

# IRM-MV7 IRM-MV5



# INTEGRATED ROOM - ENVIRONMENTAL MONITOR


## MANUAL

### TABLE OF CONTENTS

|  | PAGE  |
|--|-------|
| PRODUCT OVERVIEW . . . . .               | 3     |
| INTEGRATED ROOM I/O BOARD . . . . .      | 4     |
| INTEGRATED ROOM 7 INCH DISPLAY . . . . . | 5     |
| INTEGRATED ROOM 5 INCH DISPLAY . . . . . | 5     |
| ENVIRONMENTAL MONITOR OVERVIEW . . . . . | 6     |
| INSTALLATION . . . . .                   | 7     |
| SETUP OVERVIEW SCREEN . . . . .          | 8     |
| POINT SETUP . . . . .                    | 9-10  |
| ANALOG INPUT SETUP . . . . .             | 11    |
| ANALOG OUTPUT SETUP . . . . .            | 12-13 |
| MODE SETUP . . . . .                     | 14    |
| RELAY SETUP . . . . .                    | 15    |
| MISC. SETUP (GENERAL) . . . . .          | 16    |
| MISC. (PASSWORDS) . . . . .              | 17    |
| MISC. (CONTACT) . . . . .                | 18    |
| TOOLS (POINT ORDER) . . . . .            | 19    |
| TOOLS (LOAD/SAVE) . . . . .              | 20    |
| DIAGNOSTICS . . . . .                    | 21    |
| MODES & POINTS . . . . .                 | 22    |
| IRM OVERVIEW . . . . .                   | 23    |
| BACnet® POINTS . . . . .                 | 24    |

### IMPORTANT NOTES

The “Important Notes” header is used throughout this manual to call out important considerations that the reader should be aware of. Please take time to thoroughly read these sections.

 Other setup and display parameters may be visible in the product, but not applicable to monitor environment solutions.

## PRODUCT OVERVIEW

### IRM-MV SERIES

The MultiVIEW monitor series is specifically designed for critical environments where precise and reliable room status monitoring is essential. It provides clear indicators that key environmental parameters, vital for optimal outcomes, are being maintained within your critical workspace. The IRM-MV Series supports local analog sensors connected to the onboard I/O control board, including pressure, temperature, and humidity sensors, as well as networked data from third-party controllers via BACnet communication. It ensures safety with accurate visual displays and unmistakable audible alerts. It is suitable for critical spaces of any size or complexity, delivering consistent and safe operation. Available with a 7" display (IRM-MV7) or a 5" display (IRM-MV5).



#### IRM-MV7

The Integrated Room 7" Environmental Monitor solution consists of the following components:

- 7" Environmental Monitor
- Optional Accessories: Displays (up to 3 additional) and Room Pressure (up to 3 additional)



#### IRM-MV5

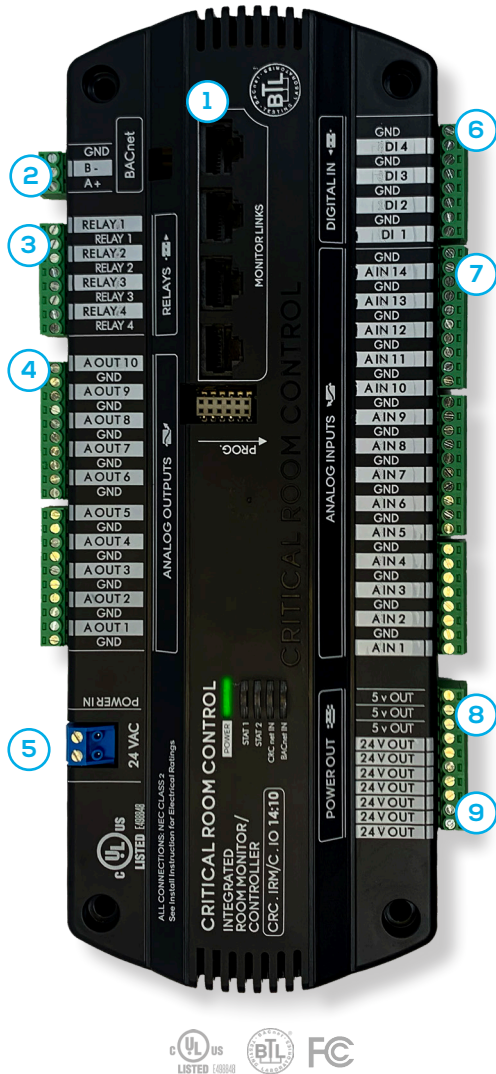
The Integrated Room 5" Environmental Monitor solution consists of the following components:

- 5" Environmental Monitor
- Optional Accessories: Displays (up to 3 additional) and Room Pressure (up to 3 additional)

# INTEGRATED ROOM-MONITOR ENVIRONMENT

MANUAL

## INTEGRATED ROOM I/O BOARD



### SPECIFICATIONS

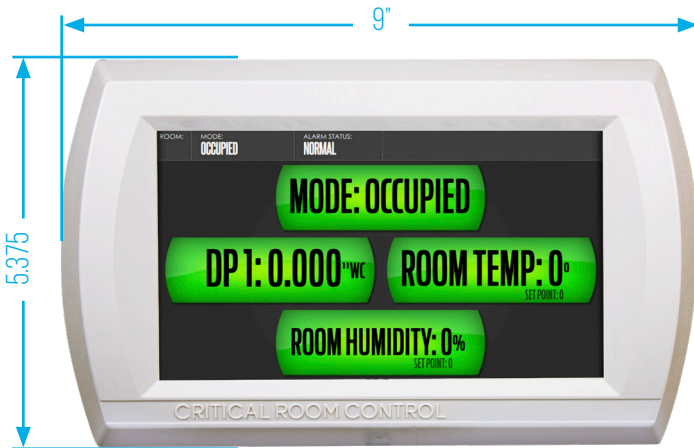
|                               |   |
|-------------------------------|---|
| <b>Dimensions</b>             | 10.25 x 4 x 1.25 in   |
| <b>Input Power</b>            | 24 VAC $\pm$ 10 %, 50/60 Hz, maximum 30 VA, Class 2             |
| <b>Onboard Power</b>          | 5 @ 24 VDC (200 mA total max.)<br>3 @ 5 VDC (100 mA total max.) |
| <b>Operating Temperature</b>  | 32 to 158 °F (0 to 70 °C)                                       |
| <b>Storage Temperature</b>    | -40 to 158 °F (-40 to 70 °C)                                    |
| <b>Operating Humidity</b>     | 10 to 70 % RH, non-condensing                                   |
| <b>Storage Humidity</b>       | 10 to 70 % RH, non-condensing                                   |
| <b>Communication Protocol</b> | BACnet® MS/TP<br>(BTL - listed/tested)                          |
| <b>Connectors</b>             | 14 – 26 AWG wire  |
| <b>Listing</b>                | UL 916, C-UL, BTL   |
| <b>Manufactured Under</b>     | ISO 13485-2003  |

### COMPONENTS

- 1 4 Display ports
- 2 BACnet® MS/TP
- 3 4 Relays (normally closed, 2 A @ 30 VDC)
- 4 10 Analog outputs (configurable 0 to 10 VDC)
- 5 24 VAC power in
- 6 4 Digital inputs (normally closed)
- 7 14 Analog inputs (configurable 0 to 10 VDC)
- 8 5 VDC power to sensors
- 9 24 VDC power to sensors



