BACHARACH

MVR-SC

Refrigerant Leak Monitor

System Controller for MVR-300 Gas Detectors

Refrigerant Leak Detection

P/N: 1100-2184 | May 2019 Revision 0

User Manual

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If Bacharach is to do the repair work, send the monitor, prepaid, to the closest service center. Prior to shipping equipment to Bacharach, visit www.mybacharach.com for a Returned Merchandise Authorization Number (RMA #). All returned goods must be accompanied by a RMA #. Pack the equipment securely (in its original packing, if possible), as Bacharach cannot be held responsible for any damage incurred during shipping to our facility. Always include your RMA #, shipping address, telephone number, contact name, billing information and a description of the defect as you perceive it. You will be contacted with a cost estimate for expected repairs prior to the performance of any service work. For liability reasons, Bacharach has a policy of performing all needed repairs to restore the monitor to full operating condition.

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Table of Contents

1 Introduction

1.1 About this Manual

Thank you for investing in a Bacharach MVR-SC Refrigerant Leak Monitor. To ensure operator safety and the proper use of the gas detector, please read the contents of this manual for important information on the operation and maintenance of the instrument.

1.2 Iconography

Alert	Icon	Description
Danger		An imminently hazardous situation which, if not avoided, will result in death or serious injury.
Warning		A potentially hazardous situation which, if not avoided, could result in death or serious injury.
Warning		Potential electrical shock hazard which, if not avoided, could result in death or serious injury.
Caution		A potentially hazardous situation which, if not avoided, could result in physical injury or damage to the product or environment. It may also be used to alert against unsafe
Important		Additional information on how to use the product.

1.3 General Safety Statements

	**DANGER:** This product **HAS NOT** been designed for use in hazardous locations. Failure to comply may result in personal injury or death.
	**WARNING: NEVER** connect the product's 24V DC inputs directly to AC power supply.
	**WARNING: DO NOT** apply power until all wiring has been completed.
	**CAUTION**: The protection provided by this product may become impaired if it is used in a manner not specified by the manufacturer. Modifications to this instrument, not expressly approved, will void the warranty.
	**CAUTION: DO NOT** continue to use this equipment if there are any symptoms of malfunction or failure. In the case of such occurrence, de-energize the power supply and contact a qualified repair technician or the nearest Bacharach Service Center.
	**IMPORTANT**: Before using this product, carefully read and strictly follow the instructions in the manual. Ensure that all product documentation is retained and available to anyone operating the instrument.
	**IMPORTANT**: The MVR-SC must be installed by a suitably qualified technician who will install this unit in accordance with these instructions and the standards in their industry / country. This document is only intended as a guide, and the manufacturer bears no responsibility for the installation or operation of this unit. .
	**IMPORTANT**: Comply with all local and national laws, rules, and regulations associated with this equipment. Operators should be aware of the regulations and standards in their industry / locality for the operation of the MVR-SC.

2 Product Description

The MVR-SC Refrigerant Leak Monitor provides centralized monitoring and alarming for multi-occupant applications utilizing the MVR-300 Refrigerant Leak Detectors. The MVR-SC continuously monitors all connected devices for alarm and fault conditions and will provide alerts via the integrated color touchscreen and built-in relays.

2.1 MVR-SC Core Functions

Monitor a network of connected MVR-300 refrigerant leak detectors for the following:

- High or low PPM alarm events
- Hardware faults
- Network connectivity

The MVR-SC controller will respond to these events as follows:

- Alarm – activates the alarm relay, flashes the screen to RED, activates the audible buzzer
- Fault – activates the fault relay, flashes the screen to AMBER, activates the audible buzzer
- Communication Error – flashes the screen to BLUE, indicates warning on screen with the specific unit(s)

2.1.1 Home

After inactivity on the touchscreen, the system will always revert to the **Home** screen. When no alarms or warnings are active, this screen resumes a **System Normal** state.

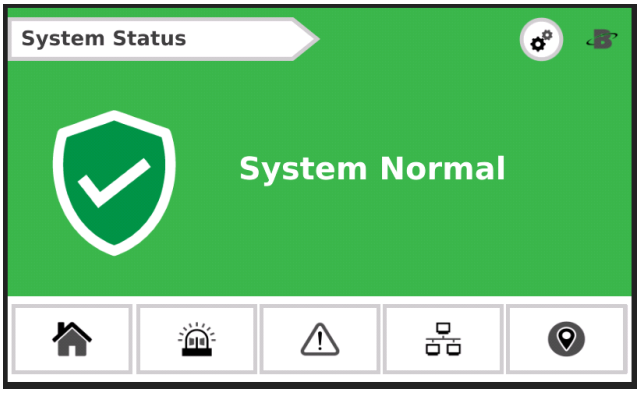
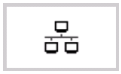
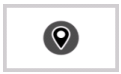


Figure 1 - Home Screen

2.1.2 Navigation Icons

Most screens have the following menu icons:

Icon	Icon Name
	Home
	Alarm list
	Fault list
	Comm Error
	Floor list

2.1.3 Status Icons

Each floor and room will use the following status icons:

Icon	Icon Name
	Alarm
	Fault
	Comm Error
	Normal
	Not yet commissioned

2.1.4 Floor List

Each floor will designate the highest severity status from all devices on that floor.

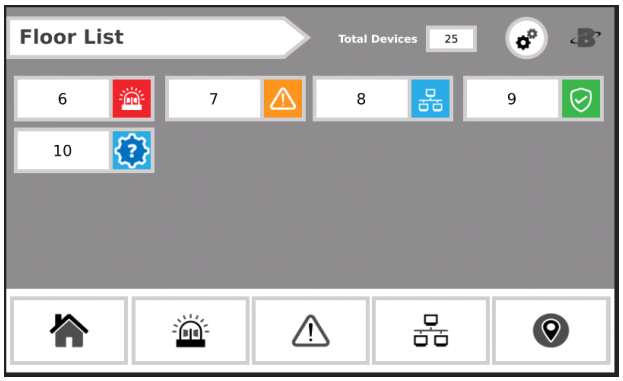


Figure 2 - Floor List

2.1.5 Room/Device list (each floor)

Detailed view for each MVR-300 / room in the system grouped on a given floor.

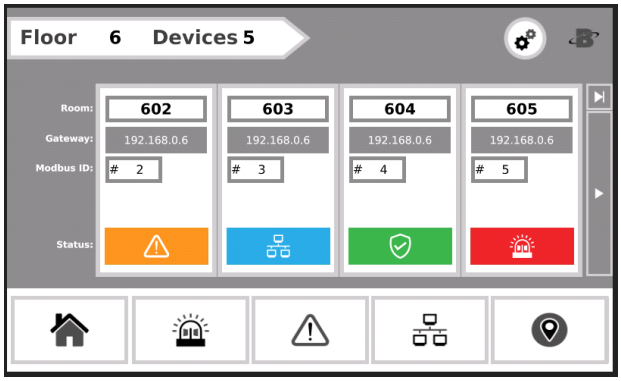


Figure 3 - Room/Device List

2.1.6 Settings

For system configuration changes.

To access the **Setting** screen, tap the gear icon.

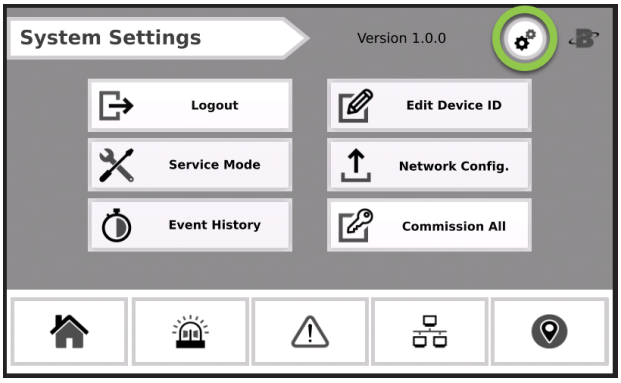


Figure 4 - System Settings

This screen is passcode protected to avoid unintentional changes.
(The **Passcode** screen appears.)

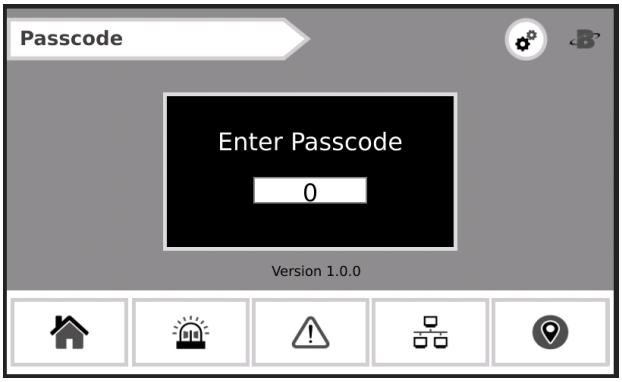


Figure 5 - Passcode

Enter the passcode for the MVR-SC controller to unlock and allow changes.

