Multi-Room Monitoring Station (MRMS)
Installation Instructions



Setra's Multi-Room Monitoring Station (MRMS) is a remote environmental condition monitoring and alarming solution for critical spaces in Healthcare, Pharmaceutical, Biological Safety Labs and Vivarium. Using BACnet® MS/TP, the MRMS can remotely monitor up to 8 spaces equipped with other Setra Pressure and Condition Room Monitors (e.g. Model SRPM or SRCM). The MRMS can be installed in a centralized location such as a Nurse's station or in a centralized control.

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 the BACnet® network. BACnet objects and configurations of each SRPM or SRCM are then automatically imported into the MRMS resulting in substantial installation and setup cost reduction.

1.0 INTENDED USE

The MRMS is designed to be used as a remote monitor of critical environments by connecting up to 8 other SRPM or SRCM devices that provide local differential pressure measurement/indication, temperature, humidity, and/or other parameters. The condition status of the critical space as well as the measurement readings are propagated to the MRMS through BACnet®. 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

1.1 Specifications

Operating Temperature Limits: 32 to 120°F (0 to 50°C).

Operating Humidity Limits: 5 to 95% Relative humidity (non-condensing).

Supply Voltage: 18-30 VAC, 50-60 Hz.

Power Consumption: 10 W.

Electrical Connection: Removable terminal blocks

Housing: LEXAN 920/940 Per UL 94 V-0

Mounting: Mounts to customer supplied 3 gang double deep electrical box

Weight Approx.: 1.2 lbs

Agency Approval: CE, CSA Class 3631 05 and Class 3631 85 Pollution Degree 2 and installation Category 2.

Communications: BACnet MS/TP Application Specific Controller (ASC)

1.2 MRMS Function

The MRMS communicates to other Setra Room Pressure Monitors (SRPM) and/or Setra Room Condition Monitors (SRCM) over BACnet MS/TP networks and relays information displayed on these remote devices. The MRMS visually indicate parameters like the room condition, room label, alarms, pressure, temperature, humidity and door status.

User Interface:

480 x 272 TFT/WQVGA LCD module, with LED backlight and resistive touch screen.

The home screen of the MRMS shows the name and status/condition of the rooms being monitored remotely.



Color	Status
Green	Normal, Room Pressure is within alarm limits
Yellow	Warning, Door is open (Door input must be enabled) or pressure is within the alarm deadband
Red	Alarm. Room Pressure is outside alarm limits and alarm delay period has been exceeded.

Audible Feedback:

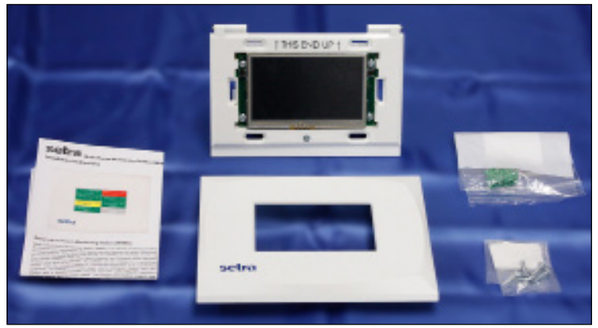
The built-in audible buzzer will sound when differential pressure has exceeded the alarm set point and alarm delay has timed out on the remote SRPM or SRCM.

Note that the buzzer will not sound at the MRMS regardless of the volume setting if the audible alarm is disabled in the remote SRPM or SRCM.

The MRMS alarm volume level can be set from 0 to 4. To disable the audible alarm, set the volume level to 0. To maximize the audible alarm, set the volume level to 4.

2.0 PARTS AS SHIPPED

2.1 MRMS Parts Included



Parts included in 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

2.2 Required Parts to Be Installed By Installer

To mount and install properly, the following components are required:

- 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)

2.3 Overview of Physical Installation

Field installation is broken up into 2 phases, "rough-in" and "finish". To make installation easier the MRMS is designed to be mounted in a standard "off-the-shelf" electrical box.