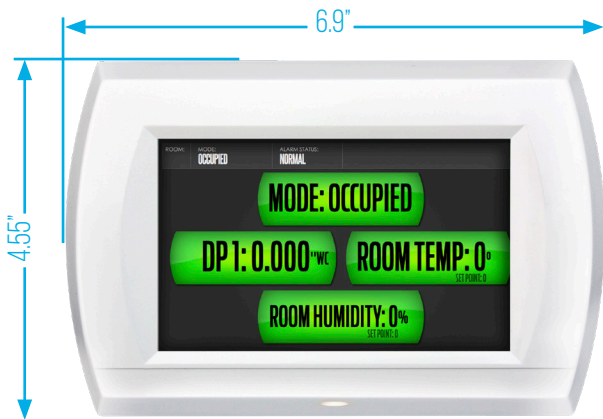
## INTEGRATED ROOM 7 INCH DISPLAY



### SPECIFICATIONS

|                              |   |
|------------------------------|---|
| <b>Dimensions</b>            | 9 x 5.375 x 1.5 in  |
| <b>Input Power</b>           | Supplied by I/O board via Cat6 cable  |
| <b>Cable Length</b>          | Up to 200 ft shielded Cat6 cable per display<br>Up to 500 ft shielded Cat6 total for all connected displays |
| <b>Operating Temperature</b> | 50 to 95 °F (10 to 35 °C)   |
| <b>Operating Humidity</b>    | 0 to 95 % RH, non-condensing  |
| <b>Resolution</b>            | WVGA RGB 480 x 800 px   |
| <b>Display Type</b>          | Resistive touch   |

## INTEGRATED ROOM 5 INCH DISPLAY



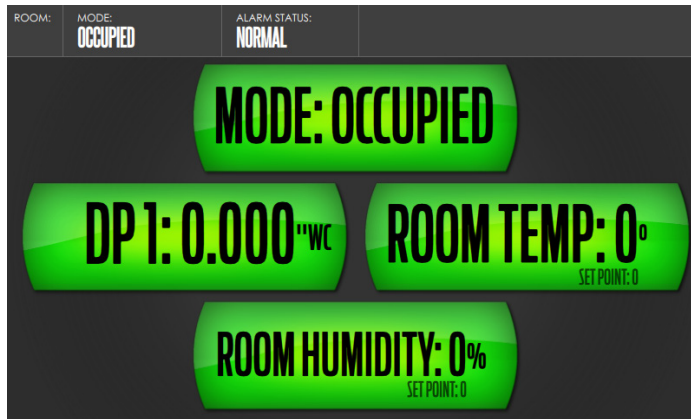
### SPECIFICATIONS

|                              |   |
|------------------------------|---|
| <b>Dimensions</b>            | 6.9 x 4.55 x 1.15 in.   |
| <b>Input Power</b>           | Supplied by I/O board via Cat6 cable  |
| <b>Cable Length</b>          | Up to 200 ft shielded Cat6 cable per display<br>Up to 500 ft shielded Cat6 total for all connected displays |
| <b>Operating Temperature</b> | 50 to 95 °F (10 to 35 °C)   |
| <b>Operating Humidity</b>    | 0 to 95 % RH, non-condensing  |
| <b>Resolution</b>            | WVGA RGB 480 x 800 px   |
| <b>Display Type</b>          | Resistive touch   |

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### ENVIRONMENTAL MONITOR OVERVIEW



### MV HOME SCREEN

ROOM: Displays Room name

MODE: Displays current mode

ALARM STATUS: Displays current alarm status

POINT LAYOUT: Optimized to display 6 points (10 total allowed, view via scrolling)

Click ROOM>>ADMIN>>SETUP to customize display



### ADMIN MENU

OVERVIEW: Click to access setup overview menu

MISC: Click to access miscellaneous menu

TOOLS: Click to access tools menu

DIAGNOSTICS: Click to access diagnostics menu

HOME: Click to return to MV home screen

MODES: Click to access modes menu

Unused Items (Hide/Show): Toggle between used and all available selections

Reset (AIs | Points | AOs): Resets to unused

### MV DEFAULTS (ENABLED)

To ensure proper configuration pair I/O Board with MV display during first power up.

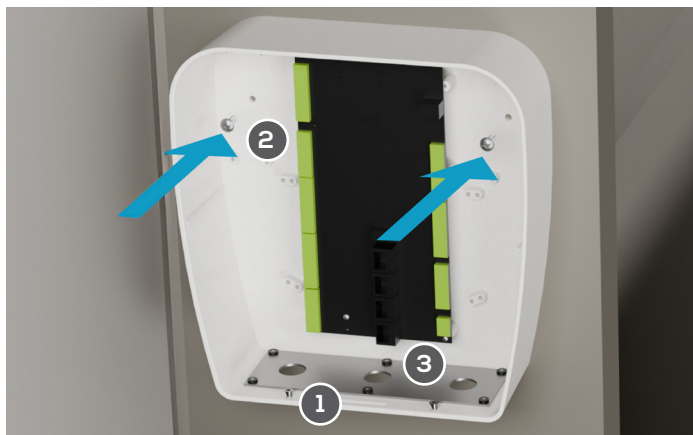
| Modes             | Analog Inputs | Points                  | Analog Outputs | Relays  |
|-------------------|---------------|-------------------------|----------------|---------|
| <b>Occupied</b>   | AI 1          | <b>1: DP 1</b>          | AO1            | RELAY 1 |
| <b>Unoccupied</b> | AI 2          | 2: DP 2                 | AO2            | RELAY 2 |
| Mode 3            | AI 3          | 3: DP 3                 | AO3            | RELAY 3 |
| Mode 4            | AI 4          | <b>4: Room Temp</b>     | AO4            | RELAY 4 |
| Mode 5            | AI 5          | <b>5: Room Humidity</b> | AO5            |         |
|                   | AI 6          | <b>24: Mode</b>         | AO6            |         |
|                   | AI 7          | 25: AUX 1               | AO7            |         |
|                   | AI 8          | 26: AUX 2               | AO8            |         |
|                   | AI 9          | 27: AUX 3               | AO9            |         |
|                   | AI 10         | 28: AUX 4               | AO10           |         |
|                   | AI 11         |                         |                |         |
|                   | AI 12         |                         |                |         |
|                   | AI 13         |                         |                |         |
|                   | AI 14         |                         |                |         |

 Scroll on the right side of the screen to view all the information.

## INSTALLATION

### INSTALLATION LOCATION FOR ENCLOSURE

- Mount in the plenum space with access for wiring within 25 ft of the display for Cat6 cable connection.

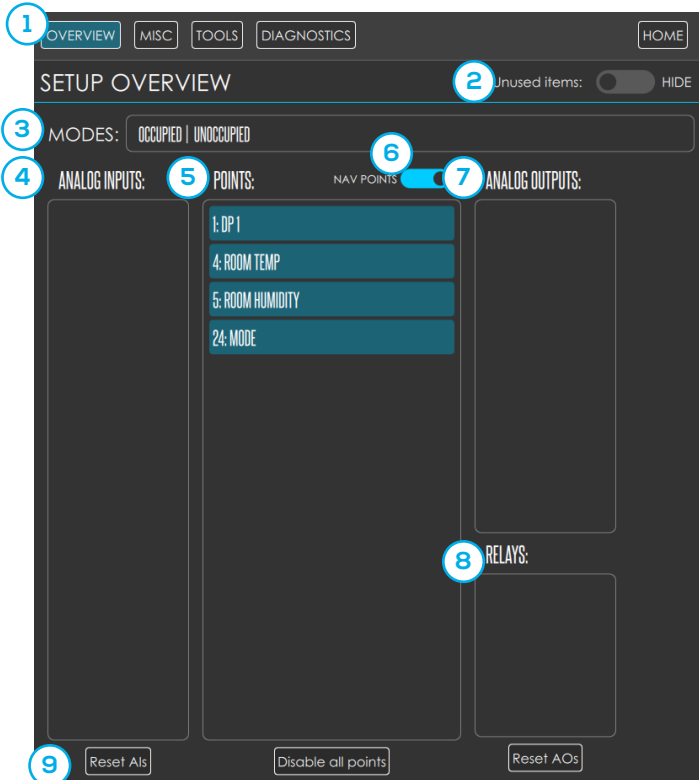


- ① Remove the bottom screws to take off the enclosure lid.
- ② Mount the enclosure at the desired location using 2 mounting holes.
- ③ Route the Cat6 cable to the display through the knockout, then reattach the lid.

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### SETUP OVERVIEW SCREEN



### SETUP OVERVIEW

#### GENERAL

The SETUP OVERVIEW is the main admin screen. From this screen, the administrator can quickly see how the display is currently configured. Users can then access Modes, Points, Analog Outputs, Relays, and other setup screens.

