screen displays if a door is open. If a door switch is configured, an open door contact will display a yellow DOOR indication.

### 3.4 Administrative Menu screen

Pressing the **MENU** button on the Home screen or Room 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 MRMS.



#### 3.4.1. Setup Unit Menu

Setup Unit is used to configure Audible Alarm, Mute Time Out, number of rooms to be read for displaying in the Home screen and for setting Supervisor Password

Setup Unit Menu			
Audible Alarm	Enabled	Change ->	Label Nurse Station Floor 1
Mute Time Out	9999	Change ->	
# of Rooms	8	Change ->	<div>Save &amp; Exit</div> <div>Exit</div>
Supervisor Password	Enable	Change ->	
Language	English	Change ->	

Unit label is editable - when touched, the alphanumeric keyboard will appear for editing the label

### 3.4.1.1. Changing MRMS Label

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

### 3.4.1.2. Audible Alarm

The Audible Alarm buzzer volume can be changed from 1-4. To disable the alarm sound for a specific Room go to Audible Alarm menu in Administrative menu screen.

### 3.4.1.3. Mute Time Out

The Mute Time Out setting allows the buzzer to be silenced until the configured duration in seconds has expired. The Mute Time Out can be changed from '0' to '9999' (forever). This setting is used is common for all rooms.

The following is an example of a mute time out setting where the mute time out is set for 60 seconds:

1. Room 1 pressure is out of limit — User presses Silence button and Room 1 timer will start incrementing and displaying mute icon in the Home screen.
2. After step 1 and within 60 seconds, Room 3 pressure is out of limit — User goes to Room 3 details and presses Silence button and now the Room 3 timer will start incrementing and displaying mute icon in the Home screen.
3. After step 2 and once Room 1 timer has reached 60 seconds, it will indicate the buzzer sound displaying the Sound icon in the Home screen.



### 3.4.1.4. Number of Rooms

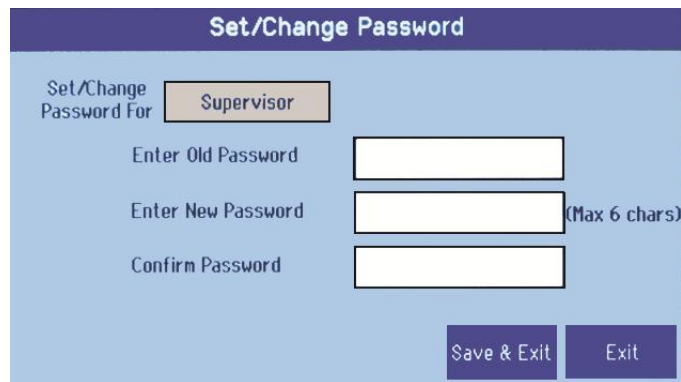
The maximum number of rooms that can be configured is eight (8). Depending on the amount of rooms configured, the MRMS Home screen will look like the following:

<b>One Room</b>	<div>Isolation 223 NORMAL</div>	<b>Two Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 224 ALARM</div>
<b>Three Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 224 ALARM</div> <div>Isolation 225 NORMAL</div>	<b>Four Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 225 NORMAL</div> <div>Isolation 224 ALARM</div> <div>Isolation 226 NORMAL</div>
<b>Five Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 224 ALARM</div> <div>Isolation 225 NORMAL</div> <div>Isolation 226 NORMAL</div> <div>Isolation 227 STANDBY</div>	<b>Six Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 227 STANDBY</div> <div>Isolation 224 ALARM</div> <div>Isolation 228 NORMAL</div> <div>Isolation 225 NORMAL</div> <div>Isolation 230 WARNING</div>
<b>Seven Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 224 ALARM</div> <div>Isolation 225 NORMAL</div> <div>Isolation 226 NORMAL</div> <div>Isolation 227 STANDBY</div> <div>Isolation 228 NORMAL</div> <div>Isolation 229 NORMAL</div>	<b>Eight Rooms</b>	<div>Isolation 223 NORMAL</div> <div>Isolation 227 STANDBY</div> <div>Isolation 224 ALARM</div> <div>Isolation 228 NORMAL</div> <div>Isolation 225 NORMAL</div> <div>Isolation 229 NORMAL</div> <div>Isolation 226 NORMAL</div> <div>Isolation 230 WARNING</div>

### 3.4.1.5. Supervisor Password

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

The Supervisor password 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.



