AMC-1DCx-L

Digital Gas Monitor

USER MANUAL

3550434C

The Armstrong Monitoring Corporation
215 Colonnade Road South, Ottawa, Ontario, Canada K2E 7K3
Tel: (613) 225-9531 ▪ Fax (613) 225-6965 ▪ Canada & U.S. Toll Free: 1-800-465-5777
Email: support@armstrongmonitoring.com ▪ Website: www.armstrongmonitoring.com

Contents

List of Figures

List of Tables

1. Safety Symbols

1.1 Safety Symbols Table

	CAUTION, POTENTIAL HAZARDS. REFER TO INSTRUCTION MANUAL BEFORE OPERATING.
	Signifies the system's Ground Terminal
	**Shock Hazard** - Disconnect or turn off power before servicing this instrument
	**Hot Surfaces** – Exercise caution when servicing this instrument; some surfaces may exceed 60°C
	**WARNING** – UNAUTHORIZED SUBSTITUTION OF COMPONENTS MAY IMPAIR CERTIFICATIONS AND EQUIPMENT RATINGS
	**WARNING** – USE OF THIS EQUIPMENT IN ANY MANNER OTHER THAN SPECIFIED BY MANUFACTURER MAY IMPAIR OVERALL SAFETY.

2. General Information

2.1 Warranty

This product is warranted against defects in material and workmanship for a period of two years from date of delivery. Maintenance items are not warranted. During the warranty period, *The Armstrong Monitoring Corporation* will repair or replace components that prove to be defective in the opinion of AMC. Any equipment deemed to be defective by the user should be returned to *The Armstrong Monitoring Corporation* for evaluation (see product return below). Site visits by Armstrong personnel, to evaluate/repair equipment, are not covered by this warranty unless covered under the site contract. AMC is not liable for auxiliary interfaced equipment, nor for consequential damage. This warranty shall not apply to any product which has been modified in any way, which has been repaired by any other party other than a qualified technician or authorized AMC representative, or when failure is due to misuse or conditions of use.

NOTE: Extended warranty and mail in calibration programs are available (please call 1-800-465-5777) or see our contacts page at www.armstrongmonitoring.com

2.2 Liability

All AMC products must be installed and maintained according to instructions. Only qualified personnel should install and maintain the equipment. The AMC-1DCX-L Gas Monitor must not be placed in areas with combustible gases reaching 100% LEL (environments prone to explosions).

AMC shall have no liability arising from auxiliary interfaced equipment, for consequential damage, or the installation and operation of this equipment. AMC shall have no liability for labor or freight costs, or any other costs or charges in excess of the amount of the invoice for the products.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE THEREOF.

2.3 Product Return

All products returned for warranty or service should be shipped by prepaid freight and will be accepted only with RMA or repair number issued by AMC.

2.4 Contact Information

For information, please call 1-800-465-5777, visit www.armstrongmonitoring.com or email directly support@armstrongmonitoring.com.

2.5 Modifications and Substitutions

Due to an ongoing development program, AMC reserves the right to substitute components and change specifications at any time without incurring any obligations.

2.6 Glossary

Act Delay	The delay in seconds between the gas concentration reaching an alarm setpoint, and the corresponding alarm level activating.
Alarm	Alarm is an audible, visual, or physical presentation designed to warn the instrument user that a specific level of a dangerous gas/vapor concentration has been reached or exceeded.
BAC	Building Automation and Control
BACnet	BACnet is a communication protocol specifically designed for building automation and control (BAC) systems.
BAS	Building Automation System
BMS	Building Management System
Calibration	Calibration is the procedure used to adjust the instrument for proper response.
Calibration Gas	Calibration Gas is a gas of known concentration used in adjusting and testing gas detection equipment to ensure proper function and accurate readings.
CIDR	Classless Inter-Domain Routing
DNS	Domain Name System
DHCP	Dynamic Host Configuration Protocol
Gas Concentration	Gas Concentration can be measured in: • ppm • ppb • %LFL • %LEL • % Volume
Hysteresis	A user-set difference from an alarm's setpoint prevents frequent alarm activation. Hysteresis solely impacts alarm deactivation, not its activation tied to the setpoint.

LEL	Lower explosive limit is the lowest concentration (percentage) of a gas or a vapor in air capable of combusting in the presence of an ignition source (arc, flame, heat).
LFL	Lower Flammable Limit.
LPS	Limited Power Source. LPS or Class 2 power supplies are inherently limited power supply units and is an isolated circuit which cannot provide more than 100VA of continuous apparent power under any loading condition.
Min Run	The minimum time in seconds that an alarm state will remain active, even if the gas concentration has returned above/below the setpoint +/– hysteresis (based on a decreasing or increasing alarm type).
ppb	Parts Per Billion (1% volume = 10,000,000ppb)
ppm	Parts Per Million (1% volume = 10,000ppm)
Percent by volume	Concentration of gas in a mixture expressed as a percentage of total volume.
PLC	Programmable Logic Controllers
Pollution Degree	Pollution Degrees per EC 60947-1 quantifies the amount of dry pollution and condensation present in an environment Degree 1: No pollution or only dry, non-conductive pollution. The pollution has no effect on the insulation. Degree 2: Normally, only non-conductive pollution occurs, but occasional temporary conductivity due to condensation may be expected. Degree 3: Conductive pollution occurs, or dry, non-conductive pollution that becomes conductive due to condensation. Degree 4: Persistent conductivity is generated by conductive dust, rain, or snow.
Span	The difference between the highest concentration and lowest concentration.
T90	Response Time in seconds to achieve 90% gas concentration reading.
T99	Response Time in seconds to achieve 99% gas concentration reading.
TTL	Time To Live
VFD	Variable Frequency Drive
Zero Buffering	Zero buffering is a function of the monitor which forces the gas concentration reading to zero when sensor is exposed to low concentration of a gas. The zero buffer is indicated in the sensor specification.
Zero Gas	Zero gas is gas in which the target gas is not present. The presence of oxygen is required. Clean air is an excellent source for zero calibration. A known gas concentration can be entered during zero calibration.

3. Product Information

3.1 Product Description

The AMC-1DCx-L Digital Gas Monitor provides a highly configurable monitoring package for a multitude of applications. Incorporating Computer-on-Module based design, it provides accuracy, durability, and ease of use within a compact package. The Monitor will work with the full range of AMC Transmitters.

3.2 Product Specifications

The monitor must be installed where it is not exposed to rain or water spray, and the environmental conditions are within the noted specifications. Specifications for the range of environmental conditions for which the equipment is designed including the following:

- Pollution degree 2(macro), Pollution degree 2(micro); Indoor use
- Overvoltage category II.
- Mode of operation: continuous.
- Altitude 2000m.

System	
System Warranty Period	2 Years
Power Supply	120 VAC +/- 10%, 60 Hz, 75 VA or 24 VDC, 3A
Relays	4x DPDT, 250 VAC, 6 A
Operating Temperature	-4° to 104°F (-20° to 40° C)
Operating Pressure	13.2 – 16.2 PSI (91.2 – 111.5 kPa)
Humidity Range	15 to 90% RH, non-condensing
Enclosure Rating	IPx5
Analog Out	
Topology	Sourcing
Voltage Range	0-10 VDC
Current Range	0-20mA
Corner Frequency	300 kHz
Analog In	
Voltage Range	0-30 VDC
Current Range	0-20 mA
Corner Frequency	250 kHz
Real Time Clock (RTC)	
Battery Size	CR1025, Field Replaceable. 3V Lithium; 30mAh
Expected Battery Life	> 8 Years

NOTE: For DC (24V) inputs the Monitor may only be powered by a power supply unit with a limited energy electric circuit in accordance with CAN/CSA C22.2 No. 61010-1-12 and ANSI/UL 61010-1, or Class 2 as defined in the Canadian Electrical Code C22.1, Section 16-200 and/or National Electrical Code (NFPA 70), article 725.121

3.3 External View

Figure 3-1: External View

1	Enclosure	Enclosure and Lid Assembly, UV Stabilized Polycarbonate, 11.750” L x 9.980” W x 5.460” (300mm x 250mm x 140mm)
2	Touchscreen Display	The LCD HDMI Touchscreen Display provides interface for monitor status and configuration menus.
3	Product Nameplate	Product label lists all product certifications and rating information.

3.4 Internal View

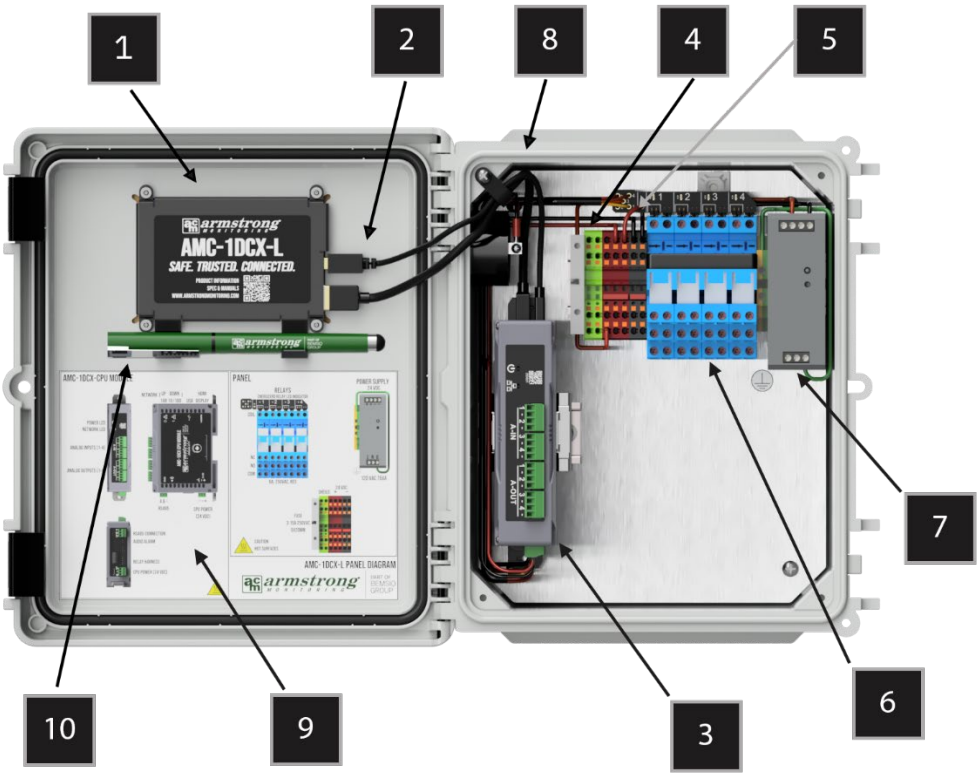


Figure 3-2: Monitor Internal View

1	HDMI Display	HDMI Display and Protective Cover **Note**: The Cover Incorporates Location for Storing Stylus.
2	Display Cables	HDMI and USB Cables Connecting Display to CPU Module
3	CPU Module	CPU Module
4	Fuse and Fuse Holder	Fuse Holder with 3.15 A Fuse and Spare Fuse
5	Power and Shield Terminal	Terminal Blocks for DC Power and Cable Shield Terminations
6	Relays	DPDT 6A 250VAC Relays
7	Power Supply	AC/DC Power Supply, 24 VDC, 3A Output
8	Buzzer	Provides Audible Indication Upon Alarm State
9	Product Label	Product Information Label
10	Stylus/Pen	A stylus/pen for the touchscreen display

3.5 CPU Module

The computing platform circuit boards are located within the DIN rail mount CPU Module (Item 3 in Figure 2-2). Refer to Section 3 for details of the field connection interfaces.

Figure 3-3: CPU Module

3.6 Accessories

The following accessories are available for use with the AMC-1DCX-L Gas Monitor. See section 4.3.8 for RAM-3 details. For details about the 1DMB products, please see https://armstrongmonitoring.com/product/AMC-1DMBx-series-manual

Accessory Description	Order Code
Analog In, 8ch, 0-20mA, 24VDC, RS-485 (also referred to as BC8AII)	AMC-1DMB-AI
Analog Out, 8ch, 0-20mA, 24VDC, RS-485 (also referred to as BC8AOI)	AMC-1DMB-AO
Power supply, 24VDC, 7A output, 4 port isolated repeater, RS-485	AMC-1DMB-PS-R
Relay module, 8ch, DPDT, 24VDC, RS-485 (also referred to as ERE)	AMC-1DMB-RL
8 relays, w analog out, 8ch, 0-20mA, 24VDC, RS-485	AMC-1DMB-RL-AO
External Power Supply with 24V 7A Output	AMC-1DPS-7A
RAM-3 Remote Audio/Visual Alarm	AMC-RAM-3

4. Installation

4.1 Introduction

The installation of the AMC-1DCX-L Series Gas Monitor is very important as the operational quality is a direct result of the quality of the installation. The following sections provide guidelines for installation, location and mounting, wiring, and cable selection.

The final installation shall comply to CEC/NEC code requirements for proper grounding of the equipment.

NOTE: The safety of any system that incorporates the 1DCX-L Monitor is the responsibility of the assembler.

NOTE: The Monitor weight is 8 lbs, (3.6 kg) and there is no special lifting or carrying requirements.

4.2 Monitor Mounting

Care should be taken to securely fasten the monitor unit on a solid, non-vibrating surface or structure so that the Monitor is located at approximately 4ft to 6 ft (1.2m to 1.8m) above floor level or per local regulations. Mount the monitor where the unit can be seen and heard periodically. See Figure 4-1 For mounting hole locations.

CAUTION: All cable entry MUST BE through the BOTTOM of the monitor enclosure only. Other entry locations will allow foreign materials to enter the enclosure, causing possible damage to the internal components.

WARNING:

Conduit entry from the top or back of the housing is NOT RECOMMENDED. Any water damage related to conduit entry from the top or back will not be covered under warranty.

Qualified personnel should perform the installation according to applicable electrical codes, regulations, and safety standards. Ensure correct cabling practices are implemented.

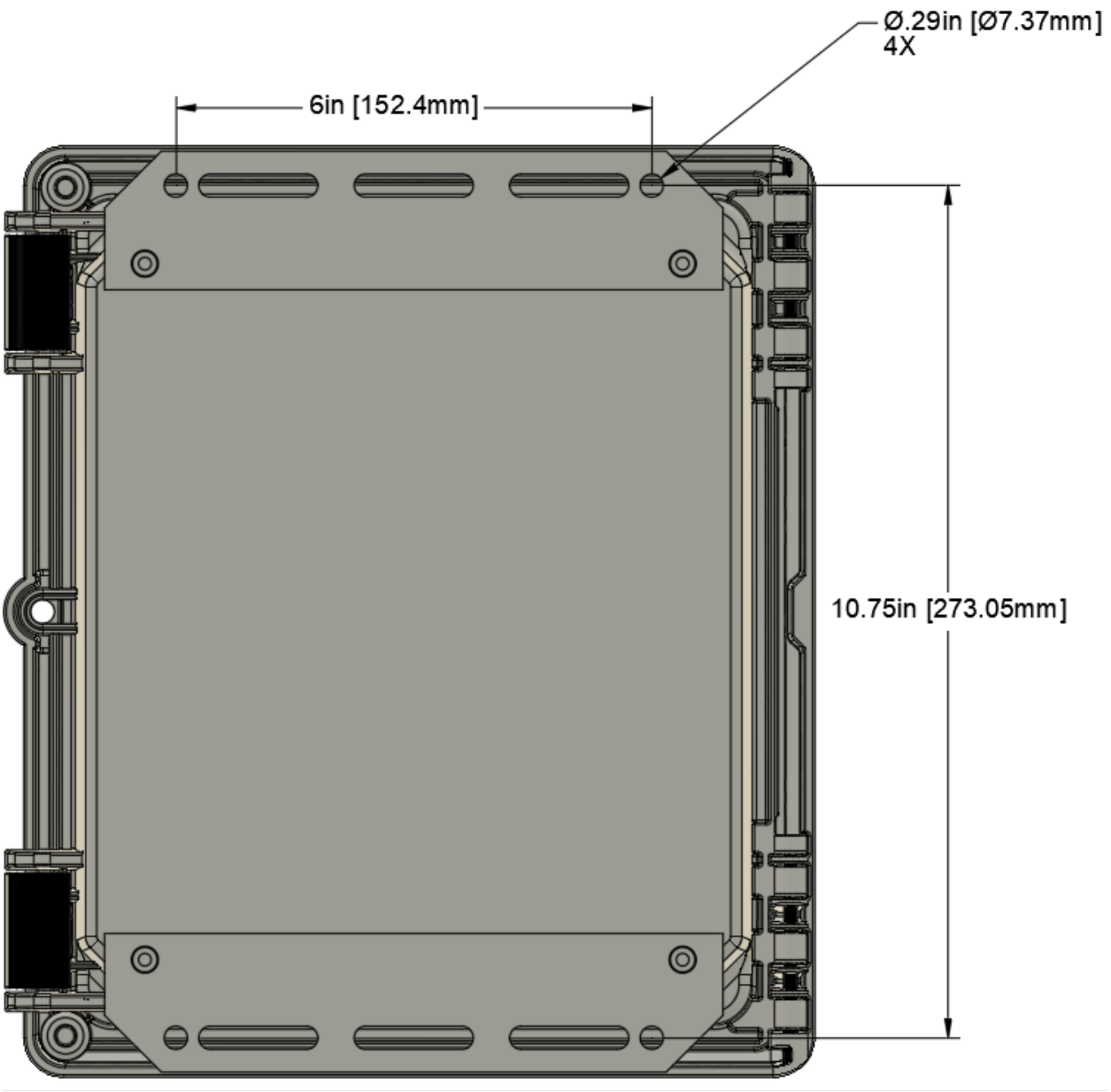


Figure 4-1: Enclosure Mounting

4.3 Wiring

4.3.1 Wire Size and Torque Requirements

Table 4-1: Wire Size and Torque Requirements

Interface	Connector Type	Wire Range (AWG)	Wire Strip Length	Torque (inch-lbs.)
Power Input, AC	Screw terminals on PSU	20 – 14	0.5” (6.5mm)	5.0 – 7.0
Power Input, DC	DIN Rail Terminal Block, screw terminals	22 – 12	0.3” (8 mm)	7.0
Cable Shield	DIN Rail Terminal Blocks	26 – 12	0.3-0.4” (8-10 mm)	Push-In Contacts
Chassis Ground / Protective Earth	DIN Rail Terminal Block, screw terminals	22 – 10	0.3“ (8 mm)	7.0
Relay Contacts	Screw terminals	10 max (Solid) or 12 max (Stranded)	0.3” (8 mm)	4.4
CPU Module - Analog Input	Removable terminal blocks with screw terminals	26 – 16	0.23-0.27” (6-7 mm)	3.0
CPU Module - Analog Output	Removable terminal blocks with screw terminals	26 – 16	0.23-0.27” (6-7 mm)	3.0
CPU Module - RS-485 Modbus Input	Removable terminal block with screw terminals	26 – 16	0.23-0.27” (6-7 mm)	3.0

4.3.2 Power and Grounding

The monitor operates on 120 VAC, 60 Hz or 24 VDC, 3A.