#### COMPONENTS

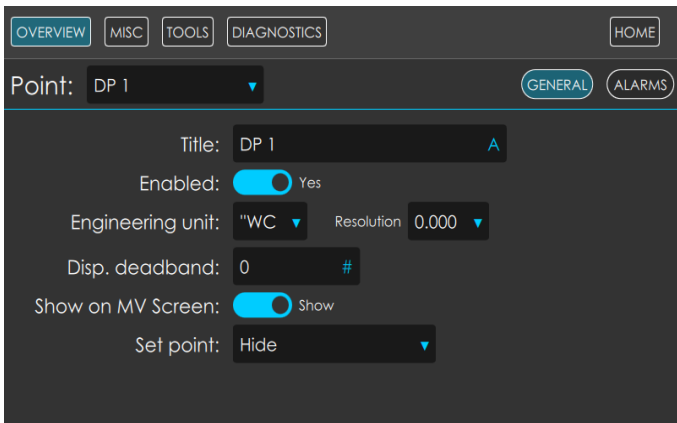
- 1** Top Menu: Allows the user to navigate between the top four admin screens.
- 2** Unused Items (Hide / Show): This control will allow the user to toggle between hiding and showing unused Points, AIs, and AOs.
- 3** MODES: Displays the modes that are currently enabled. Click on any of the modes to access the mode admin screens.
- 4** ANALOG INPUTS (AI): Indicates which Analog Inputs are being used. If an AI is currently being used, then the name of the point and whether it is configured to modify the point's current value (CV) or setpoint (SP) is displayed and highlighted in blue. Click on an AI's text to navigate to that AI's setup screen.
- 5** POINTS: Indicates which Points are being used. Click on a point's text to navigate to that Point's setup screen.
- 6** NAV POINTS: This control allows the user to either use the Point text as a button to enable / disable the Point or to navigate to the Point's setup screen.
- 7** ANALOG OUTPUT (AO): Indicates which Analog Outputs are being used. If an AO is currently being used, then the name of the point that is associated with that AO is displayed and highlighted in blue. Click on an AO's text to navigate to that AO's setup screen.
- 8** RELAYS: Indicates which relays are configured / used. Click on a specific relay to configure it.
- 9** Reset AIs | Reset Points | Reset AOs: Resets each respective item to unused.

## POINT SETUP

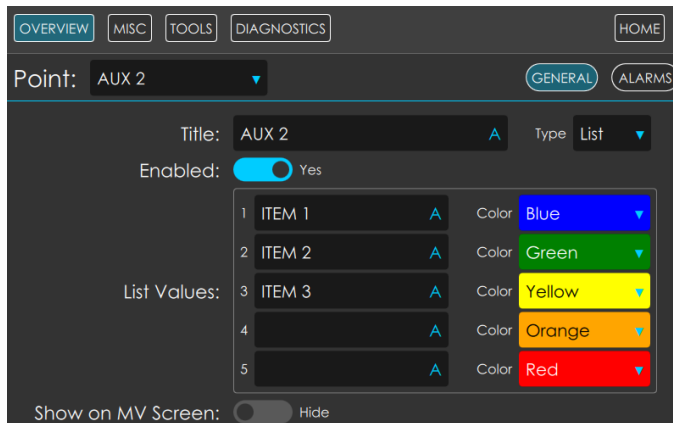
### POINT SETUP (GENERAL)

Point data can be setup and configured via the General screen.

The Point Setup Screen is used to configure how point data is displayed for the room and this specific display.



VALUE POINT SETUP (GENERAL)



LIST POINT SETUP (GENERAL)

### POINT SETUP (GENERAL) PARAMETERS

| Parameter         | Unit Selections  | Description   |
|-------------------|--|---|
| Title             | Alphanumeric Free Text (15 Character Limit)              | Change the name of the point on this display.   |
| Enabled           | Yes/No   | Point must be enabled to configure and use it.  |
| Engineering unit  | °, %, CFM, ACH, "WC, Pa, PPM, L/M, L/S, CMM, CMH, °F, °C | Value descriptor that appears after current and setpoint value.   |
| Resolution        | Up to 4 decimal places                                   | Point value resolution for displaying current and setpoint values.  |
| Disp. Deadband    | Numerical Value  | Creates a deadband where the current value will not update until it exceeds change in value ±.  |
| Show on MV Screen | Show/Hide  | Selecting "Yes" will display this point's value and alarms on the MV Screen.  |
| Set point         | Hide/Show/Show - Allow Change                            | If setpoint is not applicable, select "Hide". If the setpoint needs to be visible, select "Show". If the user needs to locally adjust setpoint, select "Show - Allow Change". |
| SP Password       | Yes/No   | Selecting "No" allows user to make changes to setpoint without requiring a password.  |
| Setpoint Limit    | Numerical Value  | If setpoint is set to "Show - Allow Change", then the SP limits are enabled. Enter a low and high limit for users. This setting will only used within this display.           |
| Type              | Value/List   | Select between value point type or list point type. Available configuration for Points 25-28.   |
| List Values       | Alphanumeric Free Text (15 Character Limit)              | Custom text option can be assigned for List items 1-5. Available configuration for Points 24-28.  |
| Color             | Blue, Green, Yellow, Orange, Red, Red + Alarm            | Select a color to be shown on display. Available configuration for Points 24-28.  |

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

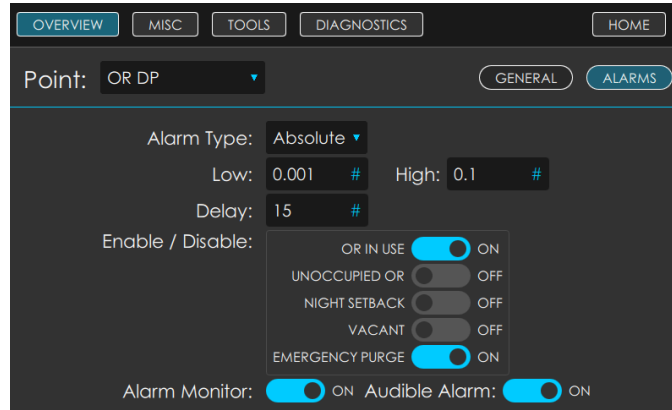
## MANUAL

### POINT SETUP

#### POINT SETUP (ALARMS)

The Point Setup (Alarms) Screen is used to configure how point data is alarmed for the room and this specific display.

 A point's alarm status is continuously transmitted to all connected displays and can be read by BACnet®.



POINT SETUP (ALARMS)

#### POINT SETUP (ALARM) PARAMETERS

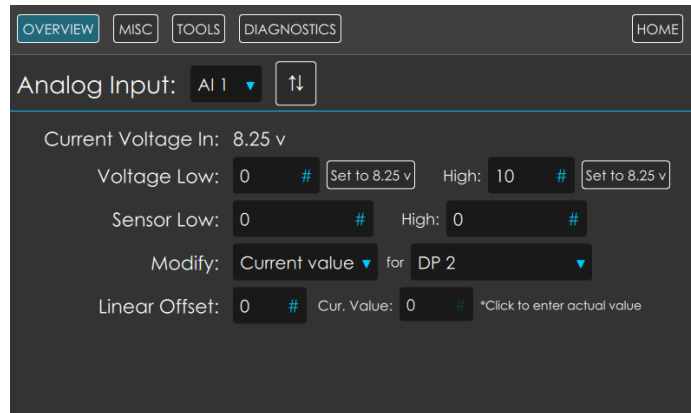
| Parameter             | Unit Selections    | Description  |
|-----------------------|--------------------|--|
| Alarm Type            | Absolute, Relative | Absolute alarm is triggered if the current value exceeds the high limit or falls below the low limit. Relative alarm is triggered if the current value is higher than the setpoint plus the Over value or lower than the setpoint minus the Under value. |
| Low/High              | Numerical Value    | Alarm limit conditions for absolute alarm.   |
| Under/Over            | Numerical Value    | Alarm limit conditions for relative alarm. The point must have an associated setpoint.   |
| Delay (sec)           | Numerical Value    | Set the desired delay time for alarm to activate, in seconds.  |
| Enable/Disable (mode) | ON/OFF             | Selecting ON will enable the point alarm for associated mode.  |
| Alarm Monitor         | ON/OFF             | Selecting ON will elevate the point alarm to a display alarm and bring visibility to the Audible Alarm parameter.  |
| Audible Alarm         | ON/OFF             | Selecting ON will enable the audible point alarm. Activation conditions are set via Enable/Disable   |

 To fully activate alarm behavior, mode alarm, Alarm Monitor, and Audible Alarm must be set to ON.