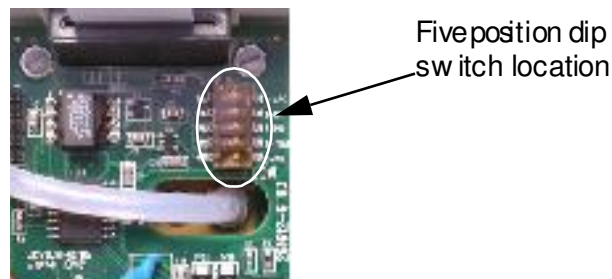
The image shows a 'Set/Change Password' screen. At the top, it says 'Set/Change Password For' followed by a dropdown menu currently set to 'Supervisor'. Below this are three input fields: 'Enter Old Password', 'Enter New Password', and 'Confirm Password'. The 'Enter New Password' field has a note '(Max 6 chars)' to its right. At the bottom right, there are two buttons: 'Save & Exit' and 'Exit'.

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

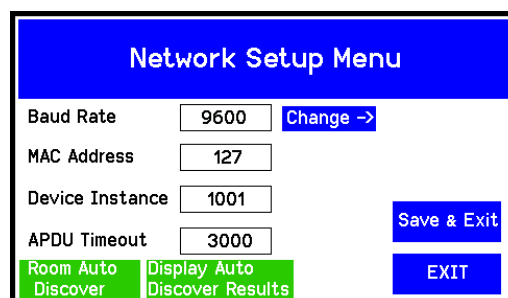
### 3.5 Network Setup

**Note:** If you are planning to use the USB Configuration Cloning feature, follow that process first before network setup. Otherwise, the cloning process will overwrite network information and affect MS/TP communications.

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



The Network Setup screen gives the option for the user to setup addressing to the network.



The image shows a 'Network Setup Menu' screen. It has a blue header with the title 'Network Setup Menu'. Below the header, there are four rows of settings, each with a label, a value in a text box, and a 'Change ->' button. The settings are: Baud Rate (9600), MAC Address (127), Device Instance (1001), and APDU Timeout (3000). To the right of these settings are two buttons: 'Save & Exit' and 'EXIT'. At the bottom, there are two green buttons: 'Room Auto Discover' and 'Display Auto Discover Results'.

1. BACnet configuration requires the user to configure the following parameters

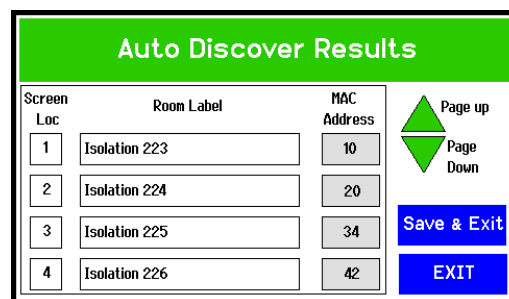
**Baud Rate** - User can select any one of the four standard baud rates for RS485 communication from 9600 (default), 19200, 38400 and 76800 by using the Change button. Auto baud feature is not supported.

**MAC Address** - User can enter MAC address specific to this device by touching on this field. User can enter a value from 0 to 127.

**Device Instance** - The Device instance number must be unique within a BACnet internetwork to identify each device. Instance numbers are defined as 22 bits long, in decimal instance number ranges from 0 to 4,194,303. For example, if 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.