The default system passcode for the MVR-SC is **6388**.

2.2 System Components

2.2.1 MVR-SC Refrigerant Leak Monitor

The MVR-SC Refrigerant Leak Monitor (MVR-SC) provides centralized alarming and monitoring for all connected MVR-300 Gas Detectors.

2.2.2 MVR-300 VRF Refrigerant Leak Detector

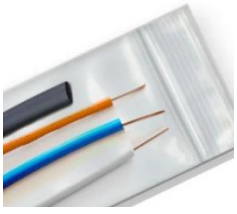
The MVR-300 VRF Refrigerant Leak Detector (MVR-300) provides refrigerant leak detection for occupied rooms in VRF applications.

2.2.3 Ethernet Network Switch

An Ethernet network switch is used to provide connectivity between the MVR-SC Controller and the individual Modbus Gateways (up to 8 ports).

2.2.4 Gateway

A gateway is used to create small networks of MVR-300 Refrigerant Detectors (up to 15 per gateway) to ease installation and troubleshooting.



2.2.5 Modbus EZ-Wire Kit

Precisely stripped, pre-bonded wire provides faster, more consistent installation to the MVR-300 Modbus port.

2.3 Hardware Overview

MVR-SC Refrigerant Leak Monitor

The MVR-SC provides centralized alarming and monitoring for all connected MVR-300 Gas Detectors.

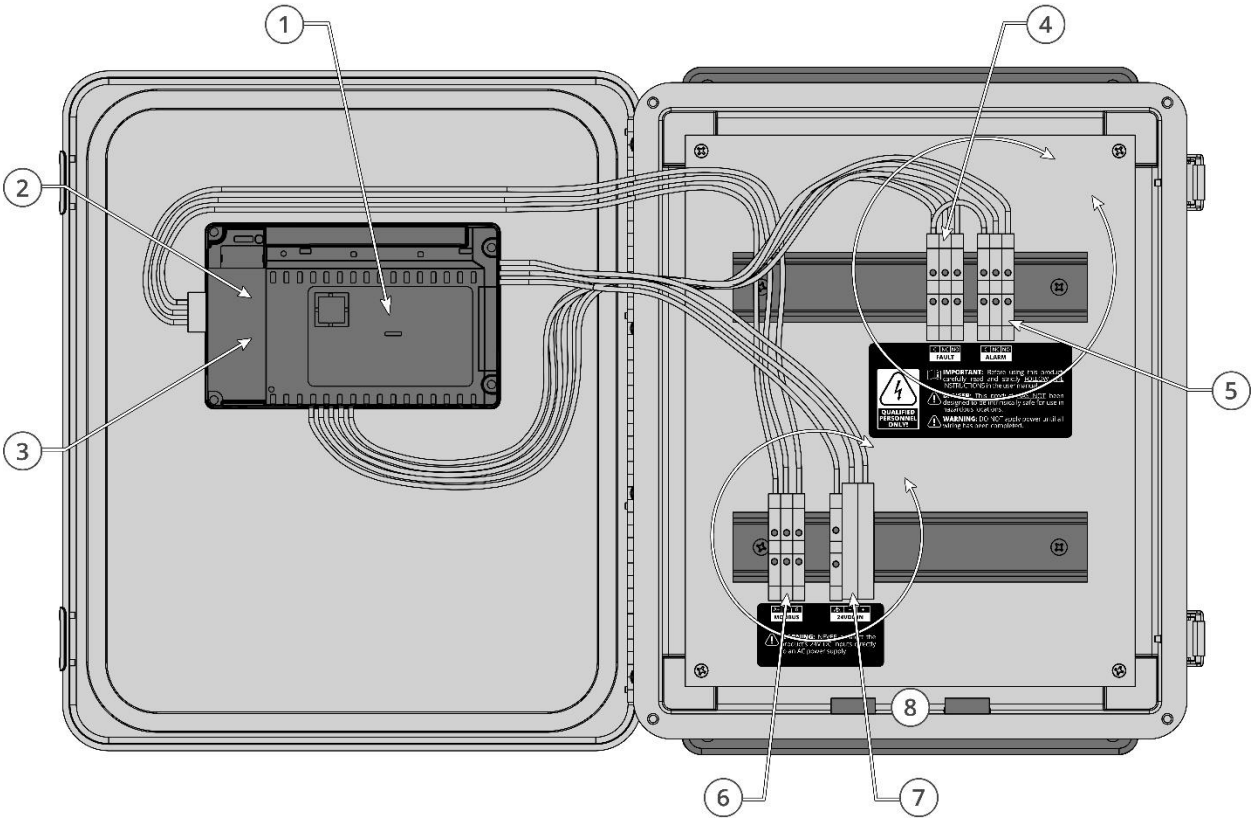


Figure 6 - MVR-SC Overview

#	Component Description
1	PLC / Touch Screen
2	Fault Relay
3	Alarm Relay
4	Modbus
5	Power (24V DC IN)
6	Cable Entries (×4)

3 Installation

3.1 Network Overview

IMPORTANT: Prior to installation, download the MVR-SC floorplan spreadsheet available from MyBacharach.com or on the USB stick supplied with the controller. This spreadsheet has editable fields for Floor / Room and non-editable fields for Modbus ID and Gateway IP address. The floor and room fields are to be completed prior to installation in order to ensure correct wiring and function.

Up to 100 MVR-300 devices can be connected to the MVR-SC. These are to be grouped as Modbus RTU daisy-chain segments of up to 15 devices, terminating at a Gateway. Up to seven gateways can be used in a fully populated network.

Gateways connect via an Ethernet TCP network, through an Ethernet switch, to the MVR-SC. Up to seven gateways can be used in a fully populated network. The MVR-SC provides centralized monitoring of all devices in the network, with a 15-second scan rate.

When creating the floorplan, follow these conditions:

- Keep daisy-chain segments of MVR-300 devices as near as possible to the gateway to which they connect.
- We recommend keeping this distance under 500 ft., if possible, for Modbus daisy-chain segments. As wire length increases, noise sources can accumulate, and a greater degree of attention to shielding and grounding is required.
- It is important that the designations in the floorplan spreadsheet “data.csv” exactly match the actual installed network. Any changes in the physical wiring must be reflected in the spreadsheet for the system to function.

The following diagram shows an example network using all seven Gateways.

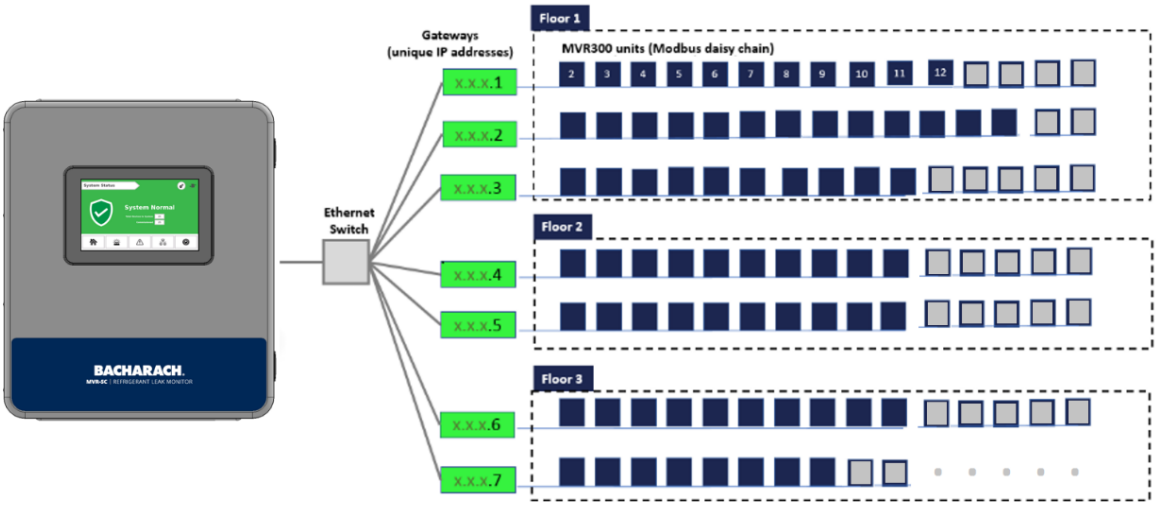


Figure 7 - Connection Diagram

Network Creating Notes:

- To mark devices to be on the same floor, those devices must have the same floor name (capitalization matters). The MVR-SC will display a new “floor” tile for each unique name appearing in the floorplan spreadsheet, up to 16 district values.
- The floor and room cells can be named with any combination of up to eight digits of letters and/or numbers.
- It is possible to hardwire up to 15 devices to the controller’s Modbus RTU port. To indicate these in the floorplan, fill in the cells at the bottom of the spreadsheet (rows with IP marked “Direct”).
- Each Gateway’s IP Address must be unique. If only one gateway is used, its IP address should be 192.168.0.1. The IP address for subsequent gateways would be 192.168.0.2, 192.168.0.3, etc.
- The 7th gateway, if used, has a limit of 10 devices. All other gateways have a limit of 15 devices.