AC input connections are made at the power supply input terminals. For DC input units the power supply connections are made at the power terminal blocks located inside the monitor. DC powered units must be powered from a certified Class 2 LPS power supply.

All power and grounding connections to equipment must be made in accordance with applicable electrical and building codes.

For AC powered monitors, a separate, dedicated, noise free, 15 Amp power circuit, with an appropriately labeled circuit breaker is required. It is recommended that the circuit breaker be located near the equipment.

4.3.3 Relays

The Monitor houses 4 relays. The relay contacts are rated for 6 Amps @ 28VDC/250VAC resistive. For relay contact arrangements, see below. Note that the default configuration is for the relays to be energized.

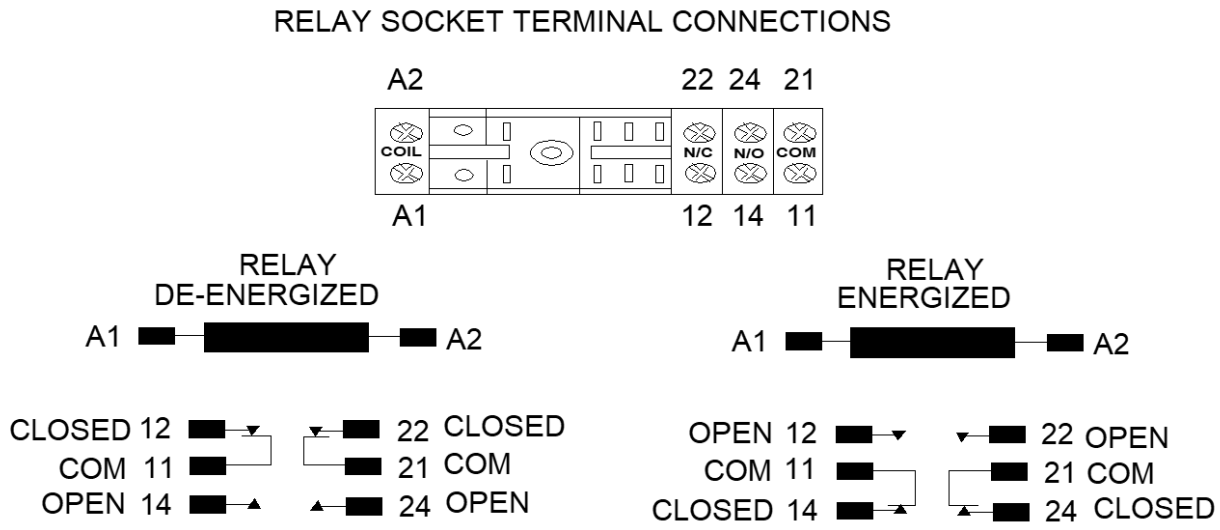


Figure 4-2: Relay Connections

4.3.4 Ethernet

The 1DCX-L Monitor supports industrial Ethernet connectivity, where Ethernet traffic is allowed to pass through the monitor even when it is powered off. Industrial Ethernet allows Downstream devices to be wired in series and maintain 10/100 speed during a power outage.

NOTE: This is an optional extra and not supported by default. Please contact us if Industrial Ethernet is required.

For a single ethernet connection to the Monitor use the GbE port. It is recommended that shielded CAT6 cabling be used for the ethernet connection.

NOTE: This connector panel also has the USB and HDMI ports that are factory connected to the Display.

Figure 4-3: CPU Module Ethernet Ports

4.3.5 RS-485

The 1DCx-L supports one lane of Modbus RTU with the following settings.

NOTE: With exception to Modbus ID, all devices on the lane must have the same RS485 settings.

Table 4-2: Supported Modbus Settings

Setting	Supported Value
BAUD Rate	9600, 19200, 38400
Parity	Even, Odd, or None
Stop Bits	1 or 2
Defaults (BAUD Rate, Parity and Stop Bits)	9600, Even, 1

Note: The default AMC-1DCx-L configuration uses:

- BAUD Rate: **9600**,
- Parity: **Even**
- Stop Bits: **1**

Not all support devices can be configured to use other Modbus settings.

Figure 4-4: CPU Module RS-485 Port

4.3.6 Analog In

Figure 4-5: CPU Module Analog Input and Output Connections

The analog input terminal blocks are used to connect sensor modules in voltage/current mode. The wiring for each channel is conveyed in Table 4-3:

Table 4-3: Analog IN

Gas Monitor	Sensor Module, 3 Wire	Sensor Module 4-20mA 2 Wire
Cable Shield Terminal Block	Connect to the cable shield	Connect to the cable shield
Negative -	Negative -	Not connected
Signal S (Port Number)	Signal S	Signal S (Negative -)
24VDC Terminal Block	Positive +	Positive +

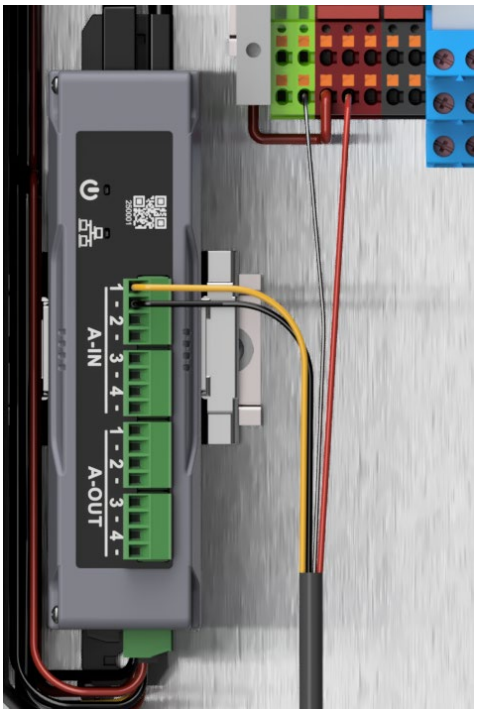


Figure 4-6: 3 Wire Sensor Connection

The analog input terminal blocks can also be used for connecting 122X Sensor Modules in Voltage Mode. The wiring for this configuration is conveyed in the following table:

Gas Monitor	**122x Sensor Module**
Cable Shield Terminal Block	Connect to the cable shield
Negative -	Negative -
Signal S (Port Number)	Signal S
24VDC Terminal Block	Positive +

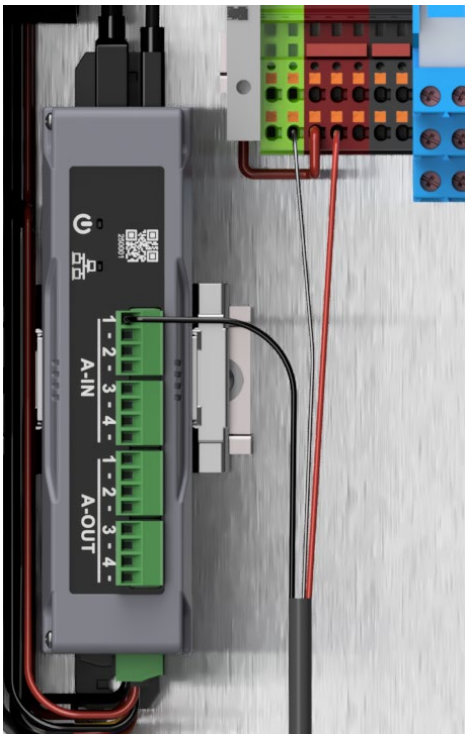


Figure 4-7: 2 Wire Sensor Connection

NOTE: For products that are 2-wire loop powered labeled positive (+) and negative (-), connect positive (+) to positive (+), and negative (-) to signal (s).

4.3.7 Analog Out

Typically, analog output is used to communicate with a Building Automation System or control a Variable Frequency Drive within a ventilation system.

The analog output supports both current mode (0-20 mA, 4-20mA, multidrop current) or voltage (0-10V, 2-10V, multidrop voltage) outputs.

4.3.8 RAM-3

The AMC-RAM-3 provides a remote alarm indication when employed with monitors such as the AMC-1DCX-L. Each RAM-3 has a red strobe light to provide a visual indicator of an alarm condition and remains active until the alarm is cleared. The Audio alert is provided by a buzzer which emits a 2900hz tone at more than 90 dB(A) at 24 inches. The audio alert is activated upon entry into an alarm condition and is silenced by either pushing the Acknowledge Switch or clearing the alarm.

Figure 4-8: RAM-3 Module

The AMC-RAM-3 is an optional Remote Alarm Module for use with the Monitor. Refer to the RAM-3 User Manual available on the AMC Website for additional information.

Alternatively, the RAM-3 Modules can be wired directly to the 24V terminal blocks and to the Alarm Relay within the 1DCx-L Monitor.

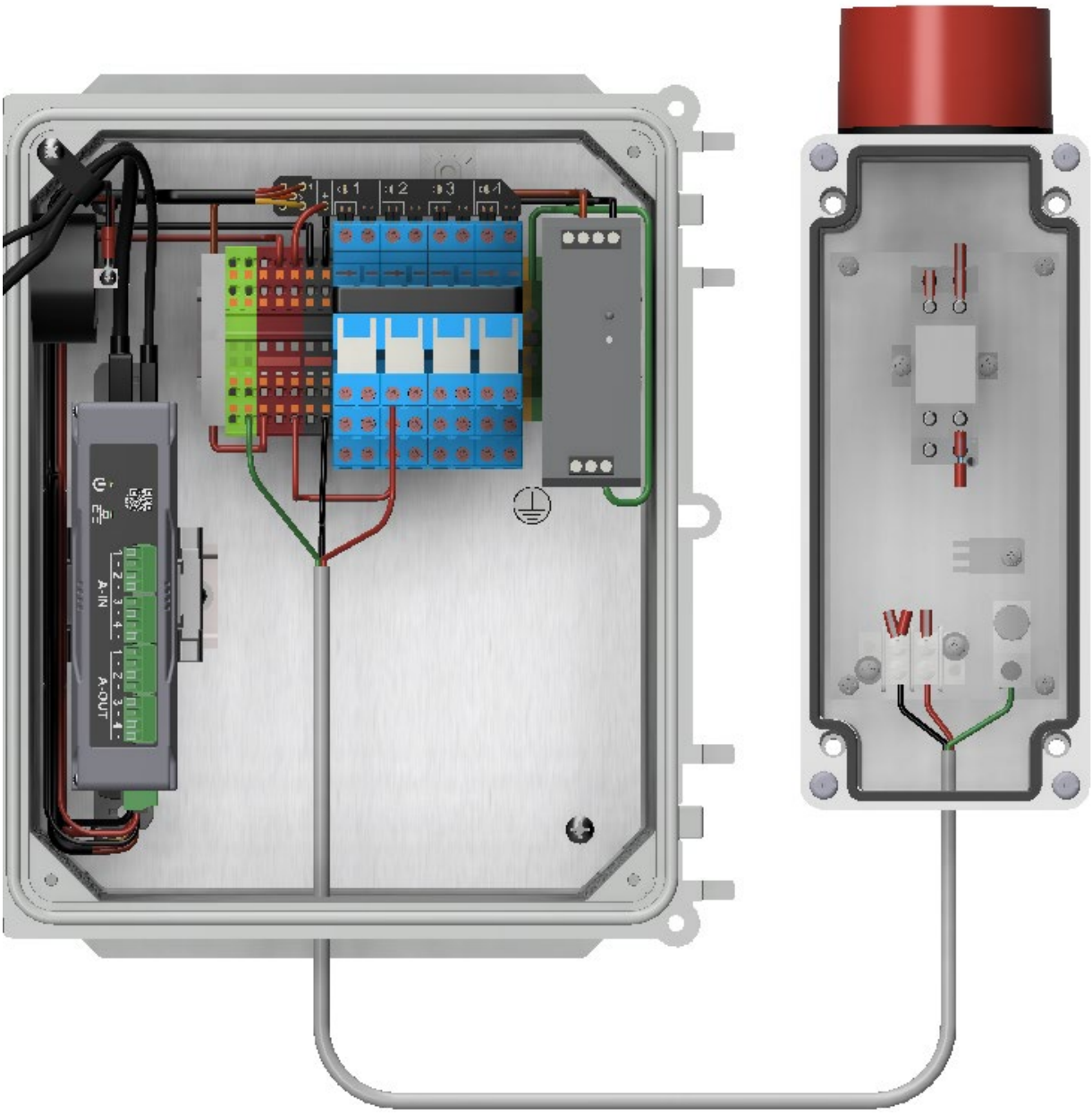


Figure 4-9: RAM-3 Wiring Example

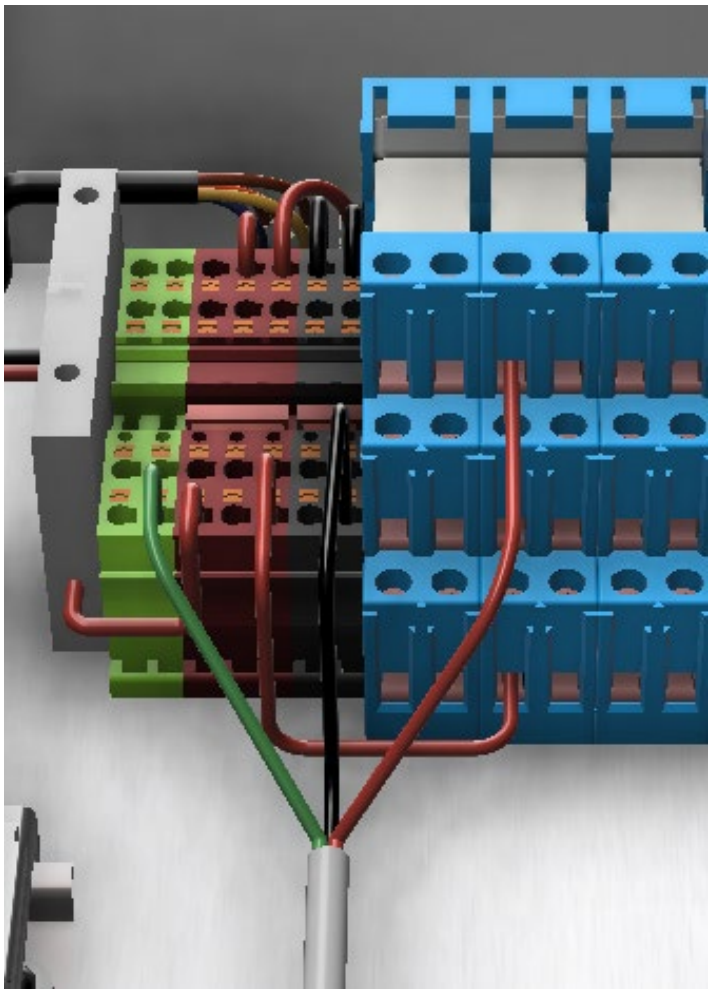


Figure 4-10: RAM-3 Wiring Close-up Example

Table 4: RAM-3 Wiring

Gas Monitor	**RAM-3 Wiring**
Cable Shield Terminal Block	Connect to the cable shield
24VDC - Terminal Block (Black)	Negative -
Open Terminal on Desired Relay (Terminal Normally Not Powered)	Positive +
24VDC + Terminal Block (Red)	Add a wire that connects to the Common Terminal on the Desired Relay

5. Operation

5.1 Introduction

The AMC-1DCx-L gas monitor is equipped with a touch screen interface. The user can optionally choose to use the stylus included with the monitor.

This section provides details about how to operate the device with the user interface, including how to access different screens, interpret on-screen indicators, and interact with system controls.