## ANALOG INPUT SETUP

### ANALOG INPUT SETUP TYPES

The Analog Input screen allows the user to configure the Analog Inputs. Analog inputs can be used to change the current or setpoint values within the system.



### ANALOG INPUT

### ANALOG INPUT SETUP PARAMETERS

| Parameter          | Unit Selections                     | Description  |
|--------------------|-------------------------------------|--|
| Move AI [+]:       | AI1-14                              | Move the settings for this analog input to another analog input (e.g., AI 1 to AI 7).  |
| Current Voltage In | 0.00V                               | Displays the current measured voltage for the selected Analog Input.   |
| Voltage Low        | 0-10V                               | Enter the low-end voltage range (0-10V) for this Analog Input.   |
| Set Voltage Low    | 0-10V                               | Populates the Voltage Low field with the Current Voltage In.   |
| Voltage High       | 0-10V                               | Enter the high-end voltage range (0-10V) for this Analog Input.  |
| Set Voltage High   | 0-10V                               | Populates the Voltage High field with the Current Voltage In.  |
| Sensor Low         | Numerical Value                     | Enter the low limit for the device connected to this Analog Input.   |
| Sensor High        | Numerical Value                     | Enter the high limit for the device connected to this Analog Input.  |
| Modify             | Unused<br>Current value<br>Setpoint | Unused: Turns this Analog Input off.<br>Current Value: Assigns the calculated value as a Current Value for the selected point.<br>Setpoint: Assigns the calculated value as a Setpoint for the selected Point. |
| Modify for         | Enabled Points                      | Select an enabled point to assign the Current Value or Setpoint.   |
| Offset             | Numerical Value                     | Digital calibration value applied to the Current Value. Click # to enter manually.   |
| Current Value      | Numerical Value                     | Displays the calculated current value. Click # to enter measured current value and auto-calculate Offset.  |

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

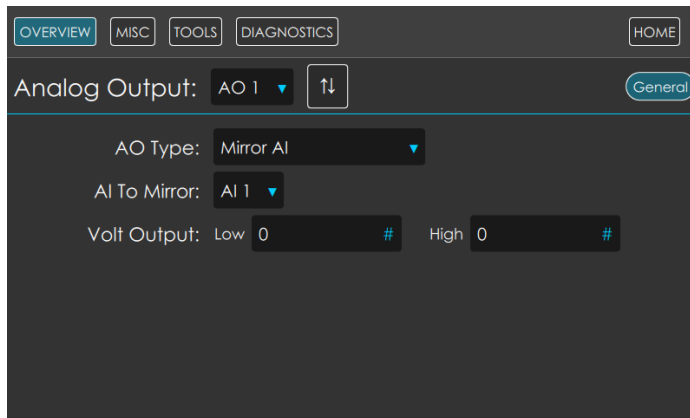
## MANUAL

### ANALOG OUTPUT SETUP

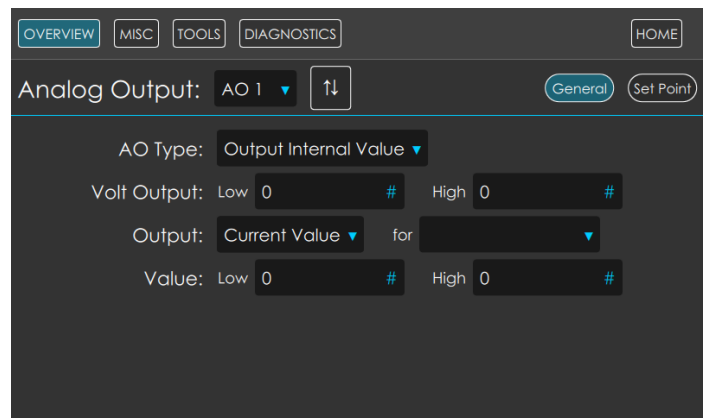
#### ANALOG OUTPUT SETUP TYPES

**Mirror AI or AO:** Configures the AO to mirror another AI or AO.

**Output Internal Value:** Configures the AO to adjust its voltage signal to represent the current value or setpoint of a specific Point.



ANALOG OUTPUT (MIRROR AI)



ANALOG OUTPUT (OUTPUT INTERNAL VALUE)

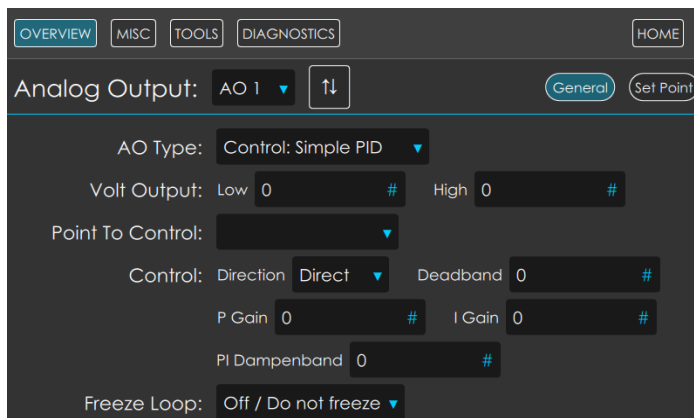
#### ANALOG OUTPUT SETUP PARAMETERS

| Parameter        | Selections                 | Description   | Mirror AI | Mirror AO | Output Internal Value |
|------------------|----------------------------|---|-----------|-----------|-----------------------|
| AI to Mirror     | Enabled AI's               | Select an enabled Analog Input signal to mirror.  | •         |           |                       |
| AO to Mirror     | Enabled AO's               | Select an enabled Analog Output signal to mirror.   |           | •         |                       |
| Volt Output Low  | 0-10V                      | Enter the low end voltage range for this Analog Output using values between 0-10V.                      | •         | •         | •                     |
| Volt Output High | 0-10V                      | Enter the high end voltage range for this Analog Output using values between 0-10V.                     | •         | •         | •                     |
| Output           | Current Value<br>Set Point | Select desired output value (current value or setpoint).  |           |           | •                     |
| for              | Enabled Points             | Select an enabled point that has the current value or setpoint value to drive this AO's voltage signal. |           |           | •                     |
| Value Low        | Numerical Temp Value       | Enter the low end of the temperature range to be used when varying this AO's voltage signal.            |           |           | •                     |
| Value High       | Numerical Temp Value       | Enter the high end of the temperature range to be used when varying this AO's voltage signal.           |           |           | •                     |

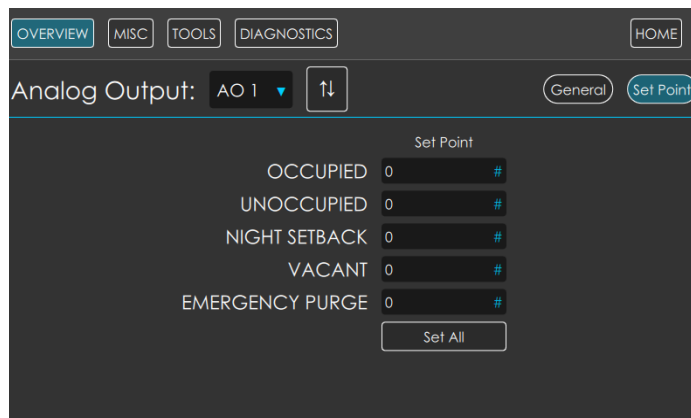
## ANALOG OUTPUT SETUP

### ANALOG OUTPUT (CONTROL: SIMPLE PID)

Used to control a single variable to desired setpoint.