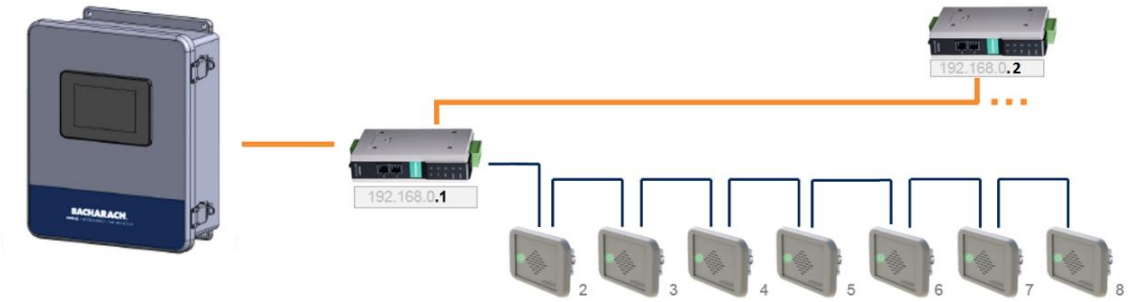


Figure 8 – Small Example Network

3.2 Floorplan Spreadsheet (CSV)

The MVR-SC floorplan spreadsheet (data.csv) is intended to be edited on a PC, and then uploaded to the controller via the USB stick. The spreadsheet contains placeholder entries for all possible devices in the network, but only those with "floor" and "room" cells populated will be active and displayed.

Insert the USB stick into a computer that has Excel software installed.

1. Open the flash drive and click the example CSV file titled "data.csv."

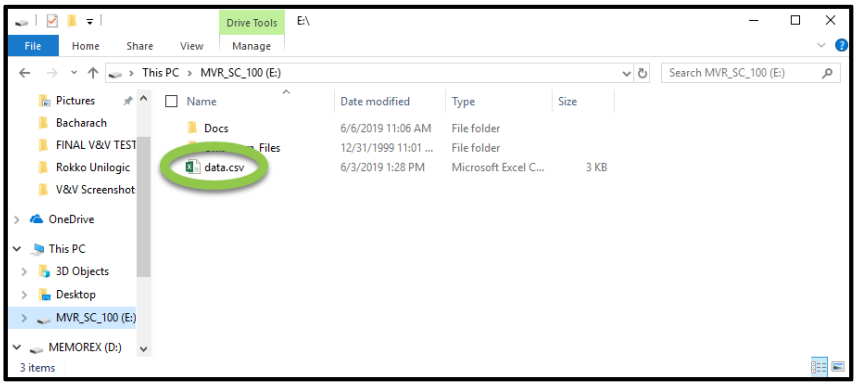


Figure 10 - Click the .CSV File

In this file, there are columns labeled: **Index**, **Floor**, **Room**, **Gateway**, **Modbus ID**, and **IPAddress**. Of those six columns ONLY the middle three (Floor, Room, and Gateway) can be edited.

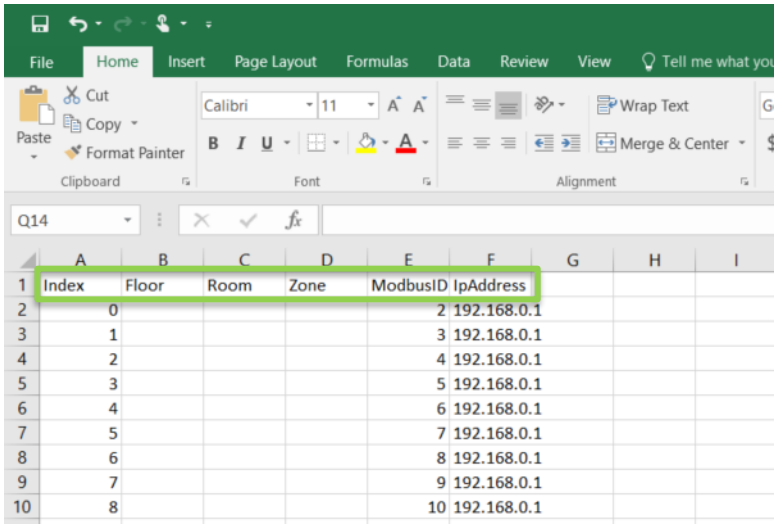


Figure 9 - The MVR-SC Floorplan Spreadsheet

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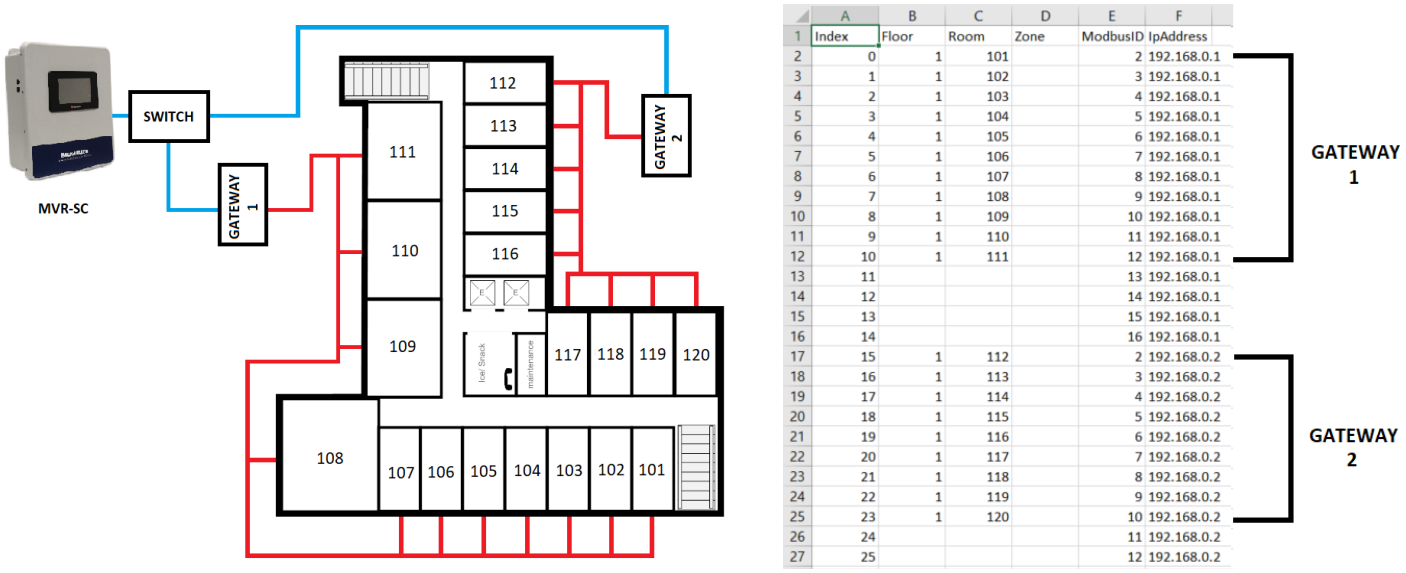
2. Add your floors and rooms to match the floorplan that has been designed for this specific building layout.

3. Save the floorplan spreadsheet as a .csv format and upload it onto the USB stick at the device root folder. The filename must be named as “data.csv.” or the MVR-SC will not be able to find the file when importing.

4. Upload the spreadsheet into the controller from the USB stick using the steps outlined in Section **Error! Reference source not found.**, **Error! Reference source not found.**.