WARNING:

Before modification of any parameters in the user menu (for example alarm set points) verify that the planned new values meet local or national building code and/or regulatory requirements.

5.2 System Initialization Sequence

When the AMC-1DCx-L monitor is powered on, it goes through a brief boot-up sequence before reaching the main dashboard. This section describes the screens displayed during that process.

5.2.1 Splash Screen

The first screen displayed is the Splash Screen, which confirms that the monitor is starting up correctly. This screen is displayed briefly before transitioning to the software version screen.

Figure 5-1: Splash Screen

5.2.2 Software Version Screen

After the splash screen, the monitor displays the Software Version Screen, which provides important information about the system software.

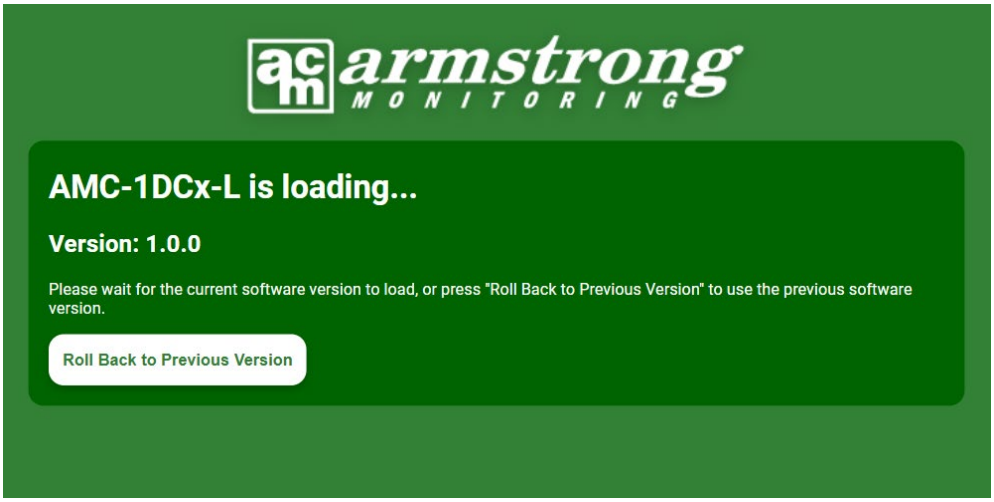


Figure 5-2: Version Information

This screen remains visible until the system completes loading and transitions to the main dashboard.

Optional Action:

A button labeled "Roll Back to Previous Version" is available. Pressing this button will revert the system to the previously installed software version, which can be useful in case of compatibility issues or unexpected behavior with the current version.

NOTE: Rolling back to a previous software version will not affect the monitor's current configuration.

Figure 5-3: Rollback Screen

NOTE: When a rollback is performed, the system reverts to the earlier version. If another rollback is performed afterward, the system reverts back to the newer version that was active before the first rollback. In this way, the rollback function alternates between the two most recent software versions.

If the device is a fresh installation with no software upgrades applied, the rollback feature will have no effect, as there is no prior version to revert to.

5.2.3 Warm-Up Mode

When the AMC-1DCx-L is powered on or restarted, it enters a configurable **warm-up period**. During this time, the system behaves in the following way:

- Delays alarm and fault evaluations to allow connected MODBUS slave devices, such as sensors, relays, and analog outputs, to initialize and stabilize.
- No alarms or faults are triggered or reported during this period.

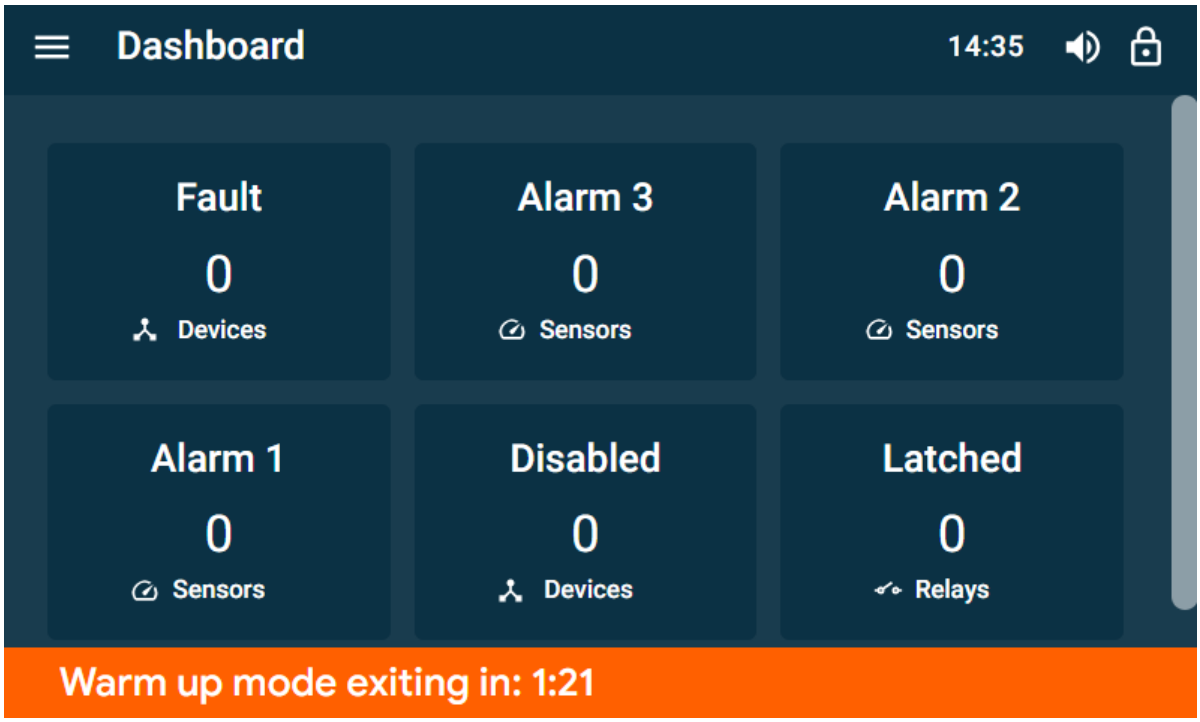


Figure 5-4: Warm Up Mode

NOTE: The warm up period is user configurable in the system settings, and can be set to either 2 minutes or 5 minutes.

5.3 Dashboard

The Dashboard is the central interface of the AMC-1DCx-L monitor, providing a real-time overview of system status and device activity. It is the first screen displayed after the boot-up sequence is complete.

5.3.1 Dashboard Overview

The dashboard is divided into six status tiles that summarize the current state of the system:

- Fault: Number of devices (sensors, relays, analog outputs, etc.) currently reporting a fault.
- Alarm 1 / Alarm 2 / Alarm 3: Number of sensors currently in each alarm level, typically indicating increasing severity.
- Disabled: Number of devices that have been manually disabled or are inactive.
- Latched: Number of relays that are latched due to triggered alarm conditions.

Each tile is interactive and provides quick access to related system views:

- Pressing the **Fault** or **Disabled** tile redirects to the **Communications** screen.
- Pressing any of the **Alarm** tiles redirects to the **Sensors** screen.
- Pressing the **Latched** tile redirects to the **Relays** screen.

Tile Visibility Logic:

- Alarm tiles (Alarm 1, Alarm 2, Alarm 3) will only appear if there is at least one sensor configured with the corresponding number of alarm levels. For example, the **Alarm 3** tile will only be shown if at least one sensor is configured with three alarm thresholds.
- The **Latched** tile will only appear if there are one or more relays configured with the **Latching** relay type. If no latching relays are present in the system, this tile will not be displayed.

Visual Indicators for Active Conditions

Each tile uses visual cues to indicate its current state:

- **Normal State:** Tiles appear uncoloured when there are no active conditions.
- **Red Highlight:** Indicates an active or critical condition, such as:
  - A sensor in Alarm 2
  - A device reporting a Fault
- **Orange Highlight:** Used specifically for the Latched tile when one or more latching relays are active.

These visual cues help users quickly identify and prioritize issues that require attention.

Unconfigured Monitor: Only Fault and Disabled tiles are shown, both displaying “0 Devices.”

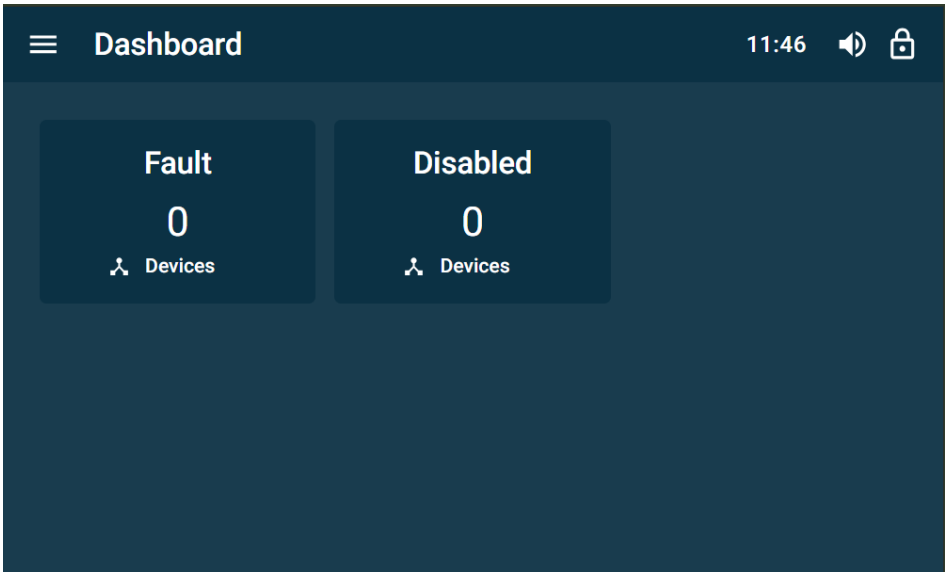


Figure 5-5 Dashboard of Unconfigured Monitor

Configured Monitor: Tiles for Fault, Alarm 1–3, Disabled, and Latched (if applicable) are visible, even if their counts are zero.

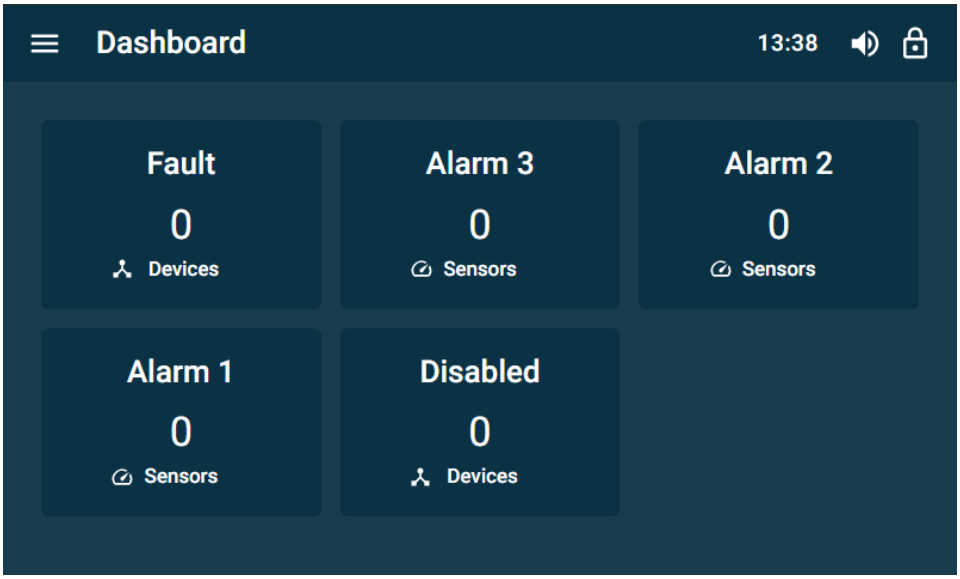


Figure 5-6: Dashboard of Configured Monitor

Active Conditions: For example, Fault: 1 Device, Alarm 2: 2 Sensors, Disabled: 1 Device—with the corresponding tiles highlighted in red.

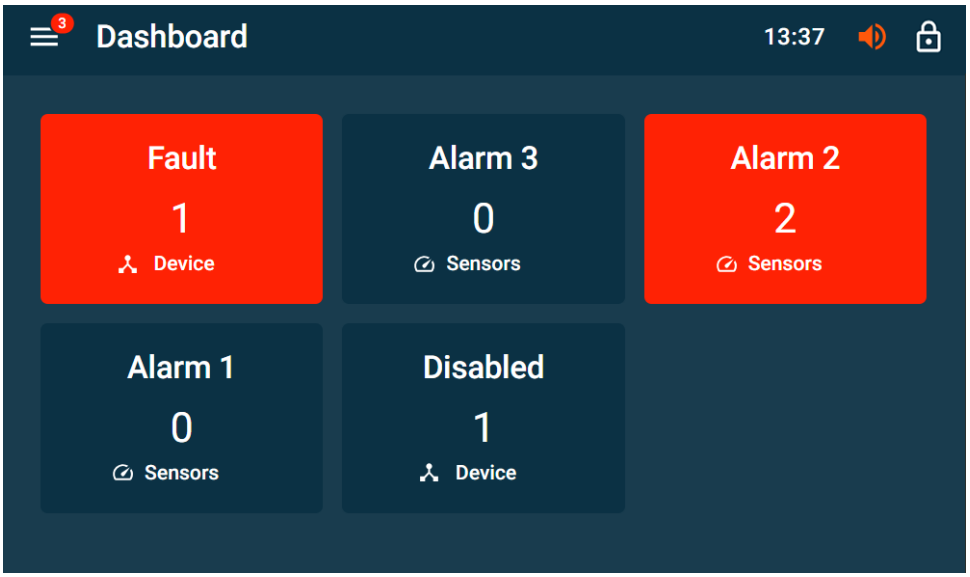


Figure 5-7: Dashboard Displaying Faults and Alarm

These tiles update in real time, allowing users to quickly assess the system's operational status.

Latching Relays Present: When one or more relays are "latching" relays, the sixth tile labeled **Latched** appears. This tile displays the number of latched relays and is highlighted in orange when active.

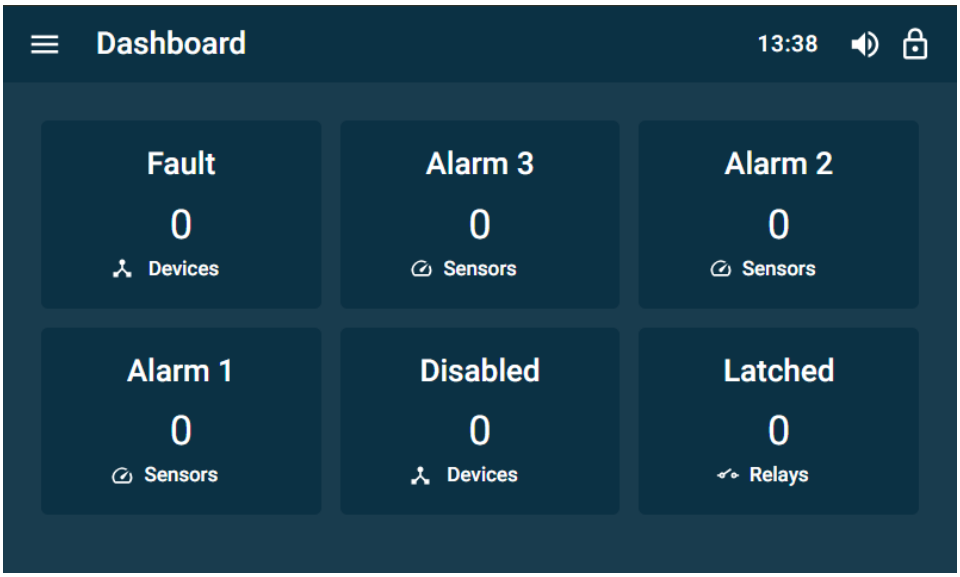


Figure 5-8: Dashboard with Latching Relays Configured

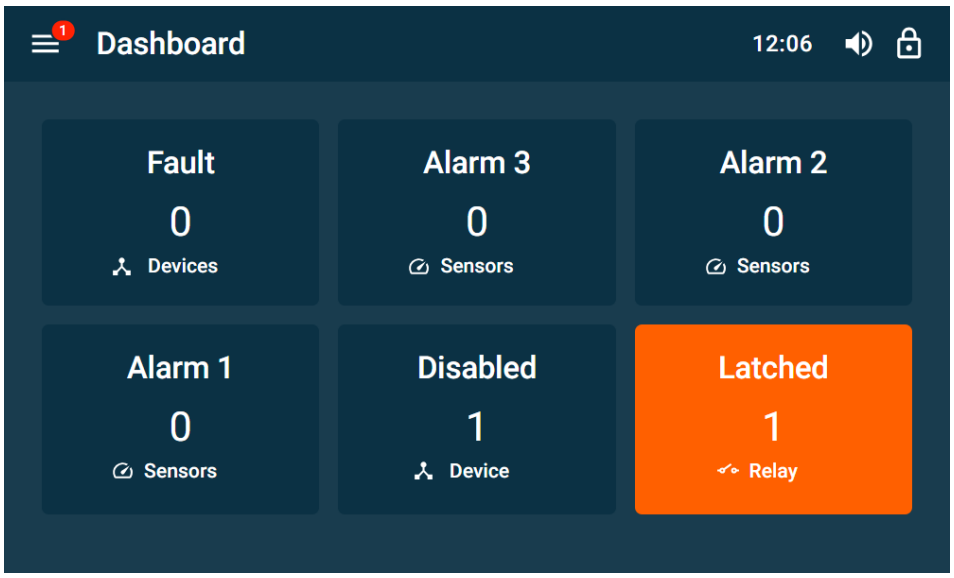


Figure 5-9: Dashboard Displaying Count of Latched Relays

When the monitor is unlocked, a button appears within the Latched tile that allows the user to unlatch the relays.