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

2. Room Auto Discover - Used to search the number of devices on the network. The Auto Discover function looks for a response to the whois - iam command response. The auto discover process will give us the room label, MAC address, and screen location option which helps in configuring the Central Display for particular rooms. A typical auto discover results screen appears below:



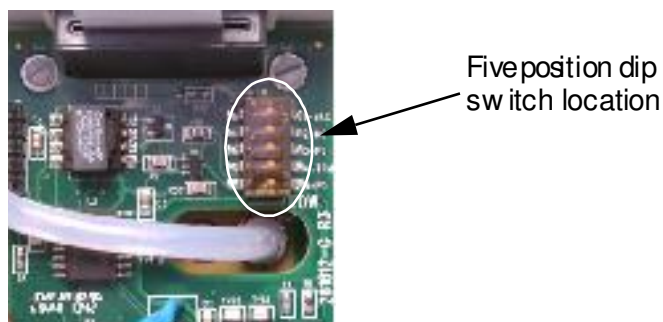
Screen Loc	Room Label	MAC Address
1	Isolation 223	10
2	Isolation 224	20
3	Isolation 225	34
4	Isolation 226	42

Page up  
Page Down  
Save & Exit  
EXIT

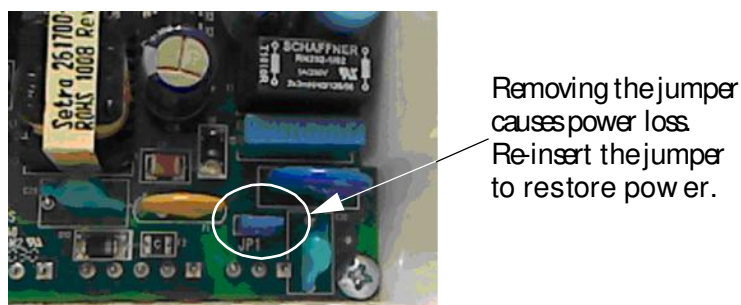
The Page up and Page down buttons help in scrolling the screen. Pressing the digits under Screen Loc will bring up a numerical keypad which allows editing the numbers up to eight (8). The Room Label is a writeable field which updates the Room Label object in the SRCM or Description Property of the Device object in the SRPM.

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

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



5. Press Save and Exit.
6. 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.

**Room Auto Discover Results** - Used to review Auto Discover results and modify the room screen location on the Home Screen.

**Note:** After cycling the power, only the rooms selected to be monitor will be listed in the Room Auto Discover Results screen.

## 3.6 System Information

**Note:** If The System Information screen reports Model Number, Serial Number, Firmware Revision, Network Status and Technical Support Contact.

System Information	
Model Number	MRMSS
Serial Number	1234567890
Firmware Revision	Host : 1.00 BACnet : 1.00
Network Status	Connected
Technical Support	abcdesetra.com
<div> <span>Restore Factory Default</span> <span>Save &amp; Exit</span> <span>Exit</span> </div>	

<b>Technical Support</b>	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.
<b>Restore Factory Default</b>	Restores the default settings for all configuration and setup screens. All configured settings, including audible alarming, that were modified after installation will be lost if this function is used.

## 3.7 Audible Alarms

The Audible Alarms menu allows you to turn on/off audible alarms for every room. To change status of a particular room, press on the field next to the room name and the alarm will toggle Yes or No.

Setup Audible Alarms Menu	
Room	Enable Audible Alarm
Isolation 223	No
Isolation 224	No
Isolation 225	No
Isolation 226	No
Isolation 227	No
Isolation 228	No
Isolation 229	No
Isolation 230	No

Save & Exit
  
EXIT

### 3.8 USB Configuration cloning

**Note:** If you are planning to use the USB Configuration Cloning feature, follow this process first before network setup. Otherwise, the cloning process will overwrite network information and affect MS/TP communications.

The MRMS 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 micro-USB adapter cable. 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"><li>• Fat 32</li><li>• Must have volume label</li><li>• Do not use quick format</li></ul>
	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"><li>• Fat 32</li><li>• Must have volume label</li><li>• Do not use quick format</li></ul>
		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 Micro USB Host Mode OTG cable (from T & S Electronics P/N: OTG-SBK6 or from SonoXY P/N:USB\_MIC-OTG) 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 MRMS with a configuration that represents most other MRMS 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.