	A	B	C	D	E	F
1	Index	Floor	Room	Zone	ModbusID	IpAddress
2	0	1	101		2	192.168.0.1
3	1	1	102		3	192.168.0.1
4	2	1	103		4	192.168.0.1
5	3	1	104		5	192.168.0.1
6	4	1	105		6	192.168.0.1
7	5	1	106		7	192.168.0.1
8	6	1	107		8	192.168.0.1
9	7	1	108		9	192.168.0.1
10	8	1	109		10	192.168.0.1
11	9	1	110		11	192.168.0.1
12	10	1	111		12	192.168.0.1
13	11				13	192.168.0.1
14	12				14	192.168.0.1
15	13				15	192.168.0.1
16	14				16	192.168.0.1
17	15	1	112		2	192.168.0.2
18	16	1	113		3	192.168.0.2
19	17	1	114		4	192.168.0.2
20	18	1	115		5	192.168.0.2
21	19	1	116		6	192.168.0.2
22	20	1	117		7	192.168.0.2
23	21	1	118		8	192.168.0.2
24	22	1	119		9	192.168.0.2
25	23	1	120		10	192.168.0.2
26	24				11	192.168.0.2
27	25				12	192.168.0.2

Figure 11 - Example Layout

Special Notes:

- There can be multiple gateways on a given floor and is not limited to one gateway per floor.
- To have floors in numeric order, have them listed as such in the “data.csv” file. The “data.csv” file does not do any interior or alphabetical sorting.
- Every assigned room in the “data.csv” file must have a Modbus number assigned.
- The column titled “Gateway” is optional and nothing in that column will appear on the MVR-SC.
- Do not add text into any text boxes to the right of Column F and/or below row 114, or the MVR-SC will not be able to read the file.

3.3 Gateway IP Address

Each gateway in the system requires a unique IP address.

The MVR-SC connects to up to seven gateways, using the following default IP address scheme.

,

Order	IP for Gateway	MVR-300 device count
1	192.168.0.1	15
2	192.168.0.2	15
3	192.168.0.3	15
4	192.168.0.4	15
5	192.168.0.5	15
6	192.168.0.6	15
7	192.168.0.7	10

The IP address for each Gateway may need to be changed by the user, since they ship with default IP 192.168.0.1. This can be done using a windows PC and the free Moxa utility.

Steps to change Gateway IP addresses:

1. Connect the first Gateway to be changed to a PC using either Ethernet port. Power the gateway with 24VDC.

2. Download MGate Manager for windows from:

   a. https://moxa.com/en/products/industrial-edge-connectivity/protocol-gateways/modbus-tcp-gateways/mgate-mb3170-mb3270-series#resources

   b. Direct Zip download link

3. Open the MGate Manager Application. Press the “Search” Button to start looking for devices

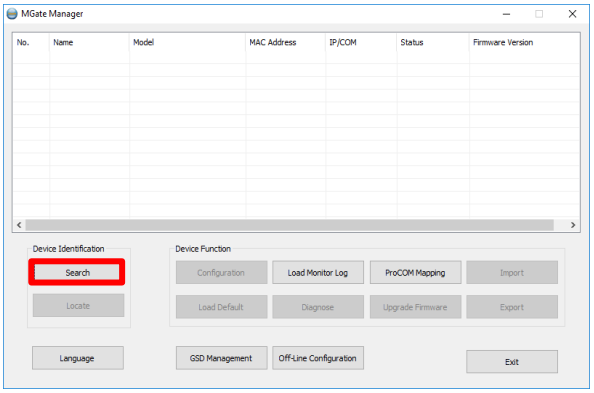


Figure 12 – Mgate Manager for Windows

4. Choose **Broadcast Search** to search on the entire connected

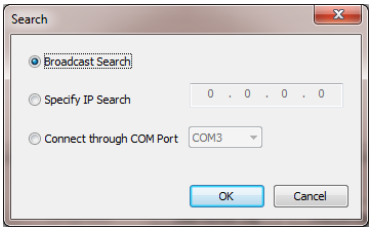


Figure 13 – Broadcast Search

5. When discovered, the Gateway should show up in the table. Select its row and press **Configuration**.

    a. Note: if this step requires a password it is “moxa”

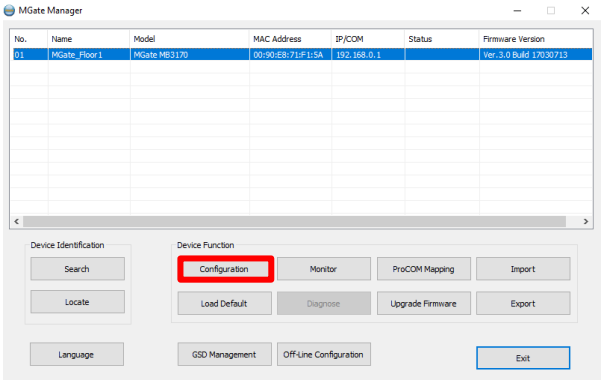


Figure 14 – Gateway Configuration

6. Navigate to the **Network** tab (the second tab).

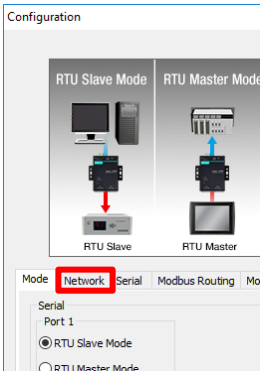


Figure 15 - Network tab

7. In the Network tab you will be able to set the IP. Change the IP from “192.168.0.1” to the IP that corresponds with your Gateway index (1 – 7) from the chart above.

8. If this gateway is the first in the network, its IP address is already correct – 192.168.0.1. If it is the second, change the last digit to match – 192.168.0.2, etc.

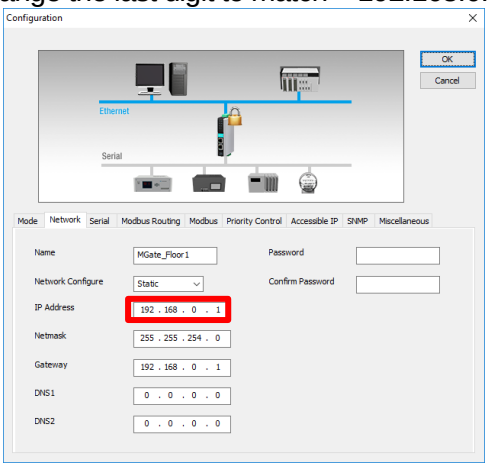


Figure 16 - Network Setting OK screen

9. Repeat this process for the remaining gateways in the system.

The gateways contain powerful built-in troubleshooting features. If system troubleshooting is required, please reach out to Bacharach Product Support for relevant documentation and support.

3.4 Hardware Installation

Mount the MVR-SC in an accessible location for viewing alerts and responding to alarm conditions.

Environment: place the MVR-SC in an indoor setting free from the risk of exposure to water, high humidity or any hazardous conditions.

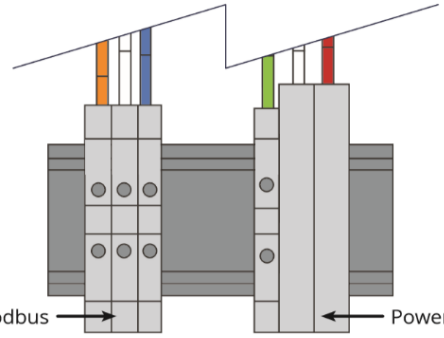
Accessibility: ensure that the MVR-SC's touch screen is readily accessible for viewing alerts and responding to alarm conditions.

1. Connect the controller to a 24V DC, rated power supply.

Near to the 24V DC is a terminal block for direct Modbus RTU connections.

This is to be used for troubleshooting or very small direct-connected networks less than 15 units. A typical large floorplan should be divided into segments connecting via Gateways, as described earlier.

WARNING: Do not apply power until all wiring is in place.



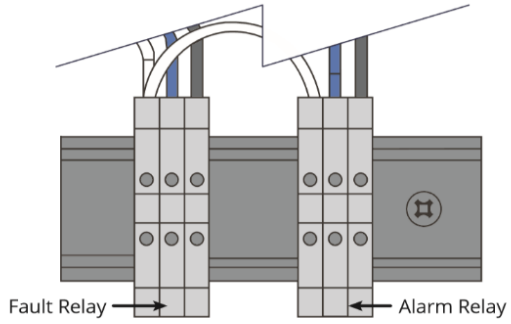
A+ *(Modbus)*		Orange
B- *(Modbus)*		White
G *(Modbus)*		Blue
(Power)		Green / Yellow
- *(Power)*		White
+ *(Power)*		Red

Figure 17 - Modbus Wiring

3.5 Connecting Relays: Alarm, Fault

If used, connect the relay output(s) to equipment that will be triggered by each relay.