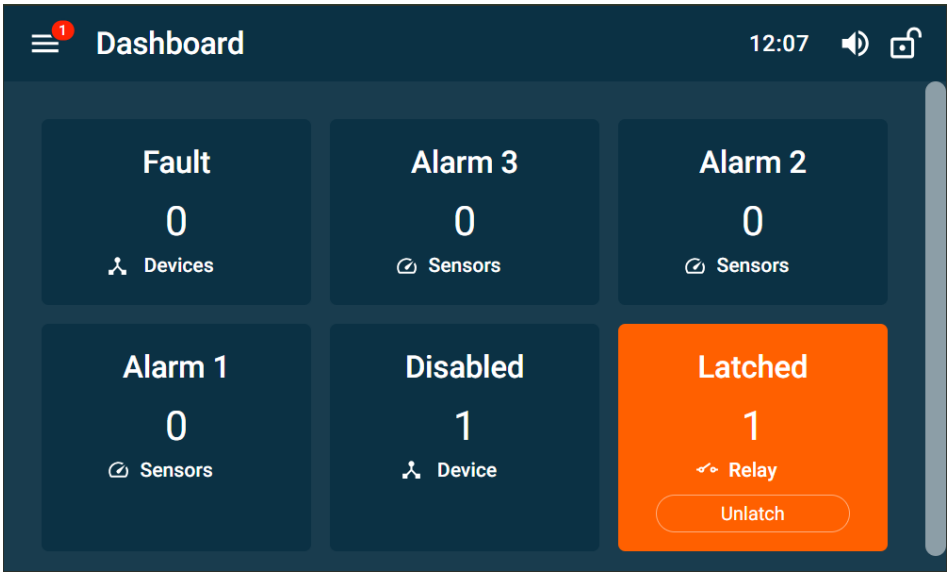


Figure 5-10: Unlocked Dashboard with Option to Unlatch Relays

Pressing the **Unlatch** button will prompt the user to unlatch all latched relays.

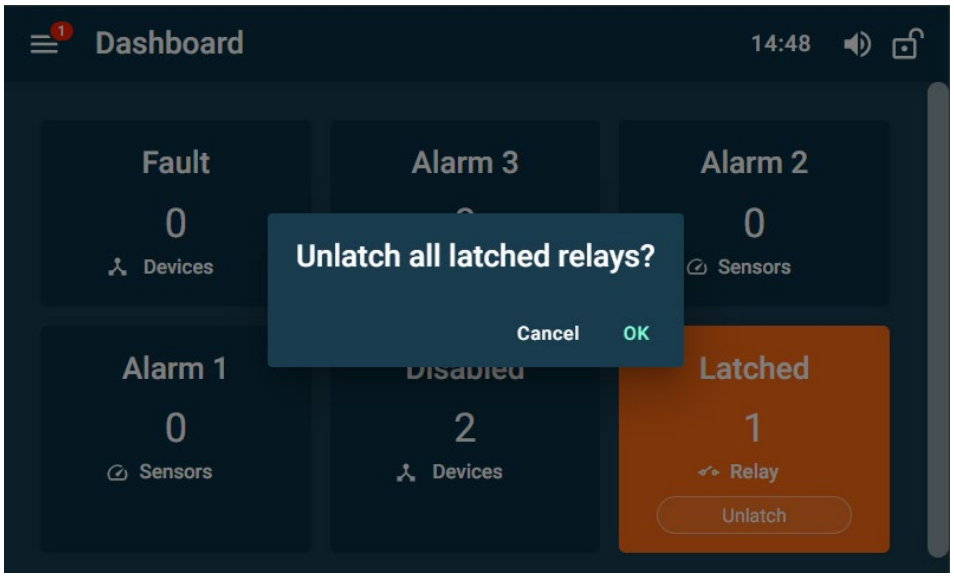


Figure 5-11: Unlatch Relays Confirmation

NOTE: Alarm conditions must be cleared for latched relays to be reset.

5.3.2 App Bar Icons

The top bar of the dashboard includes several important status indicators and controls:

- **Menu Icon (☰):** Opens the main navigation menu.
- **Time Display:** Shows the current system time.
- **Data Logging Status Icon:** Indicates whether data logging is active.
- **Siren Status Icon:** Reflects the current state of the audible alarm system.
- **Lock Button (🔒):** This icon is used to either display the password entry screen or lock settings screen depending on its state (locked or unlocked).

Figure 5-12: Monitor App Bar

5.3.3 Date and Time Settings

Accurate date and time settings are essential for proper data logging, event tracking, and system synchronization. To access the Set Date & Time screen, select the displayed time in the top app bar.

Figure 5-13: Time Displayed in App Bar

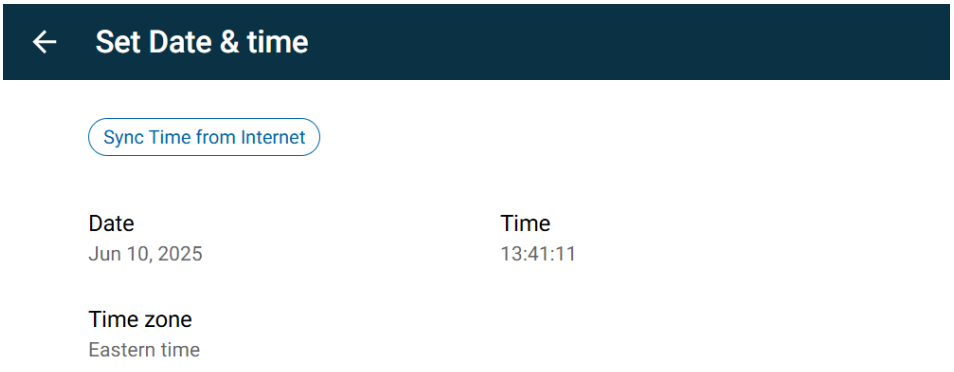


Figure 5-14: Date and Time Settings

5.3.4 Setting Date and Time

Selecting the time opens the **Set Date and Time wizard**, which guides the user through a two-step process.

NOTE: Modifying the date and time is only available when the monitor is **unlocked**. If the monitor is locked, the time display is visible but not interactive.

Step 1 of 2: Select Date

Use the calendar interface to select the current date. Press Next to proceed.

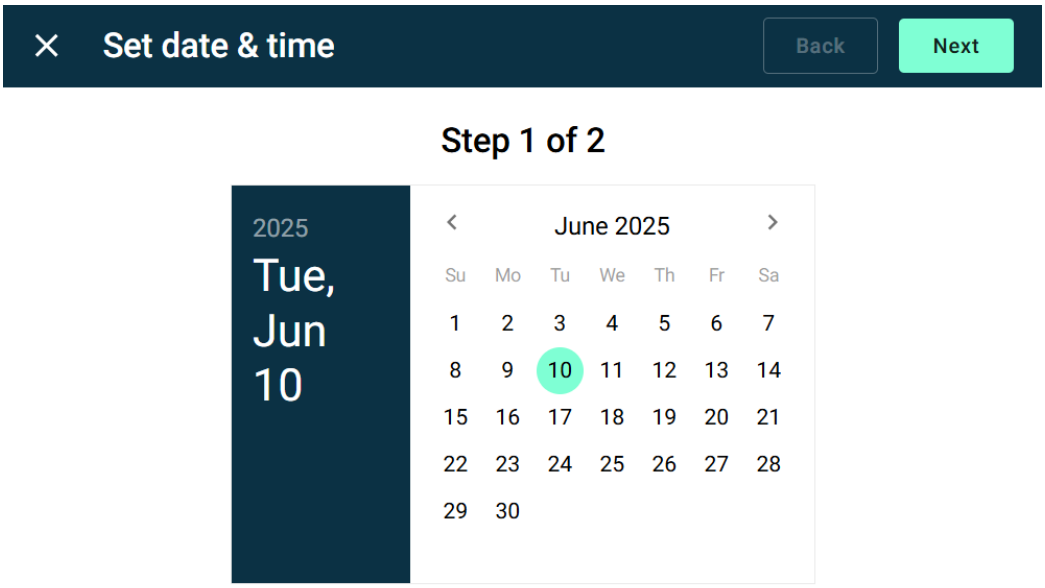


Figure 5-15: Selecting a Date

Step 2 of 2: Set Time

Use the clock interface to select the hour (00–23) and minutes (in 5-minute increments). Press **Save** to confirm.

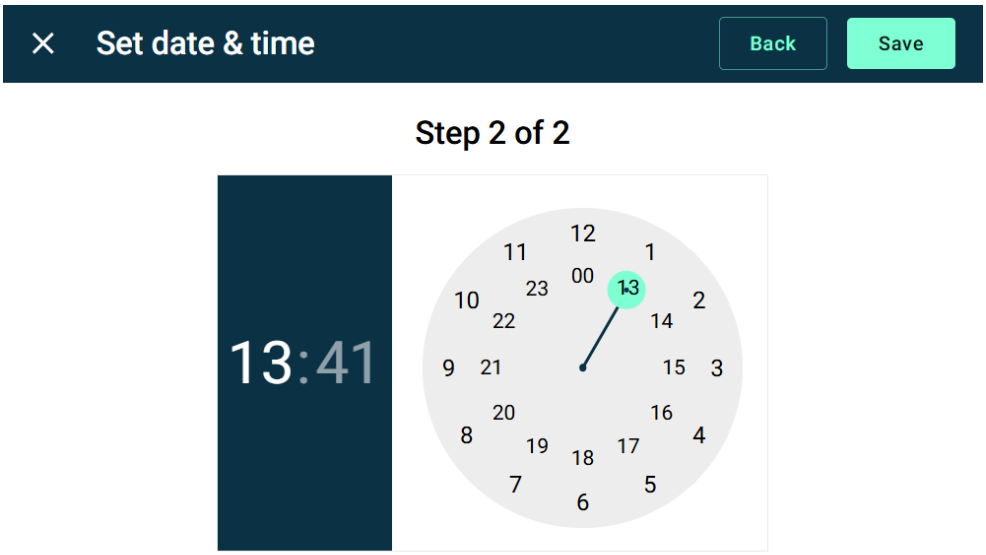


Figure 5-16: Setting the Time

Confirmation Prompt

Press Proceed to apply changes or 'Cancel' to exit.

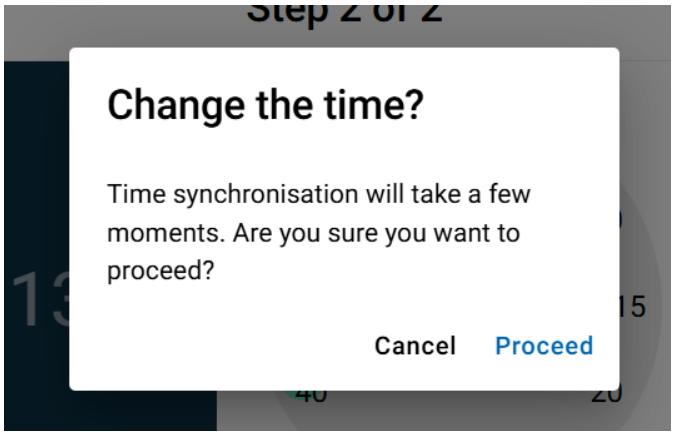


Figure 5-17: Date and Time Change Confirmation

Time Synchronization

Press Sync Time from Internet to automatically update the system clock (requires network access).

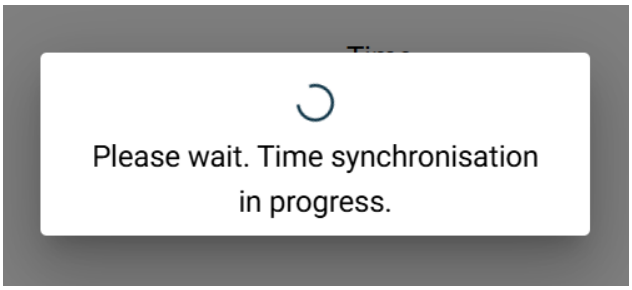


Figure 5-18: Time Synchronization in Progress

Time Zone Selection

Choose from a list of time zones (e.g., Pacific, Mountain, Central, Eastern, Atlantic). Press **Save** to apply the selected time zone.

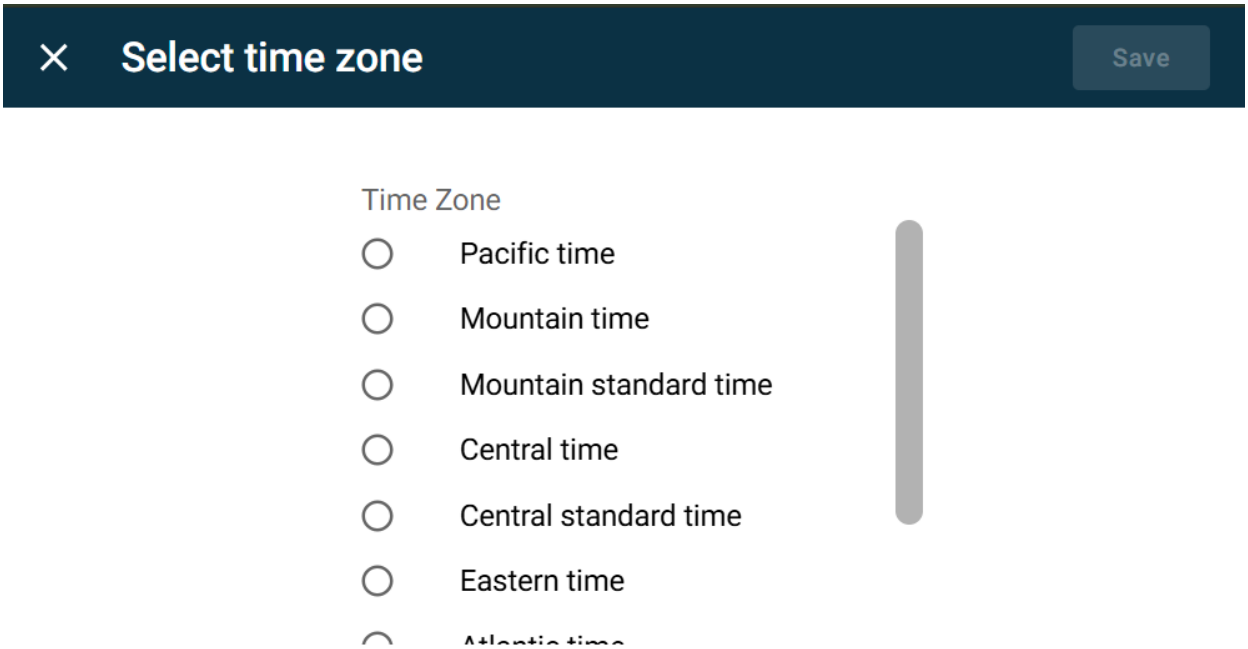


Figure 5-19: Selecting a Time Zone

5.3.5 Data Logging Status

The **USB icon** located in the top-right corner of the dashboard indicates the status of data logging to an external USB drive. Please refer to section 5.13.7 Data Logging for information about Data Logging.

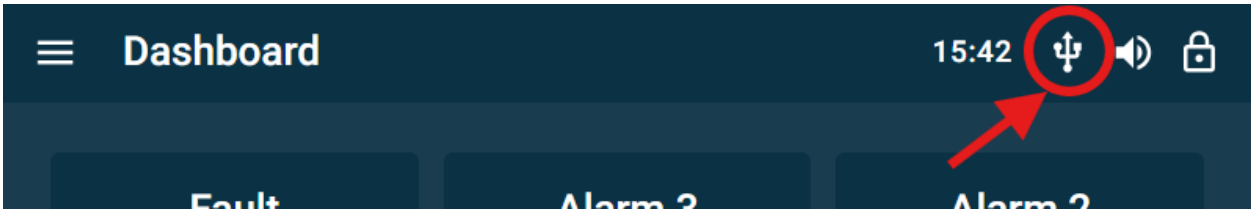


Figure 5-20: Data Logging Status Indicator

Icon Behavior:

- **Blinking USB Icon**: The system is actively logging data to the connected USB drive.
- **No Icon**: No USB drive is detected, or data logging is disabled.

This visual indicator allows users to quickly verify whether data is being recorded, which is essential for diagnostics, compliance, and historical analysis.