ANALOG OUTPUT



SETPOINT SCREEN

| Parameter                        | Unit Selections   | Description  |
|----------------------------------|---|--|
| AO Type                          | Multiple  | Enter AO Type: Control Simply PI (Used to control a single variable to the desired setpoint).  |
| Analog Output                    | AO 1 - 10   | Enter the desired which controller (1-10) analog output number to configure the parameters.  |
|                                  | AO 1 - 10   | Enables the user to assign the setup parameters to the desired analog output number on the controller.   |
| Volt Output Low                  | 0 - 10V   | Enter the low end voltage range for this Analog Output using values between 0-10V  |
| Volt Output High                 | 0 - 10V   | Enter the high end voltage range for this Analog Output using values between 0-10V   |
| Point to Control                 | Enabled Points  | Select the desired enabled point to be controlled by this analog output.   |
| Control: Direction               | Direct<br>Reverse   | Set output control based on process variable:<br>Direct: Rise in control process variable increases controller analog output voltage<br>Reverse: Rise in control process variable decreases controller analog output voltage   |
| Control: Deadband                | 0.0-100.0   | Set $\pm$ range the control system does not respond to changes to the input above or below controlled variable setpoint  |
| Control: P Gain                  | 0.01 - 100.0  | Set the P Gain (Proportional Gain). Increasing this value will enhance the system's response to the error between the controlled variable and the setpoint. (NOTE: For optimal performance, the P Gain should maintain a 3:1 ratio with the I Gain and should never be set lower than the I Gain.)           |
| Control: I Gain                  | 0.01 - 100.0  | Set the I Gain (Integral Gain). Increasing this value will enhance the system's response to the accumulated error between the controlled variable and the setpoint. (NOTE: For optimal performance, the I Gain should maintain a 1:3 ratio with the P Gain and should never exceed the value of the P Gain.) |
| Control: PI Dampening Dampenband | 0.0-100.0   | Set the PI Dampenband to the $\pm$ deadband value range around the setpoint. This will allow the IRC controller to reduce the response of the controlled variable as it approaches the desired setpoint.   |
| Freeze Loop                      | Off/Do not freeze<br>DI1 (when closed)<br>DI2 (when closed)<br>DI3 (when closed)<br>DI4 (when closed) | Freeze Loop: Set to off, unless using direct pressure control with a door contact. The door contact will freeze the control position when the door is opened, and the door contact is wired to a digital input.  |

For optimal performance, the P Gain should maintain a 3:1 ratio with the I Gain and should never be set lower than the I Gain.

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

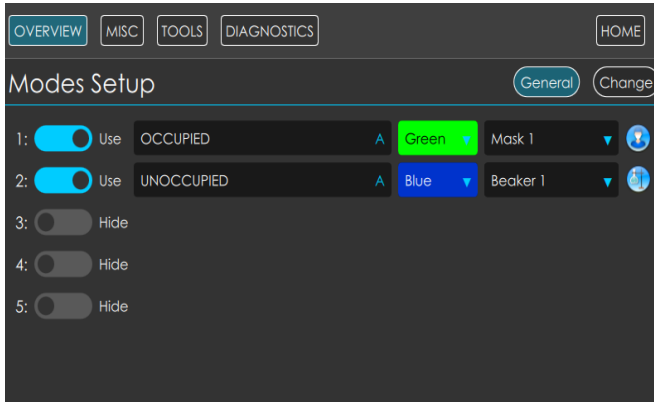
## MANUAL

### MODE SETUP

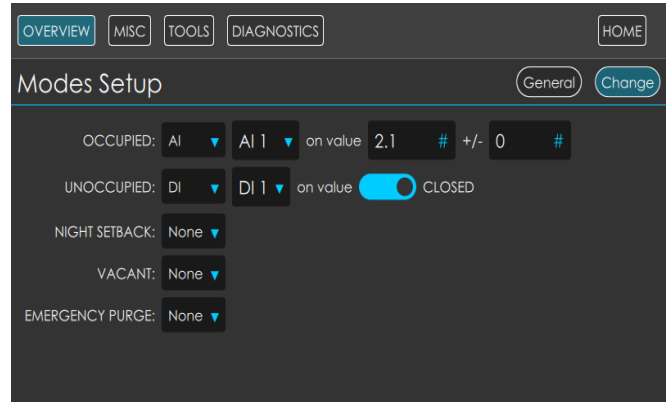
#### MODE SETUP

**General:** Mode Setup screen allows the user to configure and customize up to 5 modes. Modes can be used to indicate room's usage / occupancy and configured with different display and alarm settings.

**Change:** The mode change screen allows the user to setup analog input or digital inputs to trigger a mode change.



MODE SETUP (GENERAL)



MODE SETUP (CHANGE)

#### MODE SETUP (GENERAL)

| Parameter        | Unit Selections  | Description  |
|------------------|--|--|
| Use/Hide         | Use/Hide   | Selecting "Use" will enable the selected mode on this display.   |
| Mode Text        | Alphanumeric Free Text (15 Character Limit)  | Custom text option for each defined mode that is displayed on Main status and More Info screens.               |
| Background Color | Green, Blue, Yellow, Orange, Red, Grey   | Selectable screen color to be used with each mode that is displayed on Main status screen when mode is active. |
| Icon             | Stop Hand, Caution Triangle, Air Flow, Bed, Mop, Mask 1, Mask 2, DNA, Beaker 1, Beaker 2 | Selectable icon to be used with each mode. Will be displayed on Main Status screen when mode is active.        |

#### MODE SETUP SCREEN (CHANGE)

| Parameter             | Unit Selections   | Description  |
|-----------------------|---|--|
| Input Selection       | AI<br>DI<br>NONE  | AI: Select to trigger mode change based on voltage signal (0 -10 VDC) to analog input.<br>DI: Select to trigger mode change based on binary signal (open/close) to digital input.<br>NONE: No trigger for mode change. |
| Input Trigger         | AI Input Selection: AI 1-14<br>DI Input Selection: DI 1-4     | Select a specific AI or DI to use for mode change trigger.   |
| On Value              | AI Mode: 0-10V<br>DI Mode: ON, OFF                            | Set the specific AI or DI value that will trigger the mode change.   |
| +/- Voltage Threshold | Only applicable to AI Mode.<br>Not to exceed set AI On Value. | Enter a voltage range for the mode change triggering event. This value gives a deadband on either side of the "On" value voltage that will cause the mode to be changed.   |

**!** Mode changes triggered by an Analog Input (AI) or Digital Input (DI) happen only once and won't keep the controller in that mode continuously. After a mode change is triggered, it won't happen again until the DI or AI moves outside the triggering range and then back within it. For example, if a mode change is triggered when DI 1 closes, it won't trigger another change until DI 1 opens and then closes again.

## RELAY SETUP

### RELAY SETUP TYPES

**Unused:** Not Used

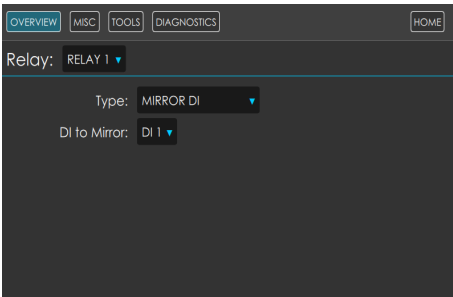
**Mirror DI:** Configures the relay to mirror the open/close state of a DI.

**Invert DI:** Configures the relay to invert the open/close state of a DI.

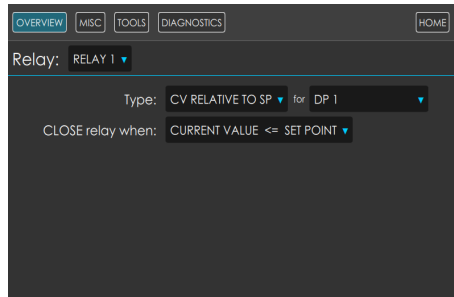
**CV Relative to SP:** Configures the relay to open/close based on a Point's current value compared to setpoint.