Note: Take care to ensure proper wiring for intended function: normally open and / or normally closed.



Common		White
Normally Closed		Blue
Normally Open		Black

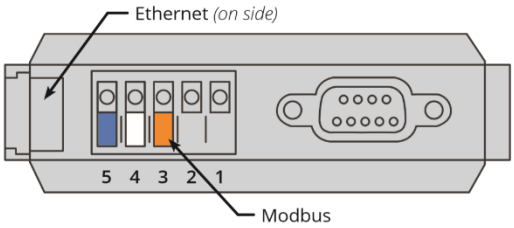
Figure 18 - Wiring Relays

3.6 Connecting Ethernet Gateways

Connect the Ethernet output from the controller to the gateway(s).

Note: If multiple gateways are in use, their Ethernet ports may be daisy chained or an optional Ethernet switch can be used to connect all gateways and the controller onto the same local subnetwork.

Connect the Modbus cable to the gateway output as depicted below.



1	Do Not Use		-
2	Do Not Use		-
3	A+ *(Modbus)*		Orange
4	B- *(Modbus)*		White
5	G *(Modbus)*		Blue

Figure 19 - Wiring Gateways

Each gateway can support a maximum of 15 MVR-300 detectors connected in a daisy chain fashion using the Modbus network cable. These use a 3-wire cable. Leave no more than 12 in (30.5 cm) for the single wire tie-off to each MVR-300.
The shield cable may be left floating or tied to electrical GND at the controller only.

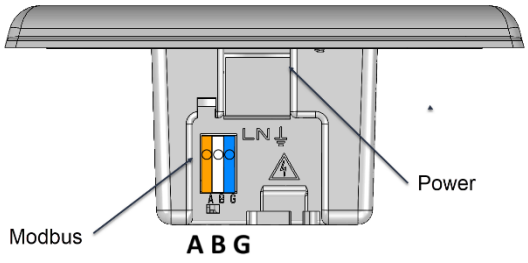
3.7 Connecting MVR-300s

Connect the first MVR-300 detector's Modbus port (3-wire) to the gateway. The address to each MVR-300 detector will therefore be a combination of its Modbus ID (number 2 through 16), and the unique IP address of the Gateway to which they are connected.

Additional resources for the MVR-300 VRF Refrigerant Leak Detector are available online. To download these resources, visit http://bit.ly/2wr9eMn.

Special Notes:

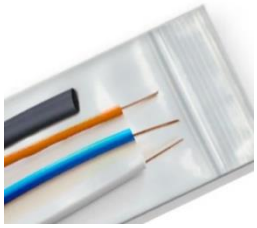
- The gateway provides the link between the MVR-SC and up to 15 MVR-300 devices.
- Cable recommended Belden 3106, 1.5 twisted pair, shielded, or similar.
- Daisy-chain only, minimizing the total Modbus run length for best performance.
- The best practice is to leave no more than 12-inches (30.5 cm) for the wire tie-off to each device.



A+ *(Modbus)*		Orange
B- *(Modbus)*		White
G *(Modbus)*		Blue

Figure 20 - Wiring the MVR-300

Tip: An EZ-wire connection is available, perfectly matched to the Modbus wiring terminal on the MVR-300, which can ensure faster, more consistent wiring.



4 Upload the Floorplan to Memory

4.1 System Startup

1. Power up the MVR-SC. When the System Startup (Home) screen appears, access **System Settings**.

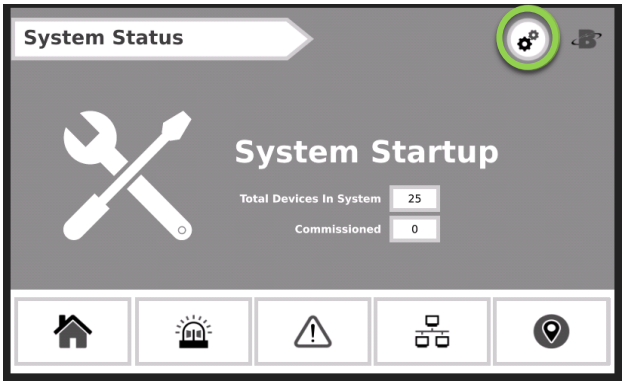


Figure 21 - System Status screen

2. After the System Setting screen appears, insert the USB stick containing the floorplan spreadsheet into the appropriate slot of the controller.

Note: Instructions on filling out this spreadsheet can be found in **Section 3**, **Installation**

3. **Network Overview**

IMPORTANT: Prior to installation, download the MVR-SC floorplan spreadsheet available from MyBacharach.com or on the USB stick supplied with the controller. This spreadsheet has editable fields for Floor / Room and non-editable fields for Modbus ID and Gateway IP address. The floor and room fields are to be completed prior to installation in order to ensure correct wiring and function.

Up to 100 MVR-300 devices can be connected to the MVR-SC. These are to be grouped as Modbus RTU daisy-chain segments of up to 15 devices, terminating at a Gateway. Up to seven gateways can be used in a fully populated network.

Gateways connect via an Ethernet TCP network, through an Ethernet switch, to the MVR-SC. Up to seven gateways can be used in a fully populated network. The MVR-SC provides centralized monitoring of all devices in the network, with a 15-second scan rate.

When creating the floorplan, follow these conditions:

- Keep daisy-chain segments of MVR-300 devices as near as possible to the gateway to which they connect.

- We recommend keeping this distance under 500 ft., if possible, for Modbus daisy-chain segments. As wire length increases, noise sources can accumulate, and a greater degree of attention to shielding and grounding is required.
- It is important that the designations in the floorplan spreadsheet “data.csv” exactly match the actual installed network. Any changes in the physical wiring must be reflected in the spreadsheet for the system to function.

The following diagram shows an example network using all seven Gateways.

Network Creating Notes:

- To mark devices to be on the same floor, those devices must have the same floor name (capitalization matters). The MVR-SC will display a new “floor” tile for each unique name appearing in the floorplan spreadsheet, up to 16 district values.
- The floor and room cells can be named with any combination of up to eight digits of letters and/or numbers.
- It is possible to hardwire up to 15 devices to the controller’s Modbus RTU port. To indicate these in the floorplan, fill in the cells at the bottom of the spreadsheet (rows with IP marked “Direct”).
- Each Gateway’s IP Address must be unique. If only one gateway is used, its IP address should be 192.168.0.1. The IP address for subsequent gateways would be 192.168.0.2, 192.168.0.3, etc.
- The 7th gateway, if used, has a limit of 10 devices. All other gateways have a limit of 15 devices.

4.2 Floorplan Spreadsheet (CSV)

The MVR-SC floorplan spreadsheet (data.csv) is intended to be edited on a PC, and then uploaded to the controller via the USB stick. The spreadsheet contains placeholder entries for all possible devices in the network, but only those with "floor" and "room" cells populated will be active and displayed.

Insert the USB stick into a computer that has Excel software installed.

4. Open the flash drive and click the example CSV file titled "data.csv."
   In this file, there are columns labeled: **Index**, **Floor**, **Room**, **Gateway**, **Modbus ID**, and **IPAddress**. Of those six columns ONLY the middle three (Floor, Room, and Gateway) can be edited.

   .

5. Add your floors and rooms to match the floorplan that has been designed for this specific building layout.

6. Save the floorplan spreadsheet as a .csv format and upload it onto the USB stick at the device root folder. The filename must be named as "data.csv." or the MVR-SC will not be able to find the file when importing.

7. Upload the spreadsheet into the controller from the USB stick using the steps outlined in Section **Error! Reference source not found.**, **Error! Reference source not found.**.

Special Notes:

- There can be multiple gateways on a given floor and is not limited to one gateway per floor.
- To have floors in numeric order, have them listed as such in the "data.csv" file. The "data.csv" file does not do any interior or alphabetical sorting.
- Every assigned room in the "data.csv" file must have a Modbus number assigned.
- The column titled "Gateway" is optional and nothing in that column will appear on the MVR-SC.
- Do not add text into any text boxes to the right of Column F and/or below row 114, or the MVR-SC will not be able to read the file.

4.3 Gateway IP Address

Each gateway in the system requires a unique IP address.

The MVR-SC connects to up to seven gateways, using the following default IP address scheme.