During the "rough-in" phase, install and secure the triple gang-double deep electrical box and run the field wiring in the walls and route the BMS system, remote SRPM and SRCM devices, power supply, earth ground, etc.

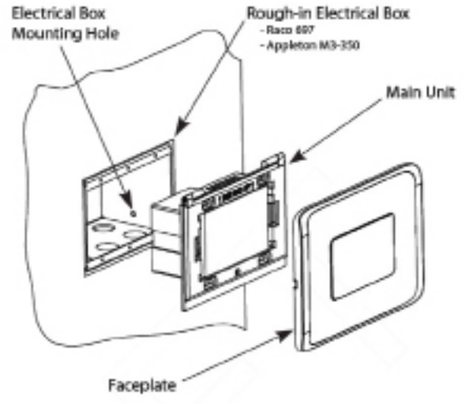
During "finish" phase, the wiring will be terminated at the electrical mating connectors (provided). After the product is properly installed and terminated, the unit can be configured for the specific application using the touch screen user interface.

Note that failure to perform installation as specified here may cause damage to the device or negatively affects its performance.

Cleaning and Decontamination: The MRMS is IP54 rated against dust and liquid penetration. Exposed surfaces are chemically resistant to vaporized hydrogen peroxide, formaldehyde, chlorine dioxide, perchlorix acid, sodium hypochloride 3-6% (bleach), and quaternary ammonia 7% in 1:128 tap water (amoni)

3.0 INSTALLATION

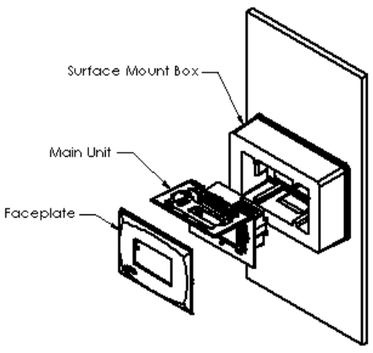
The MRMS is designed to be mounted in a standard triple gang-double deep electrical box RACO 697 or Appleton M3-350 or equivalent

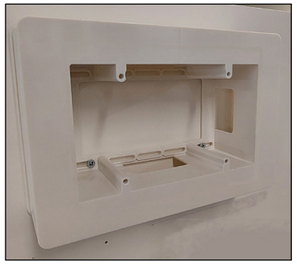


NOTE: Secure the triple gang-double deep electrical box to the stud(s) using the mounting hole in the side of the electrical box (see figure above for mounting hole location). Drive the mounting screws from the inside of the electrical box into the wall studs to prevent sharp objects protruding into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

3.1 Surface Mounting on Wall

For installations where inserting the unit into the wall is not possible, mount the optional adapter box to allow installation of the Setra SRCM unit (Setra P/N 229971).







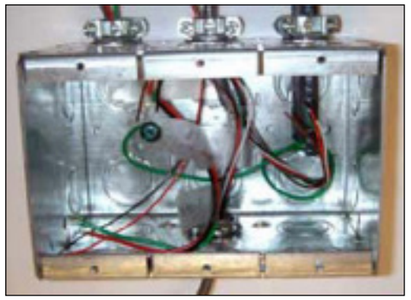
- Align the adapter box appropriately, mark and drill four holes for plastic sheet rock anchors using a 3/16" diameter drill bit.
- Gently tap the sheet rock anchors into place

- Align adapter box to sheet rock anchors and fasten adapter box to wall using four screws (provide in the optional adapter box kit).
- Mount the Setra SRCM unit onto the adapter box

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.



Triple gang electrical box rough wiring and plumbing

3.3 BACnet Wiring

BACnet wiring suggest using a 22 AWG stranded wire in a shielded cable, B+,A-, Gnd and shield should be run. This can be 2 twisted pairs with a separate cable shield. One twisted pair is used for communications, the second twisted pair can be used for communications ground and the shield wire can be connected to the other device shield wires.

BACnet hardware is implemented as isolated RS485. Wire to Connector COMM, labeled RS485. Connect TX line to B (+), RX to A (-) and ground wires to GND. Connect shields together with wire nut.