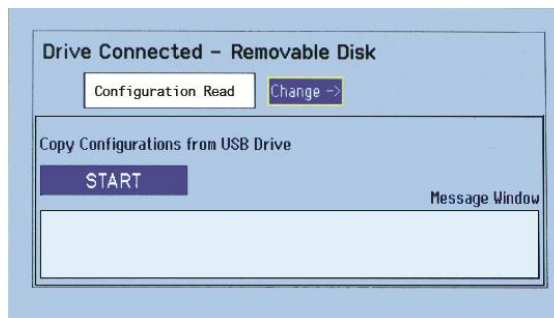
As soon as the thumb drive is connected to the MRMS, it will be recognized and bring up a Drive Connected menu.

1. Select Configuration Write to transfer the master MRMS configuration from the unit to the thumb drive

**Note:** The configuration file is labeled PCCONFIG.txt.

2. 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 Configuration Read 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. Updating Firmware

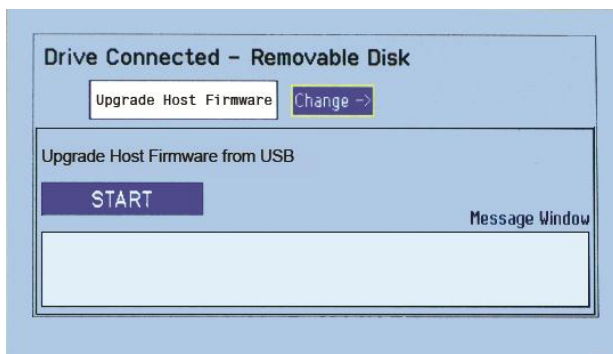
### 3.9 Updating Firmware

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

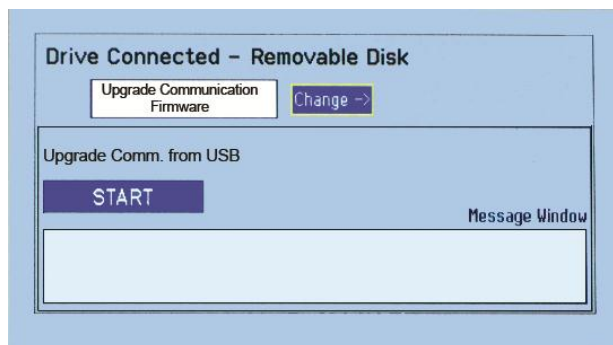
To upgrade the firmware you must first download the firmware for the latest versions of the hex file for the host controller, the USB hex file and the BACnet hex file, these are Host1924.hex, USB1924.hex and BAC1924.hex. Place the new files on the thumb drive. Plug in the adapter cable, as shown above, and the flash drive.

The MRMS will automatically detect the USB drive and will bring up a new window.

1. Press the Change button.
2. Scroll to the Upgrade Host Firmware screen as shown below and press Start.



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





# Section 4:

## Troubleshooting

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Error/Trouble Condition	Possible Cause	Solution
Display shows: <i>"Factory Calibration has been lost. Return to Factory for Calibration"</i> .	Non-recoverable EEPROM checksum error of factory calibration data, ER01.	Return unit to factory for calibration.
Display shows: <i>"Setup information has been lost. Loading Default Values Please Wait..."</i> .	Recoverable EEPROM checksum error of unit setup configuration, ER02.	Unit will auto recover by rebooting and then displaying message: <i>"Setup information has been lost, default configuration loaded. User should reconfigure."</i> User should press <b>Ok/ Cancel</b> (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".
MRMS does not come online	Two or more controllers have the same MAC address.	Modify each duplicate address to a unique number.
	Two or more controllers have the same Device ID.	Renumber the Device ID 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 APM2 Central Display does not have power.	Apply power to the APM2 Central Display.

## 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 Rd.  
Boxborough MA 01719-1304  
ATTN: Repair Department

To assure prompt handling, please refer to return instructions on our website at <http://www.setra.com/contact-us/calibration/>

## 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, 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 connect 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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