,

Order	IP for Gateway	MVR-300 device count
1	192.168.0.1	15
2	192.168.0.2	15
3	192.168.0.3	15
4	192.168.0.4	15
5	192.168.0.5	15
6	192.168.0.6	15
7	192.168.0.7	10

The IP address for each Gateway may need to be changed by the user, since they ship with default IP 192.168.0.1. This can be done using a windows PC and the free Moxa utility.

Steps to change Gateway IP addresses:

8. Connect the first Gateway to be changed to a PC using either Ethernet port. Power the gateway with 24VDC.

9. Download MGate Manager for windows from:

    a. https://moxa.com/en/products/industrial-edge-connectivity/protocol-gateways/modbus-tcp-gateways/mgate-mb3170-mb3270-series#resources

    b. Direct Zip download link

10. Open the MGate Manager Application. Press the “Search” Button to start looking for devices

11. Choose **Broadcast Search** to search on the entire connected

12. When discovered, the Gateway should show up in the table. Select its row and press **Configuration**.

    a. Note: if this step requires a password it is “moxa”

13. Navigate to the **Network** tab (the second tab).

Figure 15 - Network tab

14. In the Network tab you will be able to set the IP. Change the IP from “192.168.0.1” to the IP that corresponds with your Gateway index (1 – 7) from the chart above.

15. If this gateway is the first in the network, its IP address is already correct – 192.168.0.1. If it is the second, change the last digit to match – 192.168.0.2, etc.

16. Repeat this process for the remaining gateways in the system.

The gateways contain powerful built-in troubleshooting features. If system troubleshooting is required, please reach out to Bacharach Product Support for relevant documentation and support.

17. , of this manual.

18. Click **Network Config**, and then press **"Upload CSV"** to upload the floorplan spreadsheet **data.csv** from the root folder of the USB stick.

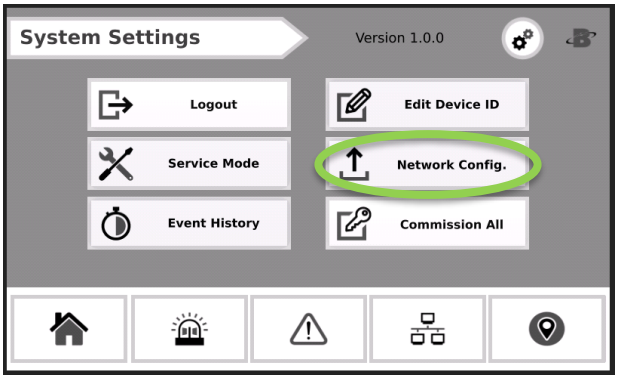


Figure 22 - System Setting screen

A success message will indicate that the upload is complete.

4.4 Commissioning

Each MVR-300 ships with default Modbus ID set to 1. These can be set in either of two methods:

1. **Modbus ID Auto-assign:**
   Automatically connect and set ID's using the integrated Magnetic Switch to pair each MVR-300 to its install location.

2. **Set Modbus ID Manually:**
   Use the RS485 port on the controller to manually set the Modbus IDs, and then install according to the floorplan, while keeping track of assigned Modbus IDs.

4.5 Method 1: Modbus ID Auto-assign

1. MVR-300 devices can be auto-assigned their Modbus ID using 2-person verification technique.
   This process gives that added advantage of physically verifying that each connected device is correctly installed in the assigned room location.

2. Enter settings to confirm passcode has been entered. (If the passcode has not been entered, the **Device Modbus Pairing** Screen will not be accessible).

3. On the MVR-SC touch screen, tap the pin icon in the bottom right of the screen to advance to the “Floors” screen and then tap the floor that is to be commissioned.

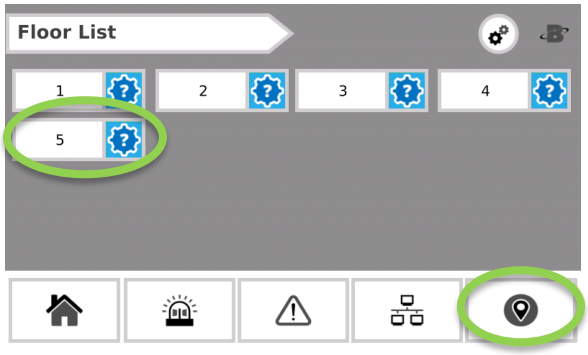


Figure 23 - Floor List screen

4. Tap the tile with the room that is being commissioned.

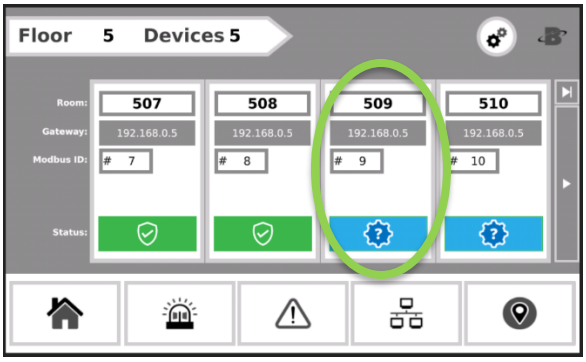


Figure 24 – Tap the tile of room to commission

This should open the **Device Modbus Pairing** Screen. At this screen, have a co-worker tap the top single dot (•) with the magnetic wand on the MVR-300 for less than a second. (Device should make an audible sound signaling that it is in "Commissioning Mode") Optionally, the MVR-300 may be taken out of this mode by briefly tapping Magnetic Switch B (••)

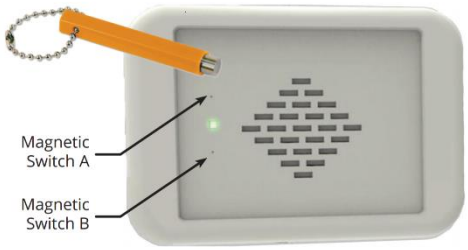


Figure 25 – The MVR-300

5. Once the device has been placed into the “Commissioning Mode”, tap **Commission Device**. If the device has successfully commissioned a “Success” message should appear. If the commission was unsuccessful, an “Unable to Contact Device” message should appear.

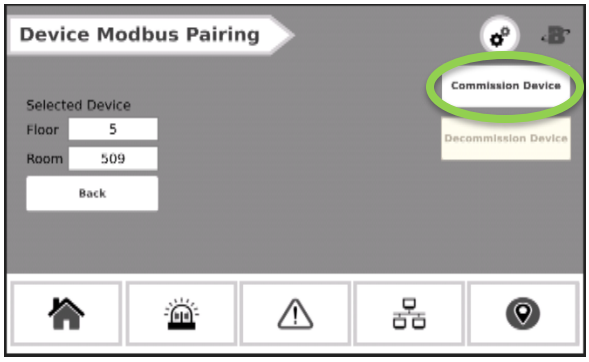


Figure 26 - Device Modbus Pairing

6. Once the commission is successful, tap the “Back” button to go back to the devices screen.

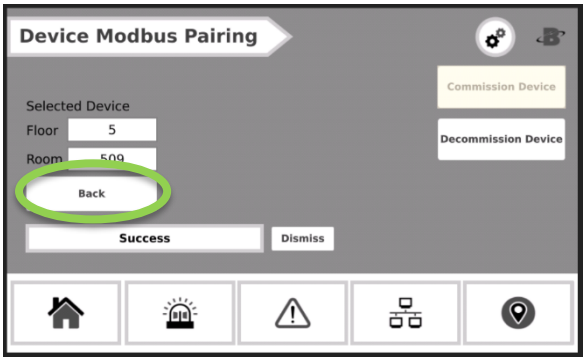


Figure 27 - Once commission is successful, tap Back

On the devices screen there should be a green checkmark on the device that was just commissioned signaling that the commission was successful.

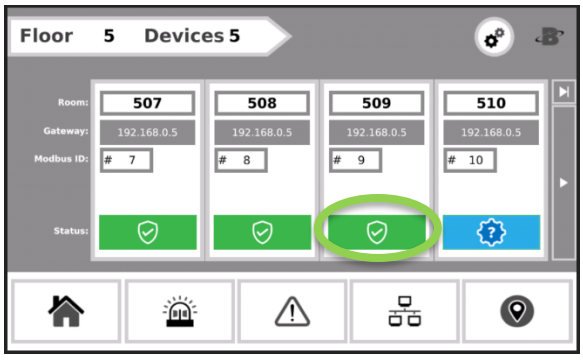


Figure 28 - Green checkmark appears

7. Repeat these steps for each room on a floor and each floor in the building until all MVR-300 devices have been commissioned. When all devices have been commissioned the green “System Normal” splash will display on the Home Screen.