**Alarm State:** Configures the relay to open/close based on a Point's alarm state.

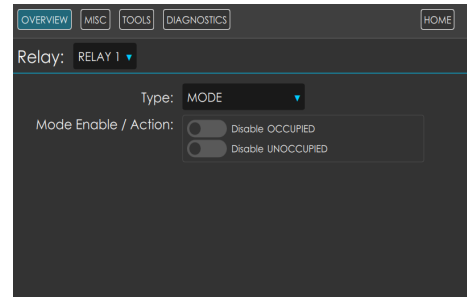
**Mode:** Configures the relay to open/close based on change of mode.



RELAY SETUP (MIRROR DI)



RELAY SETUP (CV RELATIVE TO SP)



RELAY SETUP (MODE)

### RELAY SETUP

| Parameter          | Unit Selections  | Description  | Mirror DI | Invert DI | CV Relative to SP | Alarm State | Mode |
|--------------------|--|--|-----------|-----------|-------------------|-------------|------|
| DI to Mirror       | Enabled DI's   | Configures the relay to mirror the behavior of an assigned DI. Ex: If selected DI is open (0V) the relay will be open. When DI is closed the relay will close. | •         |           |                   |             |      |
| DI to Invert       | Enabled DI's   | Configures the relay to invert the behavior of an assigned DI. Ex: If selected DI is open (0V) the relay will be close. When DI is closed the relay will open. |           | •         |                   |             |      |
| for                | Enabled Points   | Selectable Point for CV to Relative SP function.   |           |           | •                 | •           |      |
| CLOSE relay when   | CURRENT VALUE <= SETPOINT<br>CURRENT VALUE < SETPOINT<br>CURRENT VALUE >= SETPOINT<br>CURRENT VALUE > SETPOINT | Configures the relay to close based on the Point's value compared to setpoint.   |           |           | •                 |             |      |
| CLOSE relay when   | IN ALARM<br>NOT IN ALARM   | Configures the relay to close based on the Point's alarm state.  |           |           |                   | •           |      |
| Mode Enable Action | Enable/Disable<br>Open RLY/Close RLY   | Enable to drive relay behavior based on mode change.<br>Configures relay to open/close based on mode change.   |           |           |                   |             | •    |

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

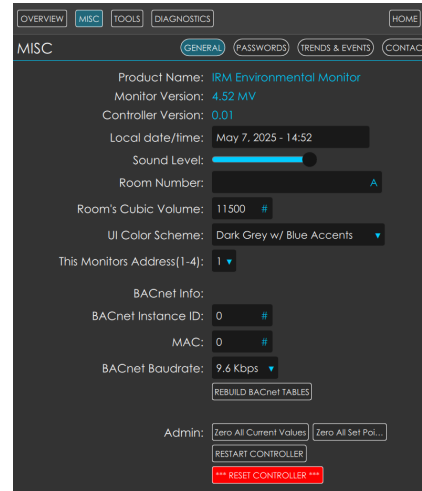
### MISC. SETUP (GENERAL)

#### MISC. SETUP

**General:** Contains general settings and BACnet configuration parameters.

**Passwords:** Allows for configuration to secure the display with a password.

**Contact:** Provides contact information for support.

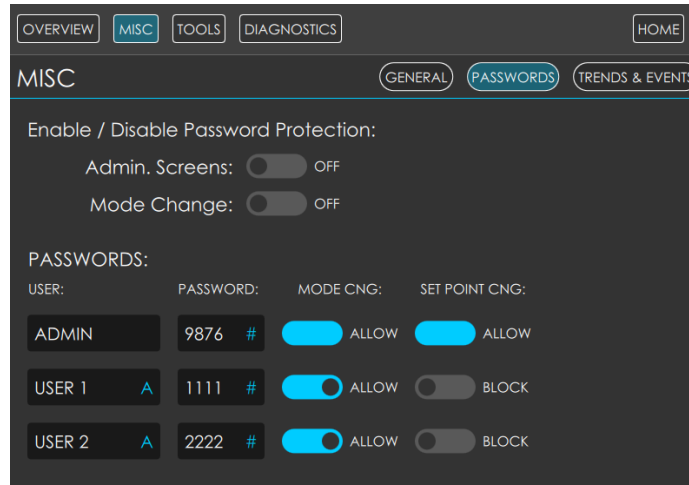


MISC SETUP

#### MISC. SETUP (GENERAL)

| Parameter                               | Unit Selections  | Description   |
|---|--|---|
| Product Name                            | N/A  | Contains the product name.  |
| Monitor / Controller / Database Version | N/A  | Contains the current build for this display and attached I/O board.   |
| Local date / time                       | Date (MM:DD:YYYY)<br>Time (24 Hour)  | Used for date / time stamp for event log and trend logs.  |
| Sound Level                             | Adjustable volume sidebar  | Sets the audible alarm volume.  |
| Room Number                             | Alphanumeric Selection<br>(15 character limit)   | Customizable room name/number displayed locally on PM and MV screens.   |
| Room's Cubic Volume                     | Numeric Value (ft <sup>3</sup> )   | Enter the volume of the room in cubic feet (length x width x height). The value entered here will drive air change rate calculations.   |
| UI Color Scheme                         | Dark Grey w/ Blue Accents<br>Dark Grey w/ Yellow Accents<br>Dark Purple w/ Green Accents<br>Dark Blue w/ Green Accents<br>Brown w/ Green Accents<br>Brown w/ Blue Accents<br>Additional: Custom Selections | Select the color scheme for background and text color.  |
| This Monitor's Address                  | 1-4  | Each display connected to the same I/O board must have a unique display address, starting with 1.<br>⚠ Each display connected must have a unique selection to properly communicate with the Integrated Room Controller. |
| BACnet® Instance ID:                    | (0-4,194,304)  | Enter a BACnet® Instance ID (0- 4,194,304), unique to this I/O board.   |
| MAC                                     | 1-126  | Enter a MAC address (1-126), unique to this I/O board.  |
| Baud Rate                               | 9.6 Kbps, 19.2 Kbps,<br>38.4 Kbps, 57.6 Kbps<br>76.8 Kbps  | Select a baud rate for this I/O board.  |
| Rebuild BACnet TABLES                   | N/A  | Press this button to rebuild the BACnet points list after any configuration changes are made from the Overview menu.  |
| Zero All Current Values / setpoints     | N/A  | These buttons can be used to reset values that were set via BACnet or AI. Will not effect Current Values or setpoints that are driven by control or AI functions.   |
| Restart Controller                      | N/A  | This button to restart the this I/O board.  |

## MISC. (PASSWORDS)



## MISC. (PASSWORDS)

## MISC. (PASSWORDS)

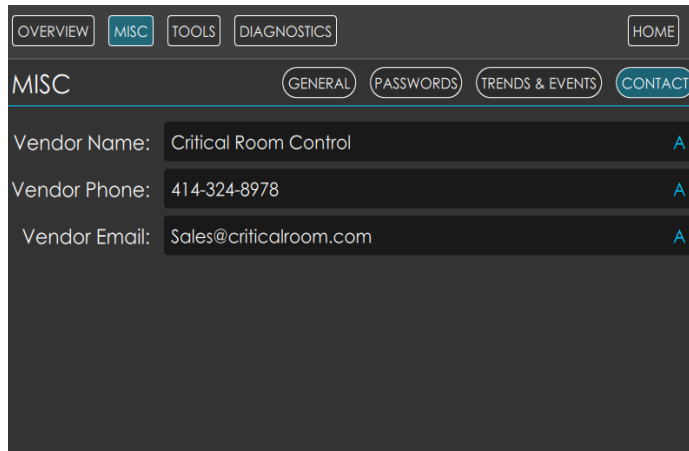
| Parameter                            | Unit Selections                | Description  |
|--------------------------------------|--------------------------------|--|
| Enable / Disable Password Protection | ON/OFF                         | Selecting ON will require user password to access the specific screen.<br>Selecting OFF will allow any user to access the specific screen.   |
| Admin                                | N/A                            | Default naming. Not user adjustable.   |
| User 1<br>User 2                     | Alphanumeric Selection         | Enter a meaningful title for this user such as "Nurse", "Cleaning Staff", etc. This field is for reference only and appears only on this page.                                     |
| Password                             | Numeric Value (up to 4 Digits) | Enter a 1-4 digit numeric password for each user.  |
| Mode Change                          | ALLOW/BLOCK <sup>1</sup>       | If "ALLOW" is selected, the user can enter their password to change the mode.<br>If "BLOCK" is selected, the user cannot change the mode even with a password.                     |
| Setpoint Change                      | ALLOW/BLOCK <sup>1</sup>       | If "ALLOW" is selected, the user can enter their password to change a Point's setpoint.<br>If "BLOCK" is selected, the user cannot change a Point's setpoint even with a password. |

<sup>1</sup>Admin setup defaulted to allow. Not user adjustable.