Stopping Data Logging

When the USB icon is pressed, a confirmation dialog appears:

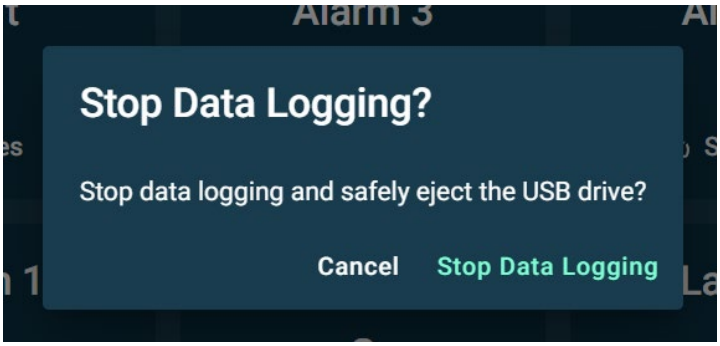


Figure 5-21: Stop Data Logging Confirmation

Options:

- **Cancel**: Closes the dialog without stopping data logging.
- **Stop Data Logging**: Ends the logging session and prepares the USB drive for safe removal.

After selecting **Stop Data Logging**, a message appears at the bottom of the screen:

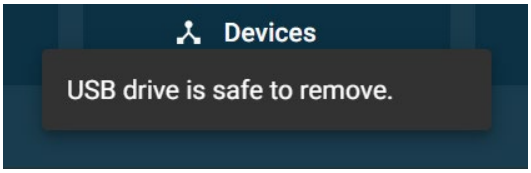


Figure 5-22: Notification that USB Drive is Safe to Remove

This confirms that the system has completed all write operations and the USB drive can now be safely disconnected.

IMPORTANT: Always stop data logging and safely eject the USB drive before removing it. Removing the drive while logging is active may result in data loss or corruption.

5.3.6 Siren Status

The Siren Status Icon is located in the top-right corner of the dashboard and reflects the current state of the system's audible alarm. The icon can also be used to temporarily mute the audible alarm.

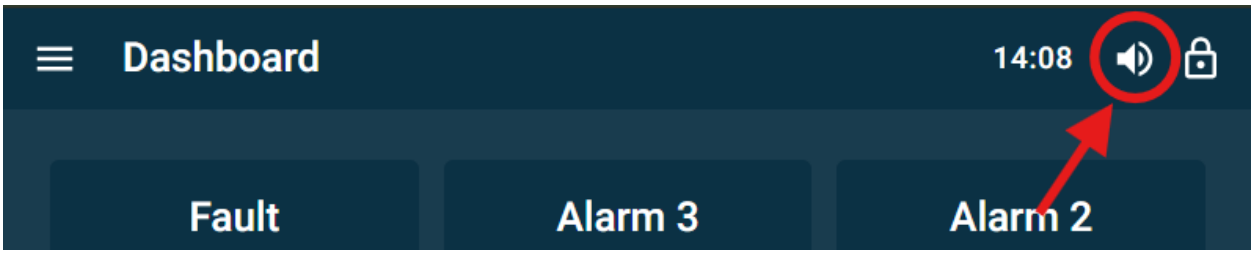


Figure 5-23: Siren Status Icon Button

Figure 5-24: Siren Icon States

Table 5-1: Siren Icon Behaviour

Icon	Description
White Siren	Indicates that the siren is armed and will activate if a fault or alarm condition occurs.
Blinking Red Siren	Indicates that the siren is currently active, signaling a fault or alarm condition.
White Muted Siren	Indicates that the siren has been temporarily silenced by the user.
Grey Muted Icon	Indicates that the siren has been permanently disabled through system settings.

This icon provides a quick visual reference for the alarm state and allows users to manage audible alerts directly from the dashboard.

Muting the Siren

When the siren icon is pressed, a dialog appears:

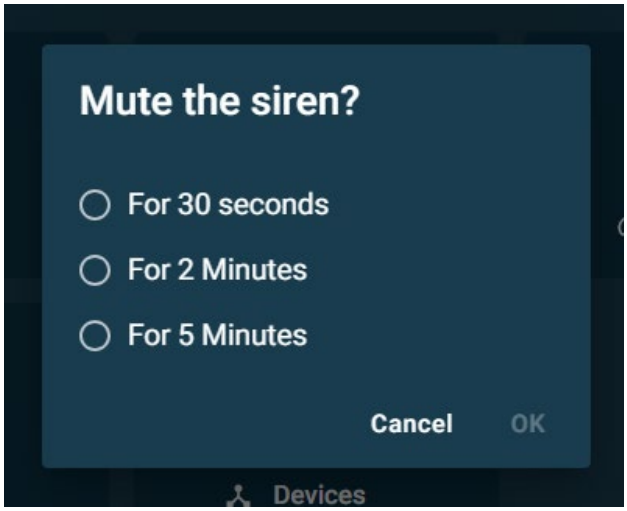


Figure 5-25: Duration Options for Temporarily Muting the Siren

Options:

- For 30 seconds.
- For 2 minutes.
- For 5 minutes.

After selecting a duration, press **OK** to confirm or **CANCEL** to exit without muting.

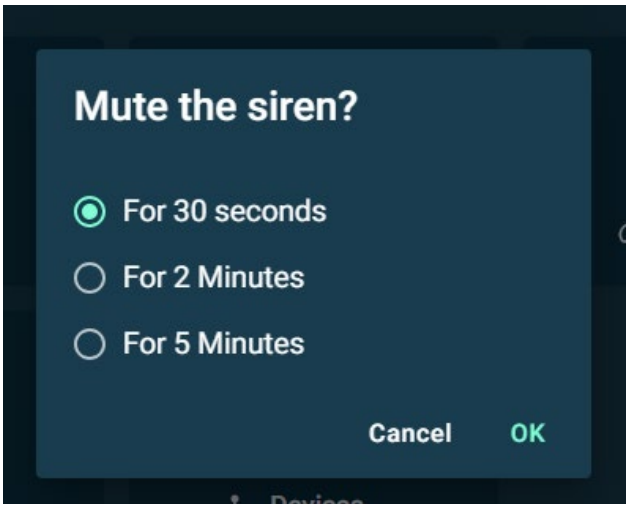


Figure 5-26: Duration Selected for Temporarily Muting the Siren

NOTE: Muting the siren does not clear the underlying alarm condition. If the condition persists after the mute duration expires, the siren will resume.

Figure 5-27: App Bar Displaying Temporarily Muted Siren

Unmuting the Siren

If the siren is currently muted, pressing the icon again will display the following prompt:

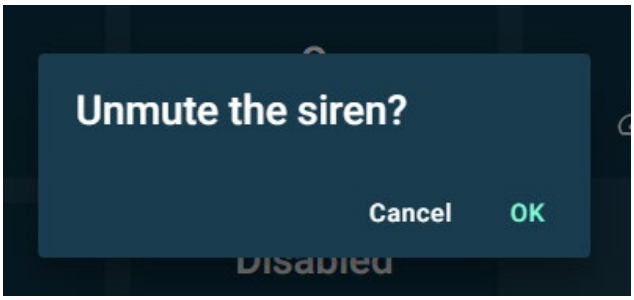


Figure 5-28: Confirmation of Unmuting the Siren

Options:

- **OK:** Immediately reactivates the audible alarm if the alarm condition is still present.
- **Cancel:** Leaves the siren muted for the remainder of the selected duration.

5.4 Lock Screen Interface

5.4.1 Lock Screen Overview

The monitor includes a secure lock screen system to prevent unauthorized access to critical settings and functions. This section outlines how to interact with the lock screen, manage passwords, and secure the monitor.

IMPORTANT: It is highly recommended to change the password when setting up the monitor.

5.4.2 Accessing the Lock Screen

The lock screen can be accessed by pressing the lock icon located in the top-right corner of the display. This action will bring up the Unlock Monitor screen, where you can enter your password to proceed.

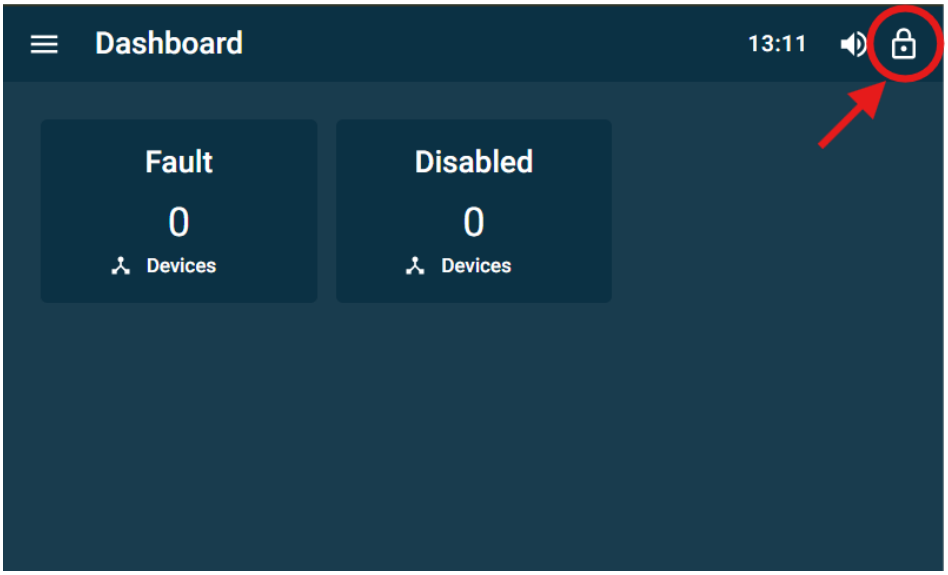


Figure 5-29: Lock Status Icon Button

5.4.3 Unlocking the Monitor

When the monitor is locked, the Unlock Monitor screen appears.

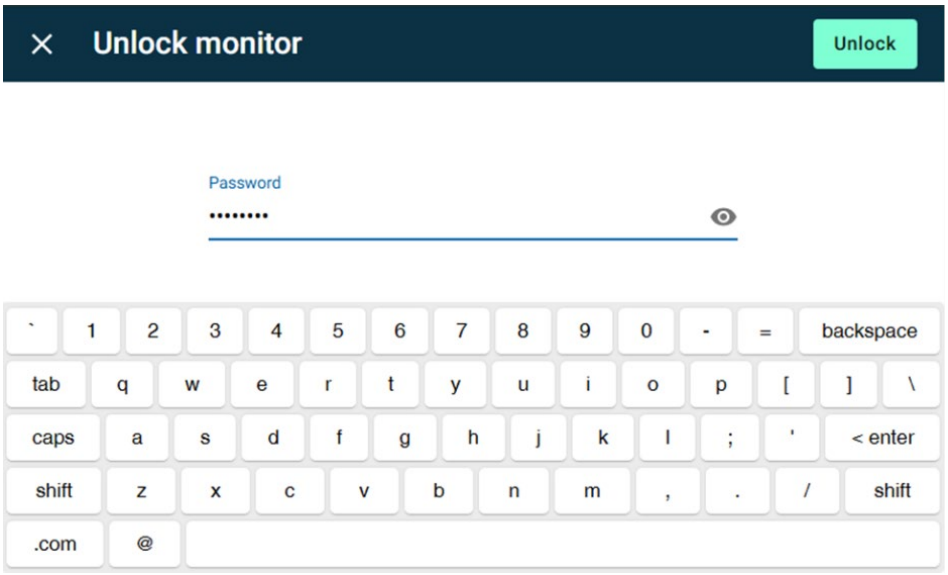


Figure 5-30: Password Entry

Steps to Unlock:

- Select the password field and enter your password using the virtual keyboard.
- Press the eye icon to show or hide the password as needed.
- Once the password is entered, press Unlock to access the monitor.

NOTE: For initial access, the monitor is configured with a factory default password of 1234. We recommend changing this password during setup to ensure system security.

Incorrect Password Handling

If an incorrect password is entered:

- A red error message appears: "Incorrect password. Please try again."
- The Unlock button remains inactive until a new password is entered.
- The field is cleared, and the password must be entered again.

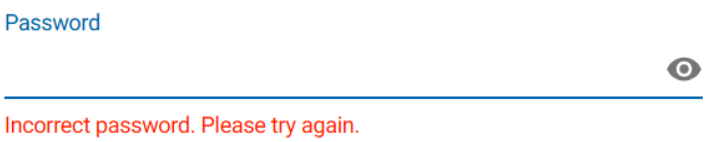


Figure 5-31: Password Validation

5.4.4 Lock Settings Menu

Once the monitor is unlocked, pressing the lock icon in the app bar will navigate to the Lock Settings screen for managing security options.

Figure 5-32: Lock Settings

Options:

Change Password: Opens the password update interface.

Lock Monitor: Immediately re-locks the monitor to secure access.

5.4.5 Changing the Password

To change the password:

- Press Change Password from the Lock Settings menu.
- Enter your new password in the New Password field.
- Use the virtual keyboard to input your desired password.
- Press **Save** to confirm the change.

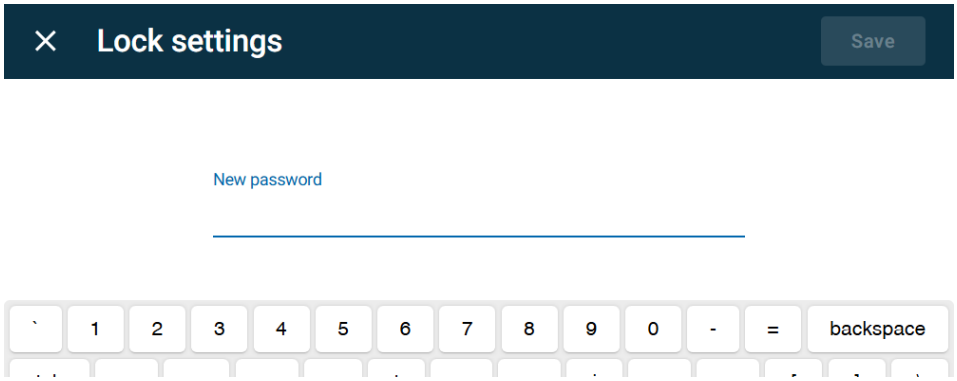


Figure 5-33: Entering a New Password

Tip: Choose a strong password that includes a mix of letters, numbers, and special characters.

5.4.6 Recovering a Lost Password

To recover a lost password, please contact Armstrong Monitoring by calling 1-800-465-5777, visiting www.armstrongmonitoring.com, or emailing support@armstrongmonitoring.com directly.

5.5 Main Navigation Menu

The **Main Navigation Menu** provides access to all major sections of the AMC-1DCx-L interface. It is accessed by pressing the **Menu Icon (☰)** located in the top-left corner of the dashboard.
When opened, the menu appears as a vertical panel on the left side of the screen. Each item is represented by a label and an icon for quick identification.

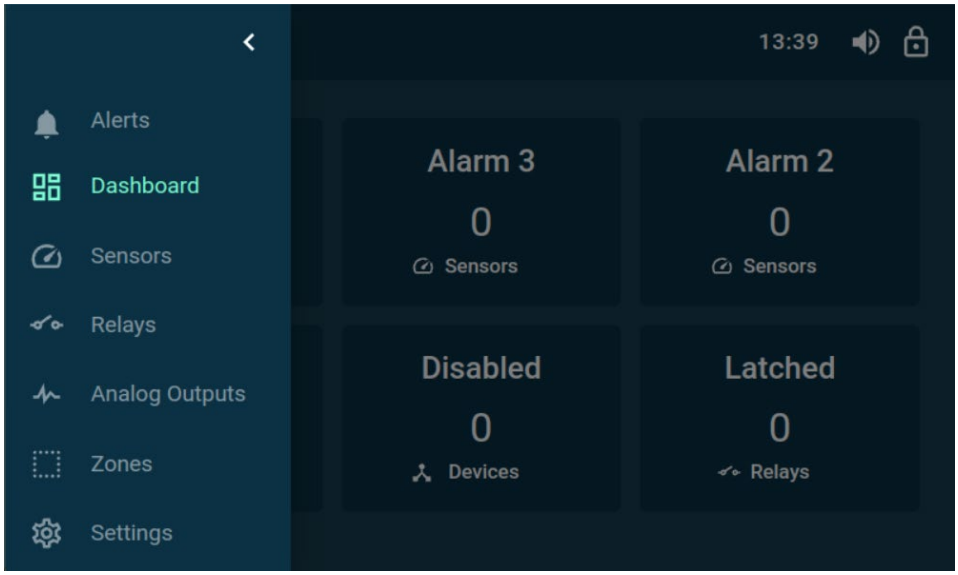


Figure 5-34: Main Navigation Menu

Menu Items

The available main navigation menu items are listed in the following table:

Table 5-2: Main Navigation Menu Items

Menu Item	Description
Alerts	Displays current system alerts, such as active alarms, faults, or missing devices. A red badge indicates the number of active alerts.
Dashboard	Returns to the main dashboard screen.
Sensors	Access and configure connected sensors.
Relays	Manage relay modules and their behaviour.
Analog Outputs	Configure analog output channels.
Zones	View and assign devices to specific zones.
Settings	Access system configuration options.

The currently active screen is highlighted in cyan within the menu. This menu remains accessible throughout the interface, allowing users to quickly navigate between system components.

Visual Indicators:
If a section contains an active alert, a **red dot** appears next to its icon in the menu. This allows users to quickly identify which areas require attention.

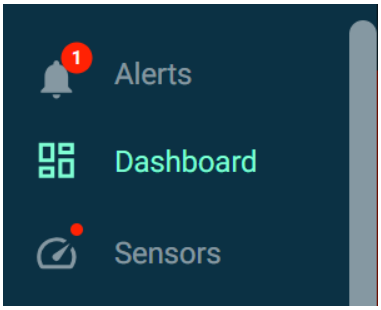


Figure 5-35: Main Navigation Menu with Alert Indicators

5.6 Alerts

5.6.1 Alerts Overview

The Alerts screen provides a centralized view of all active system alerts, including alarms, faults, and communication issues. It is accessible from the Main Navigation Menu by selecting the Alerts item. Alerts are indicated by a red badge when active alerts are present.