Hardware configuration is done using a five position dip switch located in the upper right hand section of the PCB as well as through the touch screen interface.

Switch Position	Function
1	Network Setup Enable
2	Not Connected (Not Used)
3	Pull Up Resistor
4	Termination Resistor
5	Pull Down Resistor

Use a small flat head screwdriver or pen to push the switch to the right to turn the function ON, otherwise it is OFF. Set Position 1 to ON (right position) to enable network setup. Complete the setup by using the Network Setup Screen.

If the unit will be at the end of the line, the termination resistor can be enabled by pushing position 4 to ON. If Pull-up, Pull-down or Termination Resistors are not used, disable them by pushing the switch to the left (OFF).

Once the installation has been planned, locate and mount the electrical box and bring all power, earth ground and BACnet wiring into the triple gang box.

3.4 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 read from the network.

BACnet configuration requires the user to configure the following parameters:

1. **Baud Rate –** User can select any of the 4 standard baud rates for RS485 communication from 9600, 19200, 38400 and 76800 bps by using the change button. Auto baud rate 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 range 128 to 254 is reserved for slaves. Address 255 is 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, decimal instance number ranges from 0 to 4194303.

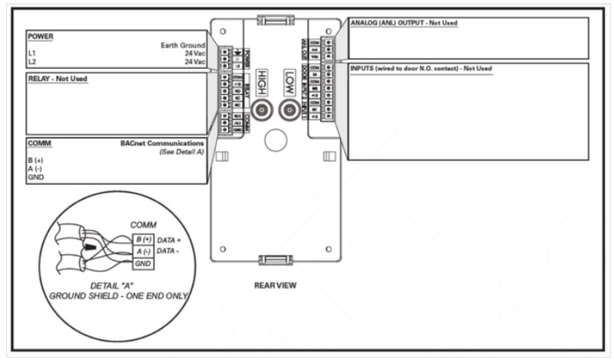
4. **APDU Timeout –** Indicates the amount of time in milliseconds between retransmission of an APDU requiring acknowledgment for which no acknowledgment has been received. The default value for this property is 3,000 ms and is limited to 65,535 ms

Save and Exit to save settings or **Cancel** to cancel setting changes. Once complete, disable the BACnet setup by moving the dip switch position 1 to OFF (left) position.

After the unit returns to the menu screen, cycle the power to the unit by removing the jumper JP1 and then reconnecting in order to boot up with the proper MAC address and Device Instance

See Auto-Discover setup in Quick Start guide to add remote devices.

3.5 Wiring (Finish)



Rear view of the MRMS monitor to show wiring and plumbing 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 18-30 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 3.2.

Analog Output, labeled ANL OUTPUT, RELAY, INPUT1, INPUT2
Not used

4.0 MAINTENANCE

The MRMS is designed to operate in an indoor environment, monitoring clean, dry air.

Upon final installation of the Multi-Room Monitoring Station, no routine maintenance is required. The MRMS is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING - Cleaning Instructions

Do not clean or wash-down the MRMS with industrial cleaners or solvents. The housing may be wiped down with soap and water or isopropyl alcohol. The LCD may only be cleaned with isopropyl alcohol. Do not immerse unit.

5.0 AGENCY ELECTRICAL STANDARD

This device falls into CSA “Pollution Degree 2” FOR pcb INSULATION AND csa “Installation Category 2”

The MRMS meets the following requirements:

CSA Standard C22.2 No 0-M 91: General Requirements –Canadian electrical code Part 1. CAN/CSA C22.2 No. 0.4-04: Bonding of Electrical Equipment CAN/CSA C22.2 No. 61010-01-04: Safety Requirements for Electrical Equipment for measurement, control and laboratory use Part -1: General Requirements ANSI/UL61010-10-1-(Second Edition): Safety requirements for Electrical Equipment for measurement, control and laboratory use Part -1: General Requirements

---

6.0 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.

7.0 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).