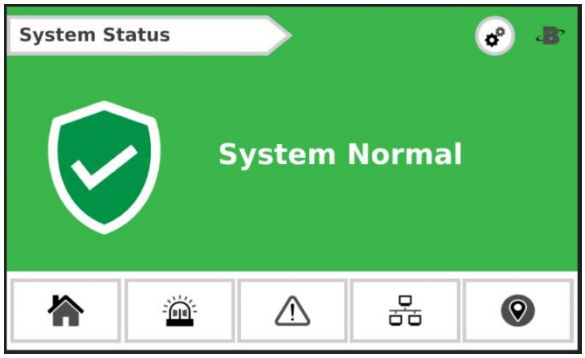


Figure 29 - System Normal screen

4.6 Method 2: Set Modbus ID Manually

An alternate approach is to manually assign IDs to the MVR-300 devices prior to wiring. There is a tool for this as well. Contact Bacharach for further information.

Wire a single MVR-300's Modbus port to the controller's Modbus terminal block. It is recommended to use the EZ-wire kit included with the MVR-SC controller for ease.

1. From **Settings**, open the **Set Modbus ID** screen to select and apply a specific Modbus ID.

2. Tap **Search** to connect to the device. If the unit does not have factory Modbus ID #1, this can be restored by doing a factory reset.

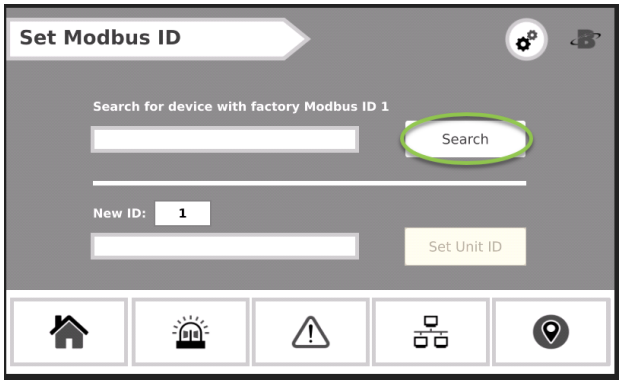


Figure 30 - Set Modus ID

In case the MVR-300 has had its Modbus ID changed by the user to some ID other than the default address 1, do the following to reset to factory settings:

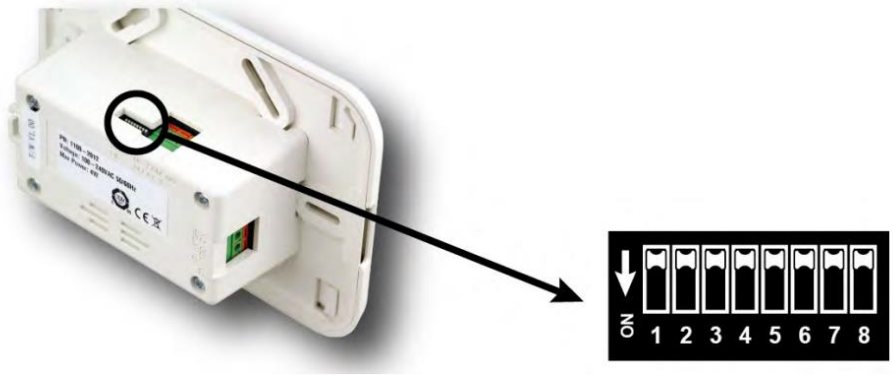
a. Power OFF the MVR-300. Set dipswitch-8 to the ON position.

b. Power ON the MVR-300 (buzzer should sound). Reset dipswitch-8 to the OFF position (buzzer should turn off).

c. Next, use the magnet wand held to the upper switch location (*) on the MVR-300 for 60 seconds. The device should beep once completed.

d. Remove the magnet wand and cycle power. The MVR-300 will have reverted to default settings and Modbus ID 1.

e. Specify a unique ID for the MVR-300 which can be numbers 2 through16.



f. Tap **Set Unit ID** to apply this ID.

Figure 31 - Set Unit ID

g. Repeat the above steps for each device. Keep track of the assigned IDs and install according to the floorplan spreadsheet.

5 Operation

5.1 Overview of Normal Operation

The MVR-SC provides centralized monitoring of all segments in the network with a 15-second scan rate.

5.2 Alarm Detection

The MVR-SC controller will provide instantaneous details for any MVR-300 in the network experiencing an alarm condition.

To respond to an alarm event:

1. Tap **Mute** to silence the alarm. This will mute the buzzer at the controller for 30-minutes.

2. Tap **Details** to open the **Devices in Alarm** screen to view the device(s) impacted.

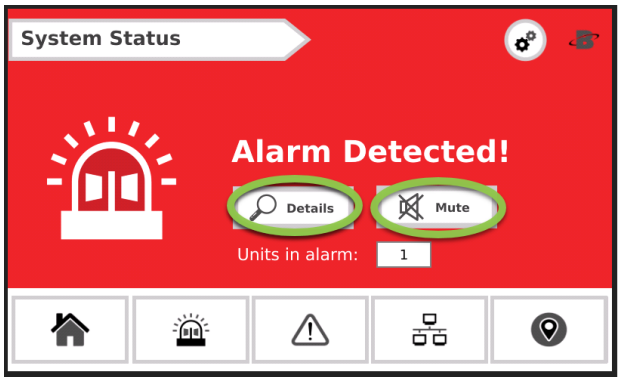


Figure 32 - Alarm Detected screen

The **Devices in Alarm** screen will list the Floor/Room location, designate the highest severity status from all devices on that floor, and network details for each affected MVR-300. Refer to Section 2.1.3, Status Icons.

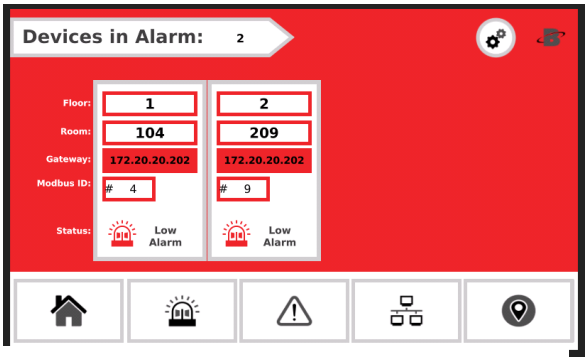


Figure 33 - Devices in Alarm screen

5.3 Fault Detection

The MVR-SC controller will provide instantaneous details for any MVR-300 in the network experiencing a hardware fault condition.

To respond to a Fault event:

1. Tap **Mute** to silence the alert. This will mute the buzzer at the controller for 30-minutes.

2. Tap **Details** to open the **Devices in Fault** screen to view the device(s) impacted.

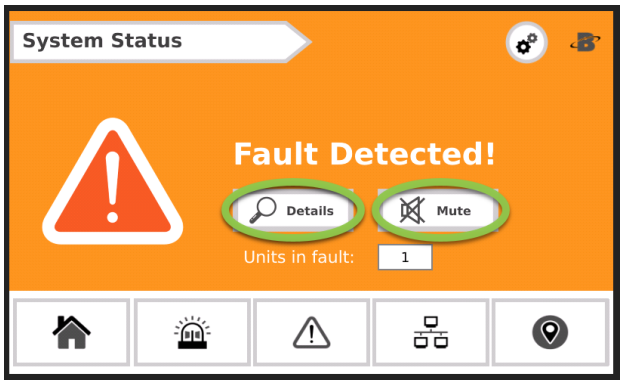


Figure 34 - Fault Detected screen

The **Devices in Fault** screen will list the Floor/Room location, status, and network details for each affected MVR-300.

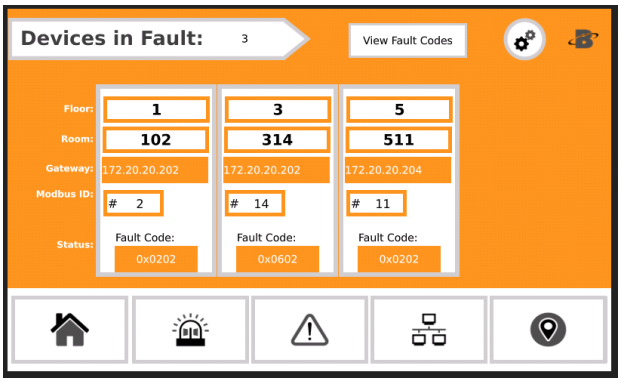


Figure 35 - Devices in Fault screen

5.4 Communication (Comm.) Error

If enough unsuccessful attempts occur to an MVR-300, this will be indicated with an alert.