When no alerts are present:

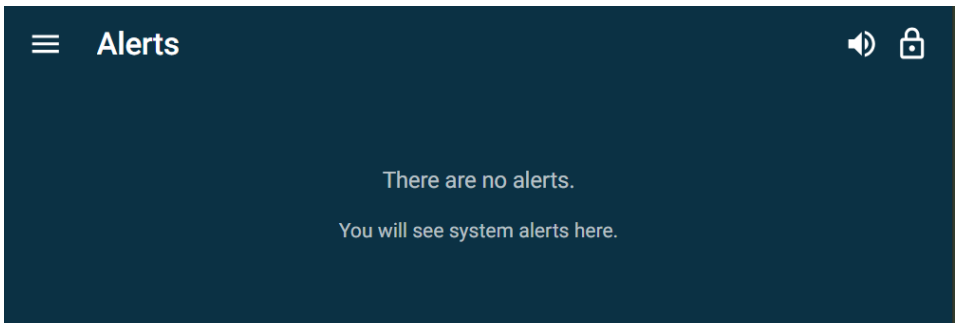


Figure 5-36: Alerts Screen with No Active Alerts

The screen displays the message “There are no alerts. You will see system alerts here.”

When alerts are present:

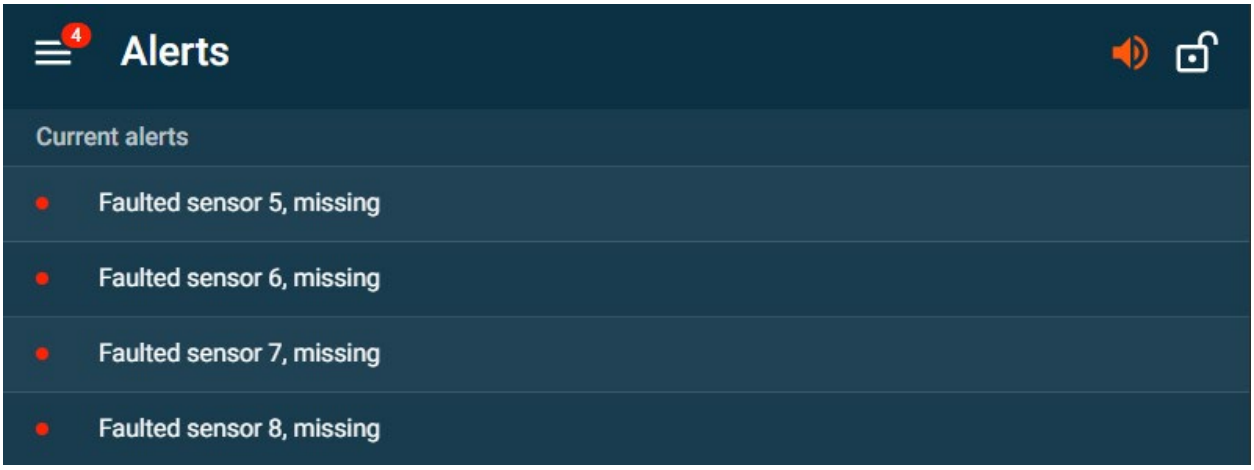


Figure 5-37: Alerts Screen with Active Alerts

Alerts will be listed in this area with details such as:

- Type of alert (e.g., Alarm, Fault, Missing Device)
- Affected device or zone
- Severity level (color-coded)

5.6.2 Interacting with Alerts

Each alert listed on the screen is interactive. Pressing on an alert will redirect the user to the corresponding section of the interface where the issue originated:

Table 5-3: Alert Interaction & Redirection Screen

Alert Type	Redirect
Sensor Alerts	Redirects to the Sensors Screen.
Relay Alerts	Redirects to the Relays Screen.
Analog Output Alerts	Redirects to the Analog Outputs Screen.
Zone Alerts	Redirects to the Zones screen.

This functionality allows users to quickly investigate and resolve issues by jumping directly to the affected component.

5.7 Common Screen Elements for Devices and Zones

5.7.1 Overview

The AMC-1DCx-L monitor uses a consistent table-based interface to manage system components such as sensors, relays, analog outputs, and zones. These tables allow users to view, add, edit, delete, and configure devices efficiently.

5.7.2 App Bar

At the top of each table screen is a consistent app bar that includes the following elements:

- **Menu Icon (☰):** Opens the main navigator drawer.
- **Screen Title:** Displays the current section (e.g., Sensors, Relays).
- **Filter Dropdowns:** Contextual filters such as Lane, Zone, and Status.
- **Settings Icon (⚙️):** Opens additional configuration options (see below).
- **Siren Status Icon:** Reflects the current state of the audible alarm system.
- **Lock Button (🔒):** This icon is used to either display the password entry screen or lock settings screen depending on its state (locked or unlocked).

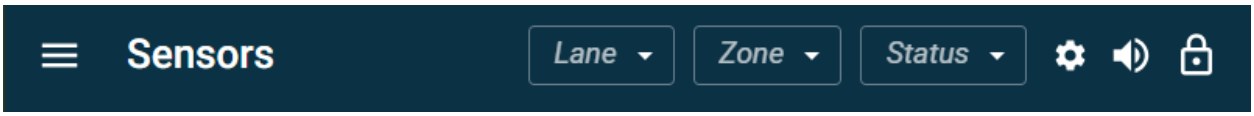


Figure 5-38: App Bar for Sensors, Relays, and Analog Outputs

5.7.3 Shared Table Columns

5.7.3.1 Columns Shared by All Tables

Each of the main system tables—**Sensors**, **Relays**, **Analog Outputs**, and **Zones**—includes a consistent set of columns to help users quickly identify and manage devices. All four tables include the following columns.

5.7.3.1.1 Checkbox Column

When the monitor is **unlocked** and **Bulk Configuration** is enabled from the Table Settings Menu, a **checkbox column** appears on the far left side of all major tables (Sensors, Relays, Analog Outputs, and Zones). Each row in this column includes a checkbox that allows users to select one or more devices or zones. This enables bulk actions to apply configuration changes to multiple items simultaneously.

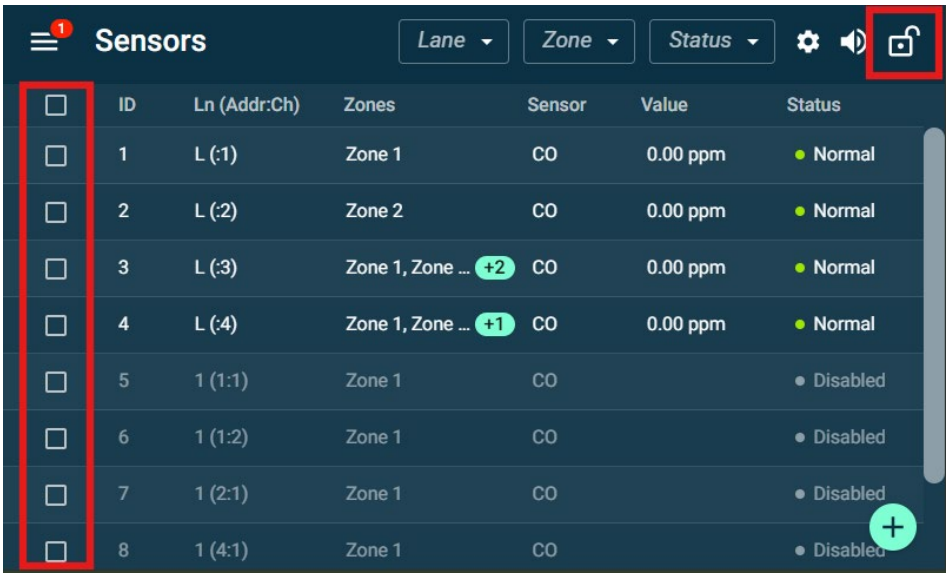


Figure 5-39: Checkbox Column

5.7.3.1.2 ID Column

The **ID Column** displays a unique identifier for each device or zone.

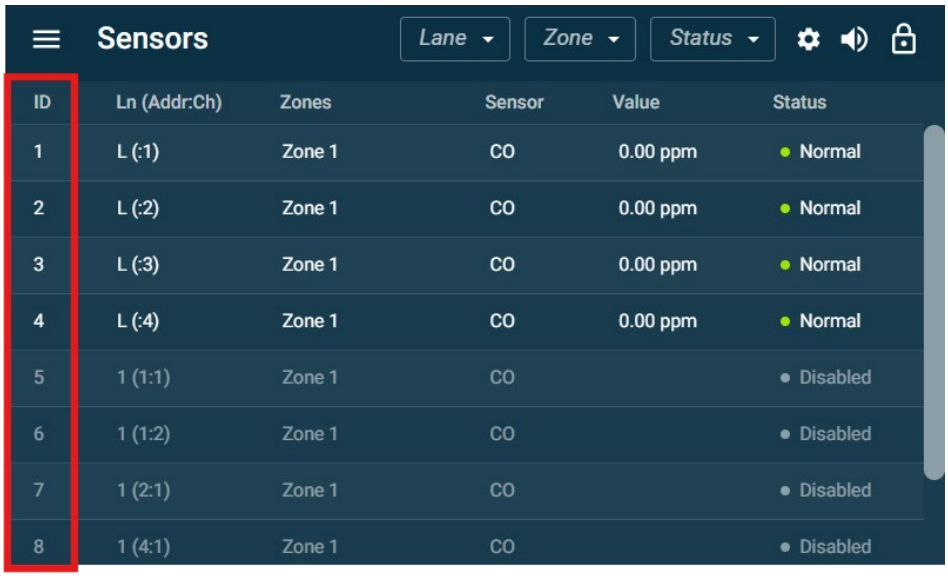


Figure 5-40: ID Column

5.7.3.1.3 Status Column

The **Status Column** displays the current operational state of the device or zone (e.g., Normal, Fault, Missing, Disabled).

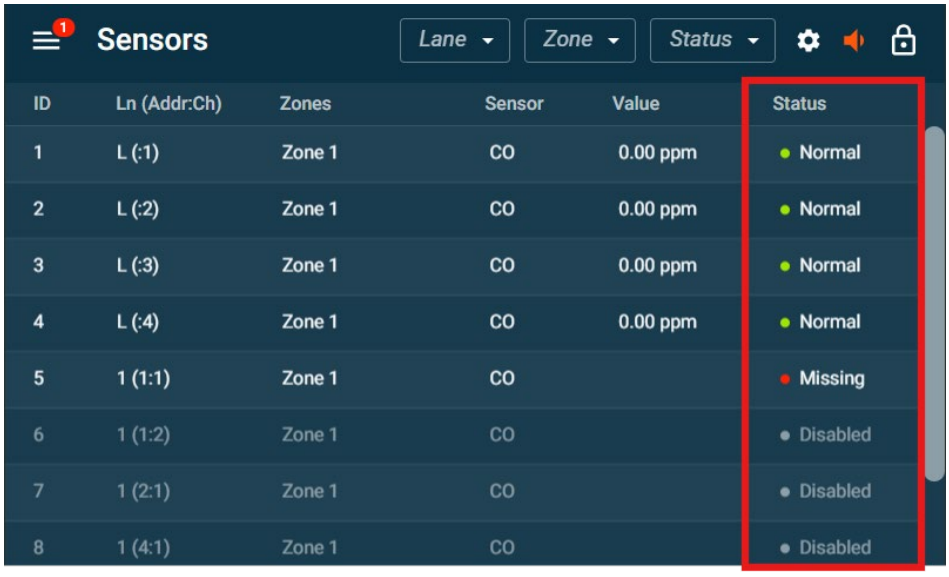


Figure 5-41: Status Column

Colour-coded status indicators help users quickly identify sensor conditions:

- **Green:** Normal
- **Gray:** Disabled
- **Red:** Alarm or Fault

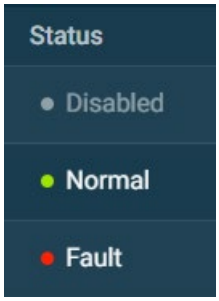


Figure 5-42: Colour Coded Statuses

5.7.3.2 Columns Shared by Devices

In addition, the **Sensors**, **Relays**, and **Analog Outputs** tables share the following columns:

5.7.3.2.1 Lane, Address, and Channel Column

The **Ln (Addr:Ch) Column** displays the communication lane, Modbus address, and channel number for each device. For local devices, this field displays in the format (L:#), where # represents the local channel number (e.g., L:1).

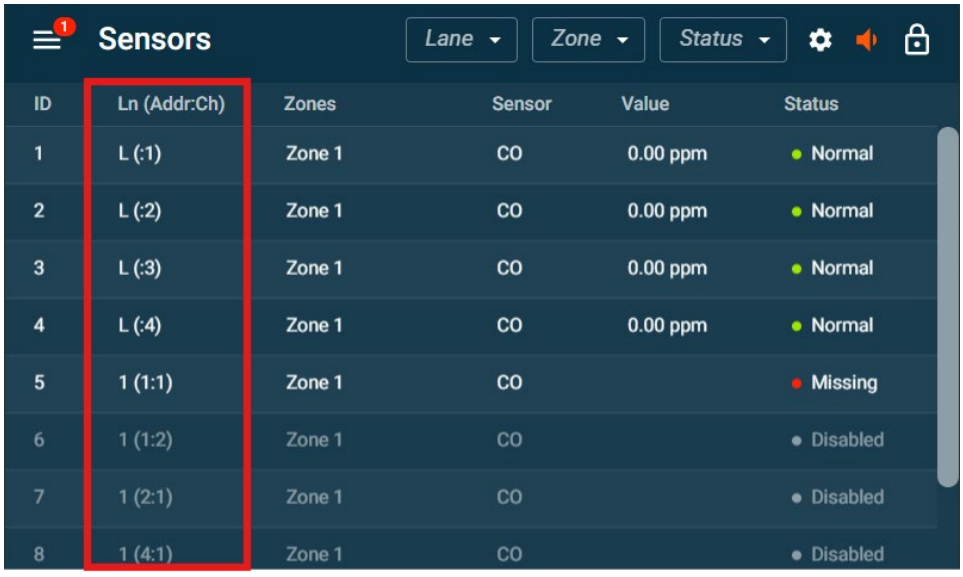


Figure 5-43: Lane (Address:Channel) Column

Duplicate Address Indicators in Tables

When viewing a table with the **Ln (Addr:Ch)** column, the system automatically checks for duplicate Modbus configurations. If a sensor shares the same Modbus lane, address, and channel as another device, a warning indicator is displayed.

Figure 5-44: Duplicate Lane (Address:Channel) Warning

5.7.3.2.2 Zones Column

The **zones column** lists the zones to which the device is assigned, allowing for grouped control and monitoring.

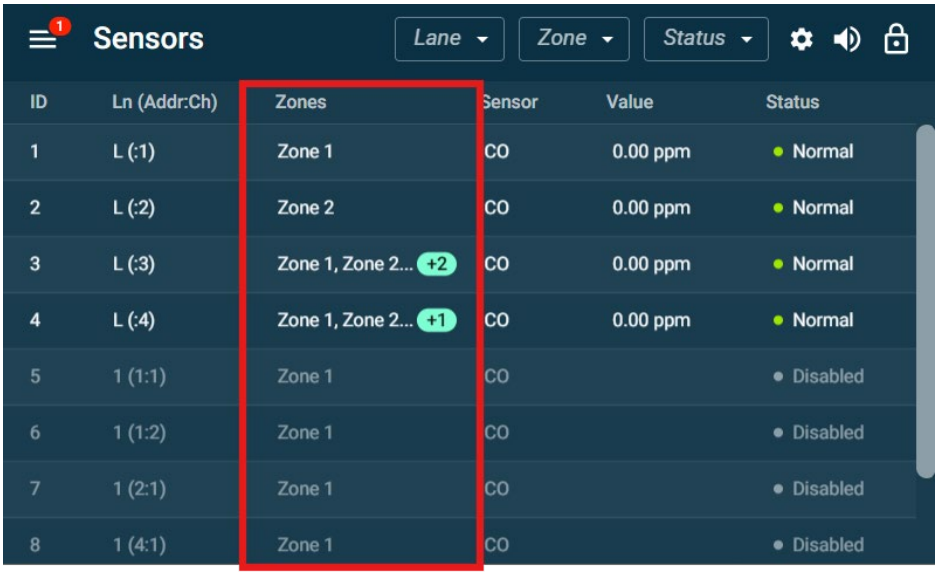


Figure 5-45: Zones Column

If a device is assigned to multiple zones and the combined zone names exceed the width of the column, the list will be truncated. In such cases, a numeric indicator (e.g., “+2”) will appear at the end of the visible list to show how many additional zones are not displayed. This helps maintain a clean table layout while still indicating the presence of additional zone assignments.

Figure 5-46: Truncated Zones Value

Pressing on the zone list will open a pop-up window displaying the full list of assigned zones, allowing users to view all zone associations for that device.