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### MISC. (CONTACT)



### MISC. (CONTACT)

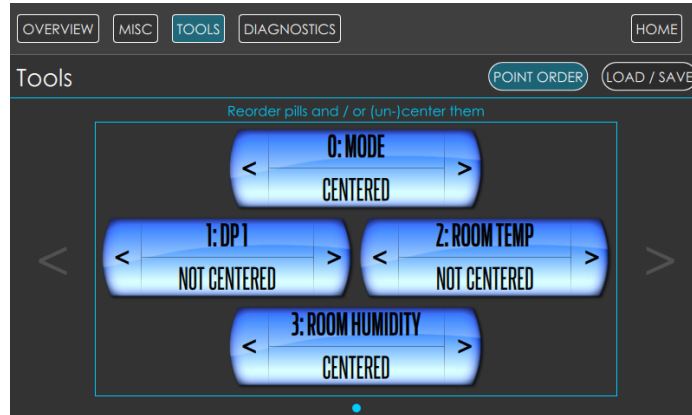
### MISC. (CONTACT)

| Parameter    | Unit Selections        | Description                            |
|--------------|------------------------|--|
| Vendor Name  | Alphanumeric Selection | Enter contact name for local support.  |
| Vendor Phone | Numeric Selection      | Enter contact phone for local support. |
| Vendor Email | Alphanumeric Selection | Enter contact email for local support. |

## TOOLS (POINT ORDER)

### TOOLS (POINT ORDER)

**Point Order:** This screen allows the user to change the position of a point's icon on the MV screen.



TOOLS (POINT ORDER)

### TOOLS (POINT ORDER)

| Parameter           | Unit Selections       | Description   |
|---------------------|-----------------------|---|
| Left / Right Arrows | Left/Right            | This button will move an icon that is spanning two columns to the left or right.                  |
| Center              | Centered/Not Centered | This button will position an icon so that it spans two columns.                                   |
| Enter Order Number  | Numeric Value         | This feature will allow you to hand key in a specific order number for the position of that icon. |

**!** Use the left / right buttons on the screen to scroll to additional point pages.

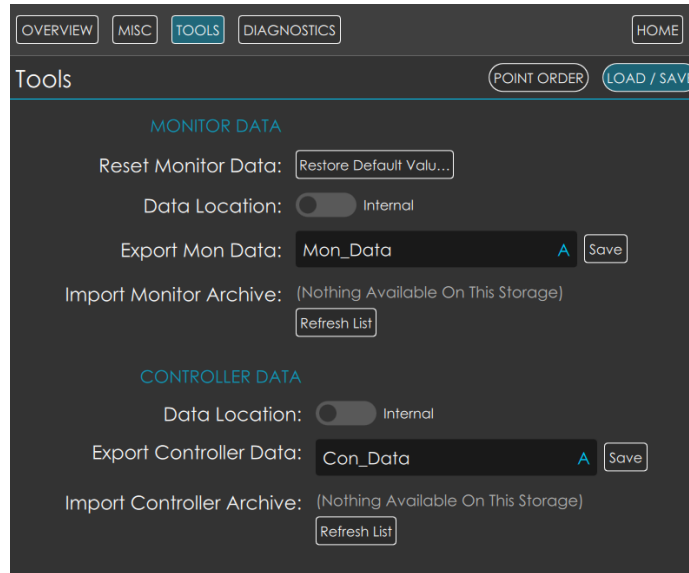
# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### TOOLS (LOAD/SAVE)

#### LOAD/SAVE

**Load/Save:** This screen allows the user to archive/save, restore, or clone system data locally or to a micro SD card located on the back of the display.



#### TOOLS (LOAD/SAVE)

#### TOOLS (LOAD/SAVE)

| Parameter   | Unit Selections                             | Description   |
|---|---|---|
| Restore Monitor Data                                | Restore Default Values                      | This will reset all parameters to their factory default values - on this display only.  |
| Data Location                                       | Internal / SD Card                          | Selecting "Internal" stores the information in internally non-volatile memory, which retains data even when powered off. The SD card (Micro SD HC) is located behind the display, allowing users to save multiple monitor / controller configuration files, provided each file has a unique name. |
| Export Mon Data<br>Export Controller Data           | Alphanumeric Selection (15 character limit) | Enter a file name and save. The monitor / controller configuration will be saved internally or to an SD card, depending on the selected "Data Location." Once saved, the file will appear on the import list.   |
| Import Monitor Archive<br>Import Controller Archive | Load / Erase                                | Lists the current archived files available for loading. You can choose to "Load" or "Erase" a file. Note: The list will show archived files based on the selected "Data Location."  |

#### DATA PARAMETERS FOR LOAD/SAVE

| Monitor Data            | Controller Data        |
|-------------------------|------------------------|
| Point Title             | Point Enable           |
| Point Eng. Units        | Point Display Deadband |
| Point Resolution        | Point Alarm Type       |
| Point Show on MV Screen | Point Alarm Low/High   |
| Point Setpoint          | Point Mode Alarm       |
| Point Alarm Monitor     | Point Alarm Delay      |
| Point Audible Alarm     | Analog Inputs          |
| Mode Names              | Analog Outputs         |
| Mode Enabler            | Relays                 |
| Sound Level             | Mode Change            |
| Room Name               | BACnet Info            |
| UI Color Scheme         | Cubic Volume           |
| Monitor Address         |                        |
| Point Order             |                        |

## DIAGNOSTICS

### DIAGNOSTICS

**Analog I/O:** The Analog I/O Diagnostic screen helps users troubleshoot analog inputs and outputs on the IRM. Each input and output has a slider showing its current voltage and range. If the voltage is outside this range, the text and outline turn orange. If the voltage is manually overridden, the lock icon will appear.

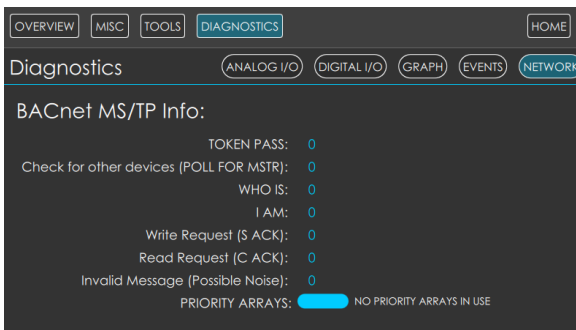
**Digital I/O:** The Digital I/O Diagnostic screen helps users troubleshoot by showing the current values of digital inputs and relays. It also provides basic information on how the relays are used. Since digital inputs can control multiple functions at once, their specific uses are not listed on this screen.

**Graphing:** The graph screen lets users plot up to 4 data points and their setpoints to help troubleshoot or confirm controller settings and outputs. The IRC automatically records each point's current value and setpoint, along with every Analog Input's and Output's voltage, over the past two hours.

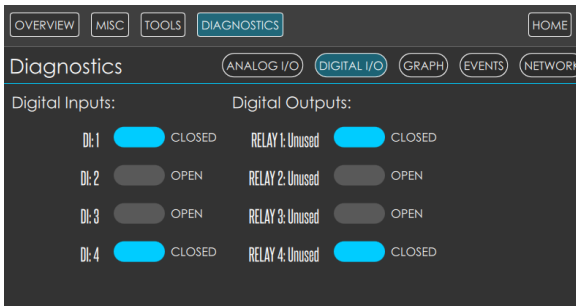
**Network:** BACnet® MS/TP Info lists BACnet® network data to help debug BACnet® MS/TP communication issues.