To respond to a **Comm. Error** event:

1. Tap **Details** to open the **Comm. Error** screen to view the device(s) impacted.

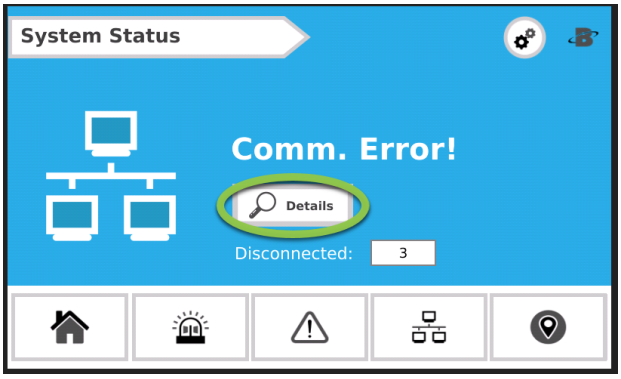


Figure 36 – System Status screen

The **Comm. Error** screen will list the Floor/Room location, status, and network details for each affected MVR-300.

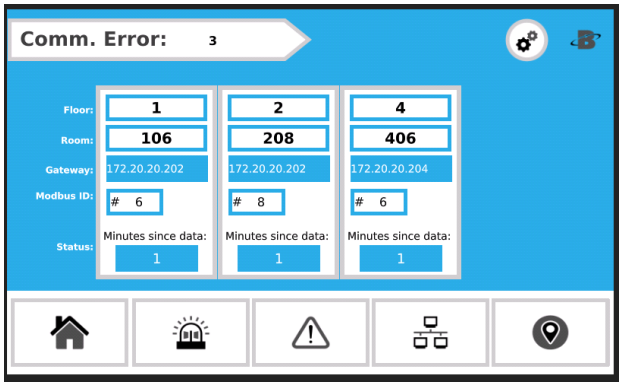


Figure 37 - Comm. Error screen

5.5 Event History

The MVR-SC will save new **Alarm** or **Fault** events to the **Event History**. This can be accessed from the **Setting** screen. The event history is a rolling list of 100 entries. In addition, entries tagged as neither alarm nor fault are created when a device status clears to normal.

Note: The Fault Code is stored as a decimal value and should be converted back to a hex or binary value for easier interpretation of the specific fault codes.

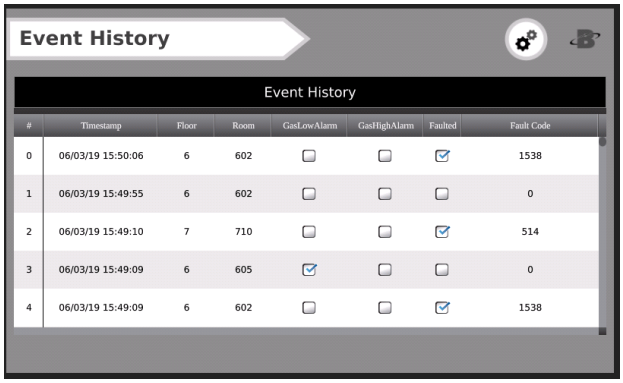


Figure 38 - Event History screen

The Time and Date can be set using the UniApps utility.

1. Press and hold the "**B**" icon in the upper right corner for 3 seconds.

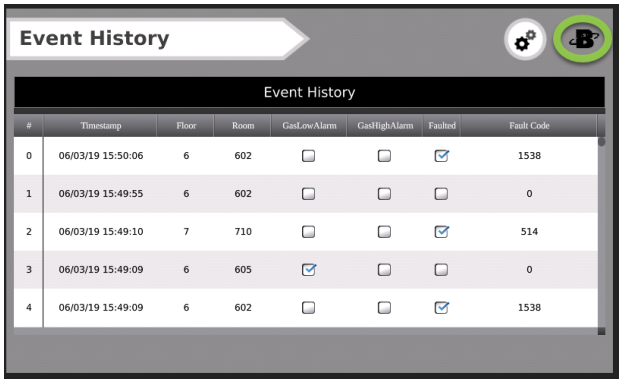


Figure 39 - Press and hold the "B" icon

2. Tap **UniApps** from the pop-up menu that appears.

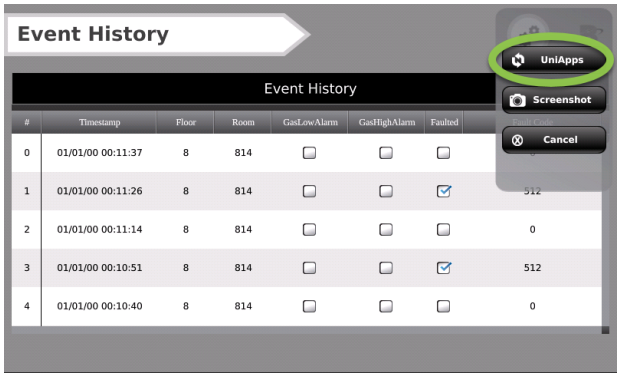


Figure 40 - Tap UniApps

3. Select the **System** tab, and then **Time & Date**. Choose the date from the calendar tool on the left side of the screen and the time from the right side of the screen.

Figure 41 - Choosing the time and date

4. To return to the home page, press and hold the upper right corner again for 3 seconds. From the dropdown menu, choose UserApp.

5.6 Service Mode Screen

Disables the audible buzzer and sets the relays to the default (normal) position for 30 minutes in order to facilitate maintenance on the network or MVR-300 devices. To access the Service Mode Screen:

1. Open the Settings screen (gear icon in upper right) and tap the **Service Mode** button.

2. Tap **Apply** to begin a 30-minute countdown. A timer appears once activated and tapping **Apply** again will restart the countdown.

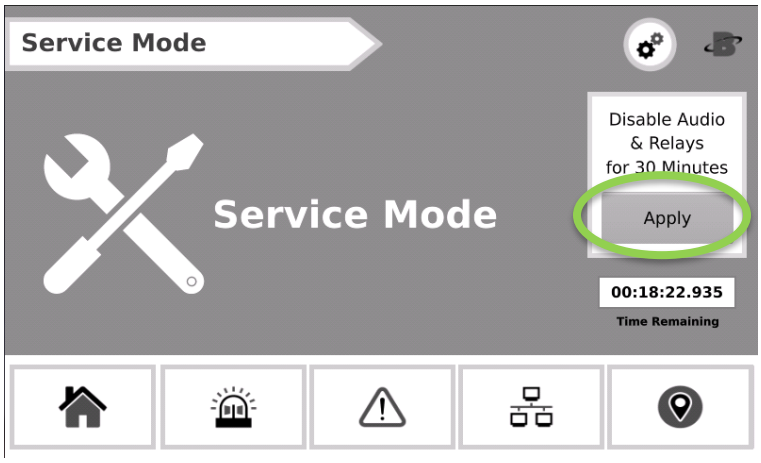


Figure 42 - Service Mode screen

6 Additional Information

6.1 Disposing of the Instrument

EU-wide regulations governing the disposal of electrical and electronic appliances which have been defined in the EU Directive 2012/19/EU and in national laws have been effective since August 2012 and apply to this device.

Common household appliances can be disposed of using special collecting and recycling facilities. However, this device has not been registered for household usage. Therefore, it must not be disposed of through these channels. The device can be returned to your national Bacharach Sales Organization for disposal. Please do not hesitate to contact Bacharach if you have any further questions on this issue.

6.2 Service Center Locations

Prior to shipping equipment to Bacharach, visit www.mybacharach.com for a Returned Merchandise Authorization Number (RMA #). All returned goods must be accompanied by an RMA #. Pack the equipment securely (in its original packing, if possible), as Bacharach cannot be held responsible for any damage incurred during shipping to our facility.

Location	Contact Information	Shipping Address
United States	Phone: +1 724 334 5000 Toll Free: +1 800 736 4666 Fax: +1 724 334 5001 Email: help@mybacharach.com	Bacharach, Inc. 621 Hunt Valley Circle New Kensington, PA 15068, USA ATTN: Service Department
Europe	Phone: +353 1 284 6388 Fax: +353 1 284 6389 Email: help@mybacharach.com	Bacharach, Inc. Unit D12 Santry Business Park Dun Swords Road Santry, Dublin, Ireland ATTN: Service Department
Canada	Phone: +1 905 882 8985 Fax: +1 905 882 8963 Email: support@bachcan.ca	Bacharach, Inc. 10 West Pearce Street, Unit 4 Richmond Hill, Ontario L4B 1B6, Canada ATTN: Service Department