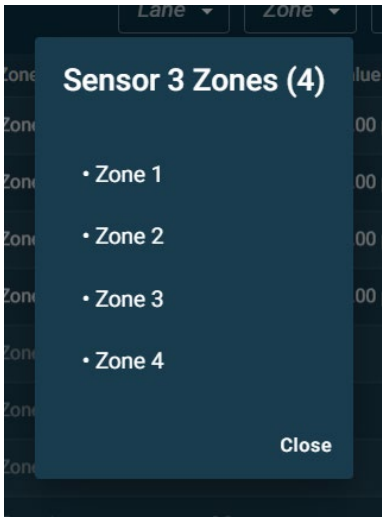


Figure 5-47: Expanded Zones List

5.7.3.2.3 Value Column

The **Value Column** shows the current reading or output level of the device, such as gas concentration for sensors or signal level for relays and analog outputs.

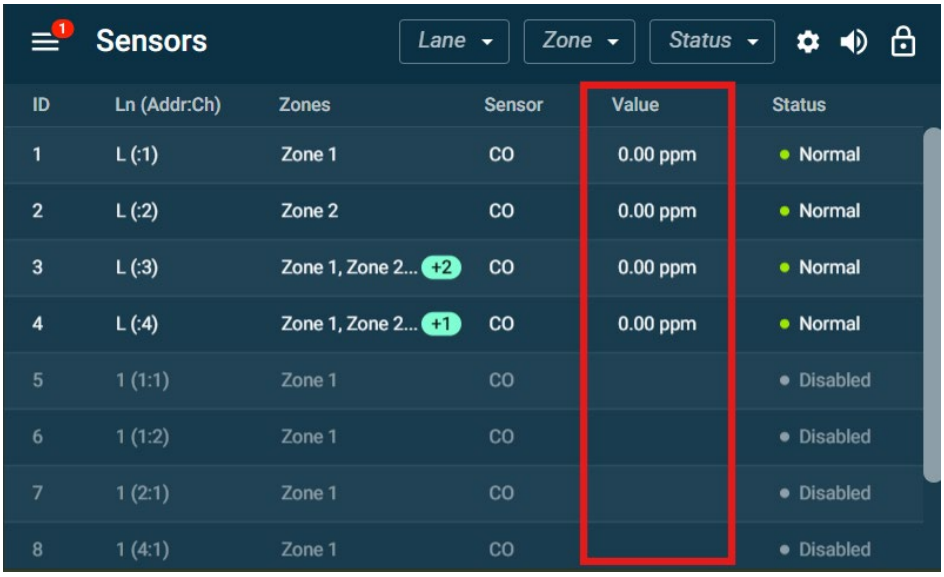


Figure 5-48: Value Column

This consistent layout across tables improves usability and helps users navigate and manage large systems more efficiently.

5.7.4 Device Filters

The dropdown filters allow users to narrow down the list of displayed items based on the options listed in the following table:

Filter	Action
Lane	Filter by communication lane or bus.
Zone	Filter by assigned zone.
Status	Filter by operational state (e.g., Normal, Fault, Disabled).

These filters help users quickly locate specific devices or conditions in large systems. When a filter is selected, the corresponding input is highlighted with a yellow border, and the table updates dynamically to reflect the filtered results.

Figure 5-49: Device Filters

5.7.4.1 Lane Filter

The Lane Filter allows users to narrow the displayed devices based on their communication path. This includes both local and Modbus-connected devices.

Figure 5-50: Lane Filter

Options:

- **Local Devices:** Displays only devices directly connected to the monitor.
- **Modbus Lane 1:** Displays devices connected through Modbus Lane 1.

5.7.4.2 Zone Filter

The Zone Filter allows users to filter devices by their assigned zones. This is helpful for managing devices grouped by physical location or functional area.

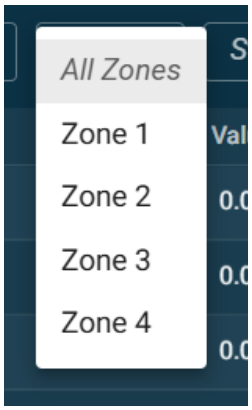


Figure 5-51: Zone Filter

Options:

- All Zones (default)
- The list of configured zones

Devices assigned to multiple zones will appear in the results for any selected zone. This enables flexible filtering for multi-zone configurations.

Figure 5-52: Zone Filter Applied

5.7.4.3 Status Filter

The Status Filter allows users to view devices based on their current operational state. This helps prioritize maintenance and response actions.

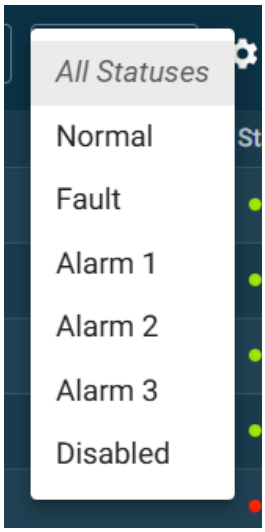


Figure 5-53: Status Filter

Options:

- Normal
- Fault
- Alarm 1
- Alarm 2
- Alarm 3
- Disabled
- Latched (Only available for relays)

Devices marked as Fault include those with communication issues or hardware failures. A common fault condition is Missing, which indicates a device is not responding or has failed to initialize. These entries typically show an empty value field and a red status indicator.

Figure 5-54: Status Filter Applied

5.7.5 Table Settings Menu

Each table view in the AMC-1DCx-L interface includes a Table Settings Menu, accessible via the gear icon near the top-right corner of the table. This menu allows users to customize the table layout and enable bulk configuration features.

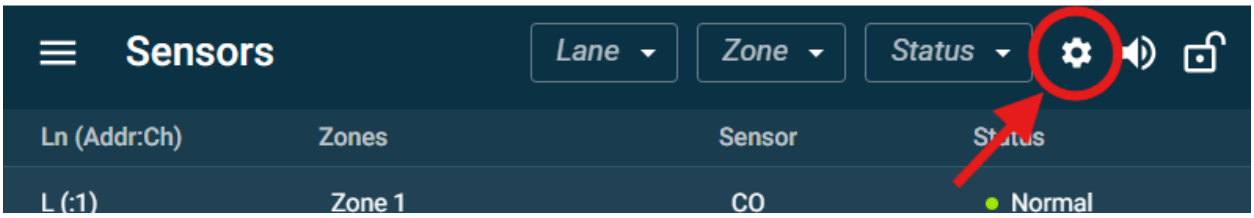


Figure 5-55: Table Settings Icon Button

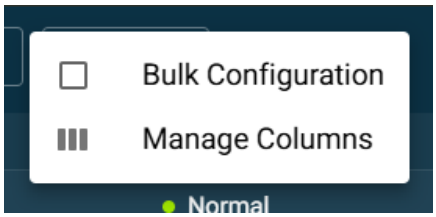


Figure 5-56: Table Settings Menu

5.7.5.1 Bulk Configuration

This menu option toggles a “Bulk Configuration” mode which enables a checkbox column on the left side of the table. This option is only available when the monitor is unlocked, ensuring that configuration changes are protected from unauthorized access.

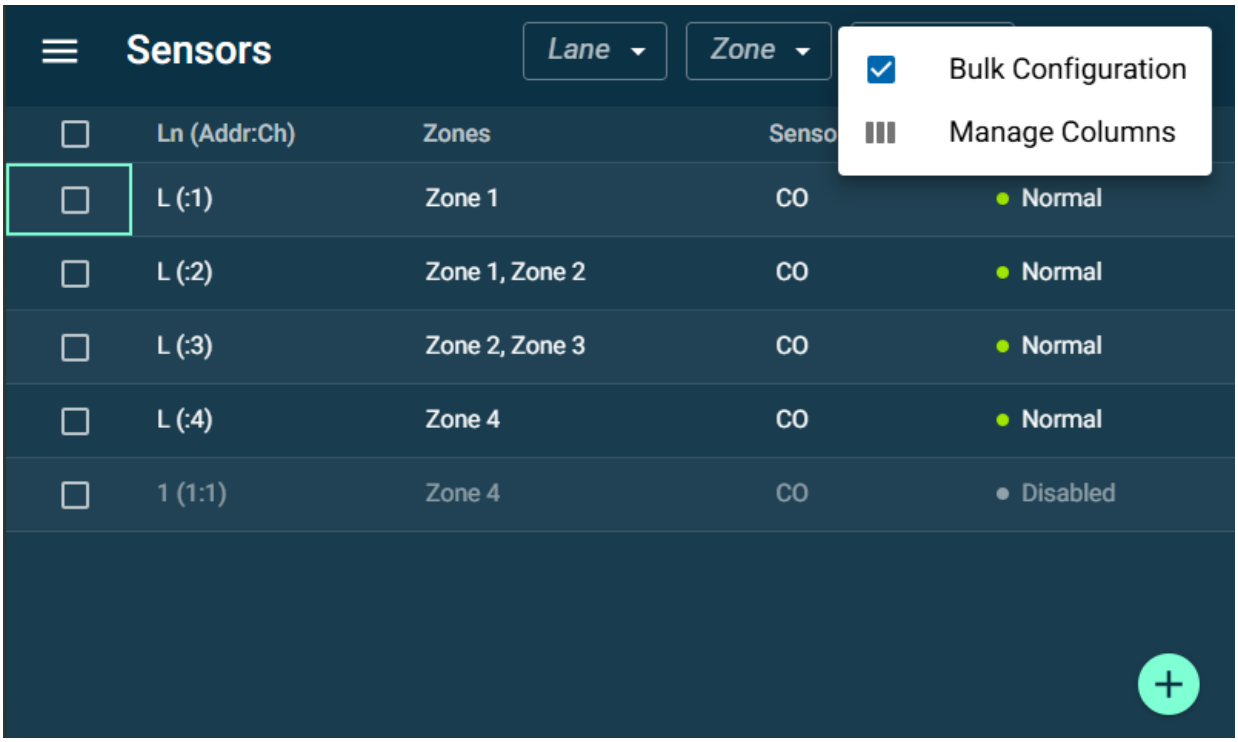


Figure 5-57: Bulk Configuration Enabled

5.7.5.2 Manage Columns

This menu allows users to toggle the visibility of individual columns in the table (e.g., ID, Zones, Value). This helps tailor the view to the user's needs and reduce visual clutter.

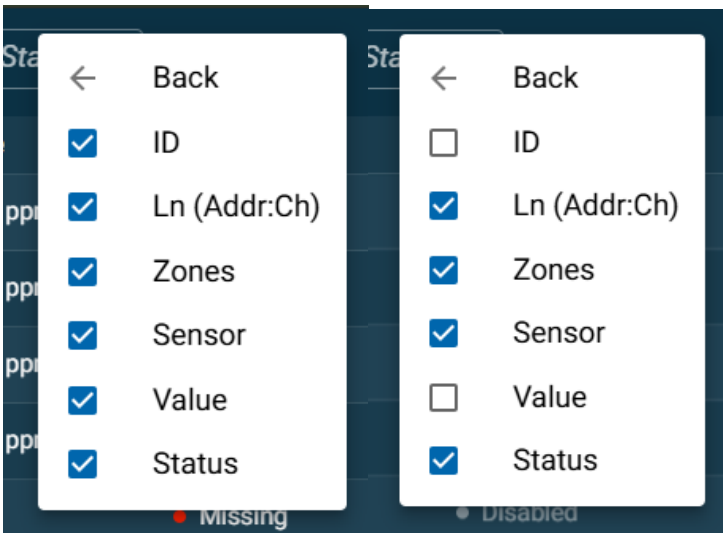


Figure 5-58: Column Visibility Settings

Figure 5-59: Table Displayed with Hidden Columns

5.7.6 Adding Devices and Zones

To add a new device or zone, press the cyan circular Add button (+) located in the bottom-right corner of the table screen.

NOTE: When the monitor is locked, users can only view device information and cannot make any changes. This ensures that critical configuration settings remain protected from unauthorized edits.

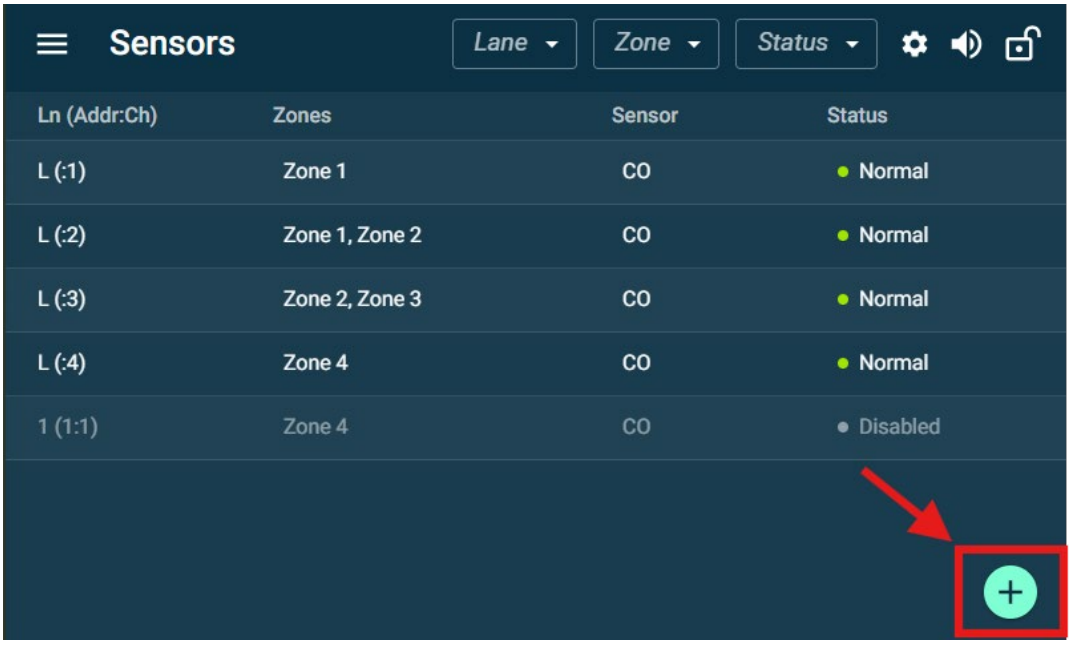


Figure 5-60: Add Button

Once the **Add** button is pressed, the system will guide the user through the necessary steps to configure the new device or assign it to a zone. This button is only available when the monitor is unlocked, ensuring that only authorized users can make configuration changes.

5.7.7 Editing Devices and Zones

To view and edit a device's configuration, select row in the table to open the **Device Details** view.

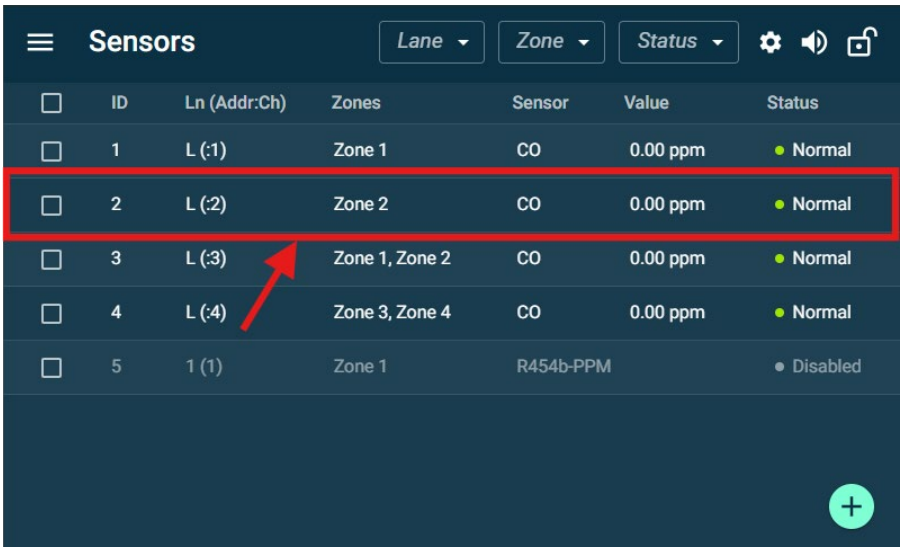


Figure 5-61: Selecting a Row to Edit

5.7.7.1 Viewing and Editing Device Details

Device Details with Locked Monitor:

If the monitor is locked, all fields in the **Device Details** view will be read-only. The user must unlock the monitor to make changes.

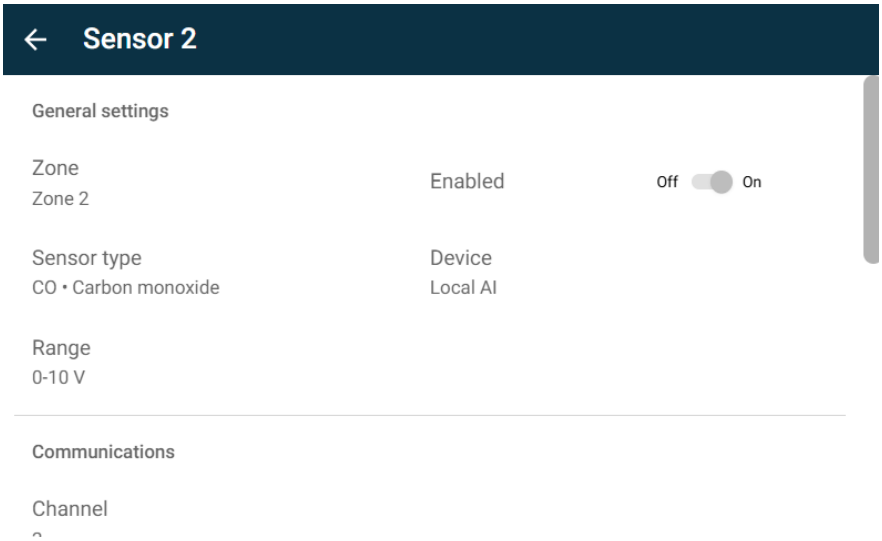


Figure 5-62: Details Screen with Read-Only Fields

Device Details with Unlocked Monitor:

When the monitor is unlocked, fields in the Device Details View become interactive. Selecting a field will enter edit mode. The edit screens vary from a toggle switch, virtual keyboard, radio button list, or multi-select menu depending on the field's data type.