DIAGNOSTICS (ANALOG I/O)



DIAGNOSTICS (NETWORK)



DIAGNOSTICS (DIGITAL I/O)

# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### MODES & POINTS

| Type   | Parameter | Default Description | Notes   |
|--------|-----------|---------------------|---|
| Modes  | 1         | OCCUPIED            |   |
| Modes  | 2         | UNOCCUPIED          |   |
| Modes  | 3         | NIGHT SETBACK       |   |
| Modes  | 4         | VACANT              |   |
| Modes  | 5         | EMERGENCY PURGE     |   |
| Points | 1         | DP 1                |   |
| Points | 2         | DP 2                |   |
| Points | 3         | DP 3                |   |
| Points | 4         | ROOM TEMP           |   |
| Points | 5         | ROOM HUMIDITY       |   |
| Points | 24        | MODE                | =Mirror of current mode<br>Maintain Default Point Setup |
| Points | 25        | AUX 1               |   |
| Points | 26        | AUX 2               |   |
| Points | 27        | AUX 3               |   |
| Points | 28        | AUX 4               |   |

## IRM OVERVIEW

### OVERVIEW

The Integrated Room BACnet® stack is fully tested and certified by BACnet® Testing Lab (BTL). The Integrated Room PIC list can be found from BACnet® International.

⚠ After any configuration changes are made from the Overview menu, the user must press “Rebuild BACnet® Tables” from the MISC. menu to refresh the current BACnet® points list.

### OBJECT NAME PREFIX

The Integrated Room allows adding a custom prefix to all AV, BV, and MSV object names for a device. To do this, write the desired prefix to the device object’s location property, followed by a “:”. The characters before the “:” will be added as a prefix to all object names.

For example, writing “MSP\_BLDG3\_:” to the location property will change all object names. “ROOM TEMP: CV” will become “MSP\_BLDG3\_ROOM TEMP: CV”.

### CHANGING POINT OBJECT’S NAME

The object name property for all BACnet® points linked to a specific Integrated Room point can be customized. To do this, write the new name followed by a “:” to the object name property of the AV point (AV 1000-1027) you want to change.

For example, writing “CHILLER TEMP : CV” to AV 1003’s object name property will change all related AV and MSV points (ex: AV 1115 will read “CHILLER TEMP : AL H/OVR”).

### RS485 WIRING

Connecting to the RS485 network requires a three-wire conductor: positive, negative, and ground/common. Devices on an RS485 network are connected in a series circuit, or “daisy-chained.”

An MS/TP EIA-485 network should use a three-wire shielded twisted pair cable with an impedance of 100-130 ohms. The capacitance between conductors should be less than 100 pF per meter. Both foil and braided shields are acceptable.

The maximum segment length is 4,000 feet using 18 AWG wire, with up to 32 nodes per segment. The network should not have T connections. Terminations of 120 ohms ±5% should be at each end of the segment, with no additional terminations at intermediate nodes.

### COV SUBSCRIPTIONS

Change of value subscriptions are available on the following points:

- Point’s Current Value (AV 1000 – AV 1027)
- Point’s Current Set Point (AV 1084 – AV 1111)
- Point’s Alarm Status (MSV 1196 – MSV 1223)
- AI Voltage In (AV 2168 – AV 2181)
- AO Voltage Out (AV 2790 – AV 2799)
- Room’s Current Mode (MSV 5001)
- Room’s Alarm Status (MSV 5002)
- Room’s Drop-in Pressure Status (MSV 5006)

### PRIORITY ARRAYS

Priority Arrays are available on the following AV points:

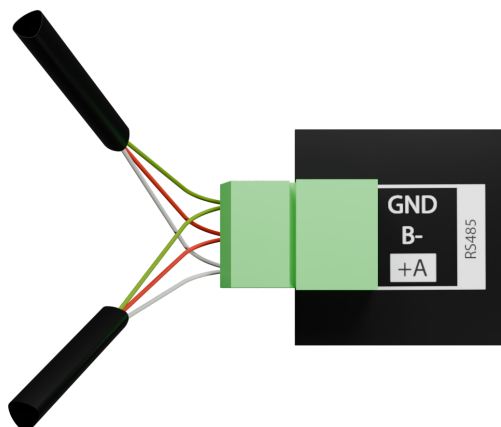
- Point’s Current Value (AV 1000 – AV 1027)
- Point’s Current Set Point (AV 1084 – AV 1111)

⚠ The Integrated Room can be restarted via BACnet®. To restart via BACnet®, send a warm or cold start command using the password “crcRestart” and it will restart in 5 seconds.

Restarting it will not power cycle or restart the display.

Adding an object name property prefix or modifying an Integrated Room object name property ONLY effect the OBJECT NAME property within BACnet®.

### BACnet® MS/TP WIRING



# INTEGRATED ROOM - ENVIRONMENTAL MONITOR

## MANUAL

### BACnet® POINTS

Below are the default key BACnet® points which support the Integrated Room Monitor Environment products.

Additional BACnet® points may be visible on the IRM-MV7 and IRM-MV5. Please refer to Integrated Room Complete BACnet® points list for complete BACnet® information.

### IRM-MV SERIES DEFAULT BACnet® POINTS

| Object Instance | Object Name            | Description                                     | Writable? | Units                                  |
|-----------------|------------------------|---|-----------|--|
| AV 1000         | DP 1: CV               | Current value for DP 1 (Point 1)                | Y         | "WC                                    |
| AV 1003         | Room Temp: CV          | Current value for Room Temperature (Point 4)    | Y         | °F                                     |
| AV 1004         | Room Humid: CV         | Current value for Room Humidity (Point 5)       | Y         | %                                      |
| AV 1023         | Mode: CV               | Current value for Mode (Point 24)               | Y         | 1= Occupied<br>2= Unoccupied           |
| AV 1112         | DP 1: AL H/OVR         | Alarm high limit for DP 1 (Point 1)             | Y         | "WC                                    |
| AV 1115         | Room Temp: AL H/OVR    | Alarm high limit for Room Temperature (Point 4) | Y         | %                                      |
| AV 1116         | Room Humid: AL H/OVR   | Alarm high limit for Room Humidity (Point 5)    | Y         | CFM                                    |
| AV 1140         | DP 1: AL L/UNDR        | Alarm low limit for DP 1 (Point 1)              | Y         | "WC                                    |
| AV 1143         | Room Temp: AL L/UNDR   | Alarm low limit for Room Temperature (Point 4)  | Y         | °F                                     |
| AV 1144         | Room Humid: AL L/UNDR  | Alarm low limit for Room Humidity (Point 5)     | Y         | %                                      |
| AV 1168         | DP 1: AL DLY           | Alarm delay time for DP 1 (Point 1)             | Y         | Per Second                             |
| AV 1171         | Room Temp: AL DLY      | Alarm delay time for Room Temperature (Point 4) | Y         | Per Second                             |
| AV 1172         | Room Humid: AL DLY     | Alarm delay time for Room Humidity (Point 5)    | Y         | Per Second                             |
| MSV 1196        | DP 1: AL STAT          | Alarm status for DP 1 (Point 1)                 | N         | 1 = Normal<br>2 = Caution<br>3 = Alarm |
| MSV 1199        | Room Temp: AL STAT     | Alarm status for Room Temperature (Point 4)     | N         | 1 = Normal<br>2 = Caution<br>3 = Alarm |
| MSV 1200        | Room Humid: AL STAT    | Alarm status for Room Humidity (Point 5)        | N         | 1 = Normal<br>2 = Caution<br>3 = Alarm |
| MSV 5001        | DEVICE CUR MODE        | Current mode for device                         | Y         | 1= Occupied<br>2= Unoccupied           |
| MSV 5002        | DEVICE RM AL STAT      | State of alarm for device                       | N         | 1 = Normal<br>2 = Caution<br>3 = Alarm |
| MSV 5006        | DEVICE DROP IN PRES AL | Pressure alarm for any DP (Point 1,2,3)         | N         | 1= No Alarm/Caution<br>2= Alarm        |

BACnet® is a registered trademark of ASHRAE

criticalroom.com



**Measure What Matters.**

Critical Room Control  
9275 North 49th Street  
Brown Deer, WI 53223

414.324.8978  
Sales@criticalroom.com