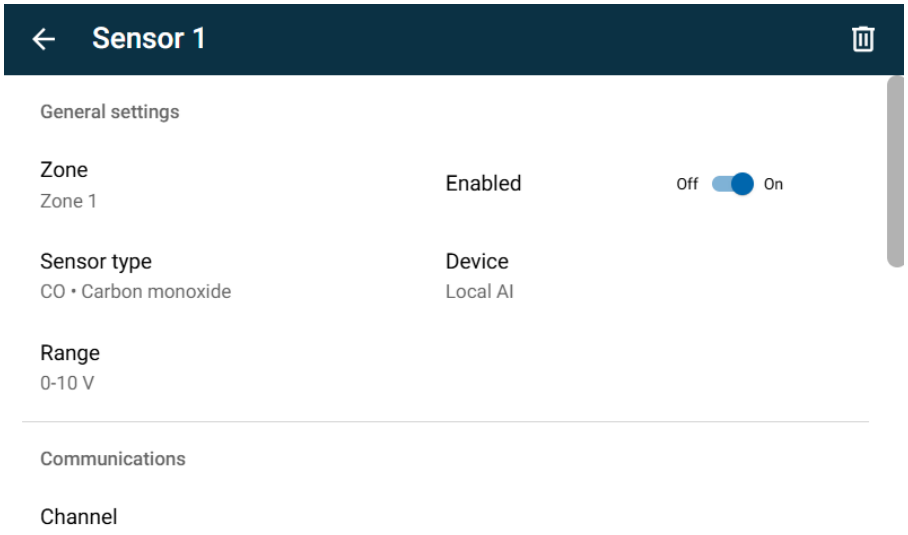


Figure 5-63: Details Screen with Editable Fields

5.7.7.2 Types of Editable Fields

Toggle Switch:

Figure 5-64: Enabled Toggle Switch

Virtual Keyboard:

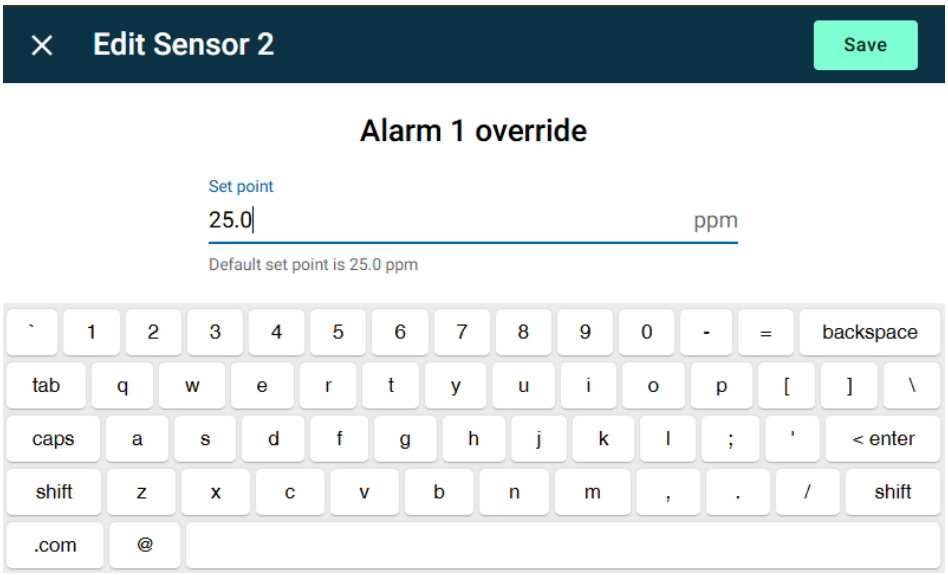


Figure 5-65: Virtual Keyboard

Radio Button List:

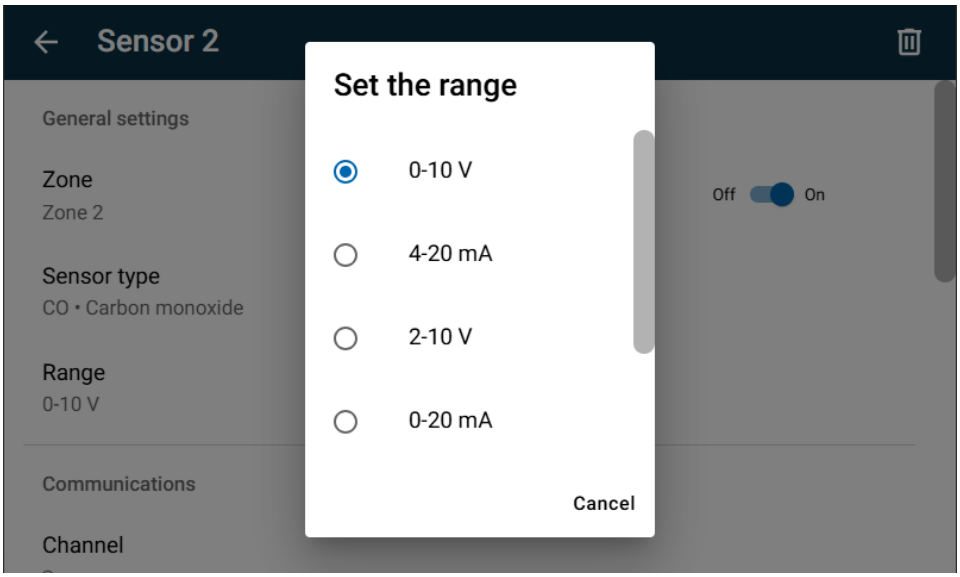


Figure 5-66: Radio Button List

Multi-Select Menu:

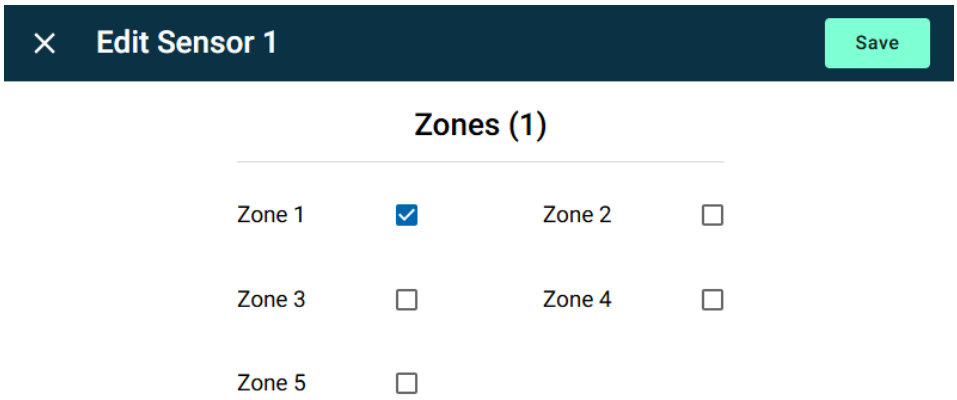


Figure 5-67: Multi Select Menu

5.7.7.3 Editing Communication Settings

5.7.7.3.1 Editing a Device's Modbus Address

The **Modbus Address** uniquely identifies the sensor on the MODBUS communication network. Each device on the same lane must have a distinct address to avoid conflicts.

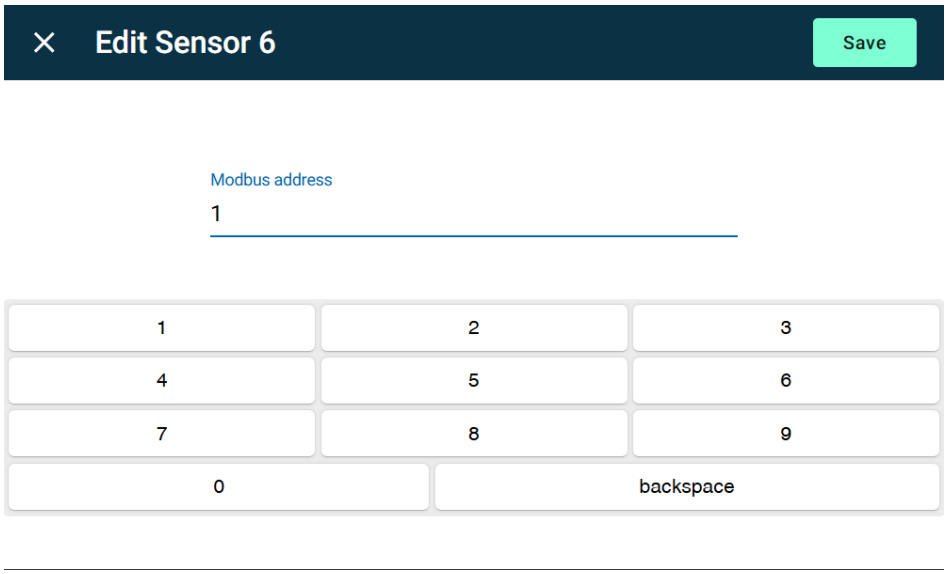


Figure 5-68: Editing a Device's Modbus Address

Form Validation

To ensure system integrity and prevent configuration errors, the AMC-1DCx-L interface includes built-in form validation for editable fields. The address must be a valid Modbus address (typically between 1 and 247, depending on system configuration) and must match the address of the external device being configured.

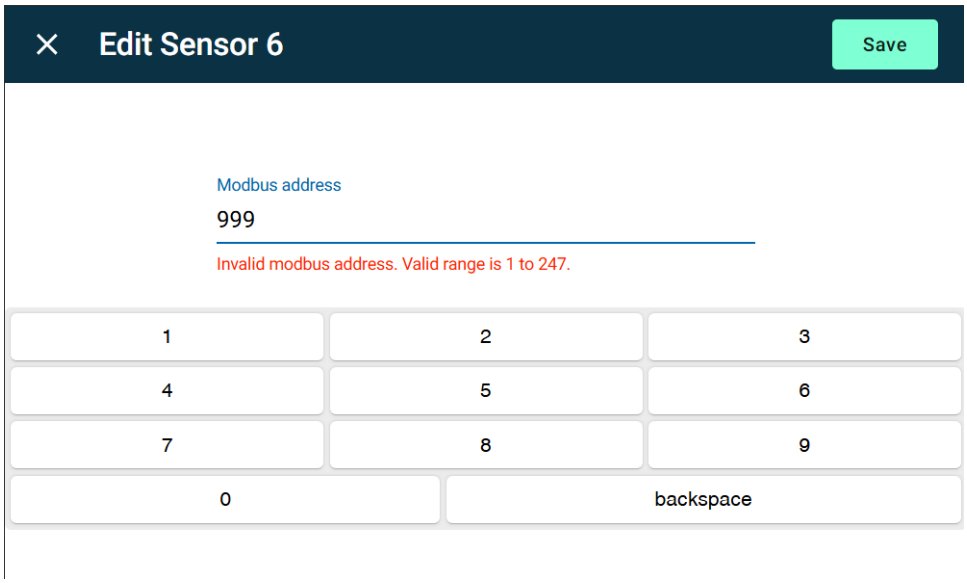


Figure 5-69: Modbus Address Validation

For example, when editing the Modbus Address:

- The valid range is 1 to 247.
- If a user enters a value outside this range (e.g., 999), an error message appears:
  - "Invalid Modbus address. Valid range is 1 to 247."
- The Save button remains inactive or ineffective until the error is corrected.

This validation helps prevent communication conflicts and ensures that only acceptable values are saved to the system.

NOTE: ERE devices are set to an address of **100** at the factory and **cannot be changed in field**. Please contact us if modification required.

Device	Value	Valid Address Range
ERE	100	100 (unless modified)

NOTE: The following devices can **only** be configured from Modbus addresses **1 to 127** and their factory configured addresses are listed in the table below.

Device	Value	Valid Address Range
BC8AII	101	1 - 127
BC8AOI	102	1 - 127

Please see section **3.6 Accessories** for more information.

5.7.7.3.2 Editing a Device's Channel

The **Channel** setting identifies the specific input or output line used by the sensor on its assigned device. This is especially important when multiple sensors are connected to the same Modbus address.

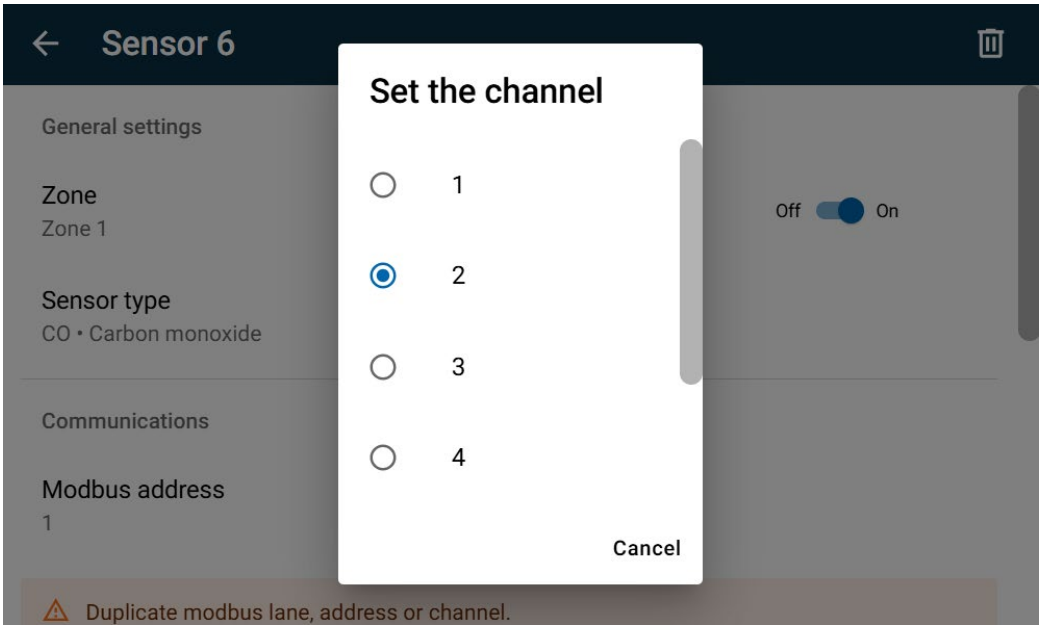


Figure 5-70: Editing a Device's Channel

5.7.7.3.3 Duplicate Modbus Configuration Warning

To maintain reliable communication, each sensor must have a unique combination of Modbus lane, address, and channel. If a duplicate configuration is detected, the system will display a warning message.

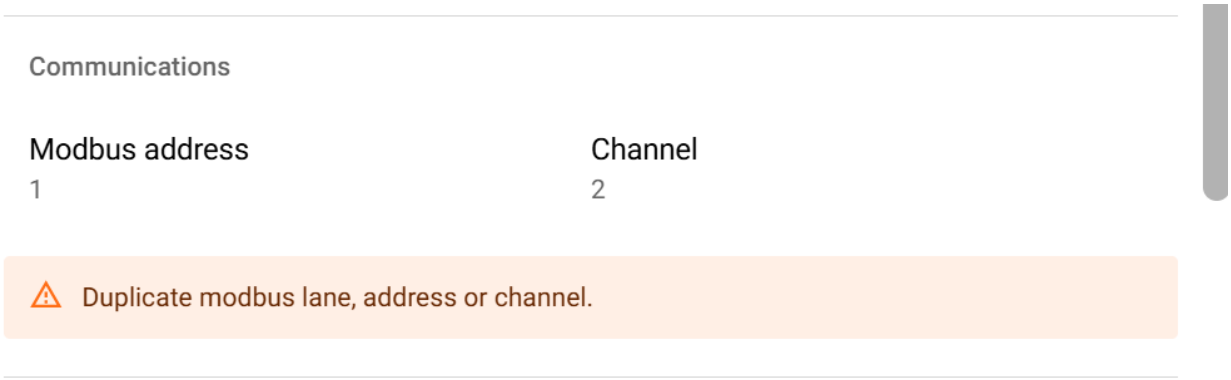


Figure 5-71: Duplicate Lane, Address, or Channel Warning

What to Do:

- Review the Modbus lane, address, and channel values.
- Adjust one or more of these fields to ensure the combination is unique.
- The warning will disappear once the conflict is resolved.

5.7.8 Deleting Devices and Zones

Users can remove devices or zones from the system through the device detail screen. This action is only available when the monitor is unlocked to prevent accidental or unauthorized deletions.

In the top-right corner of the screen, a trash can icon represents the Delete button. This icon is only visible when the monitor is unlocked.

Pressing this icon will display the deletion confirmation window. Press Delete to permanently remove the device or zone, or Cancel to exit without making changes.

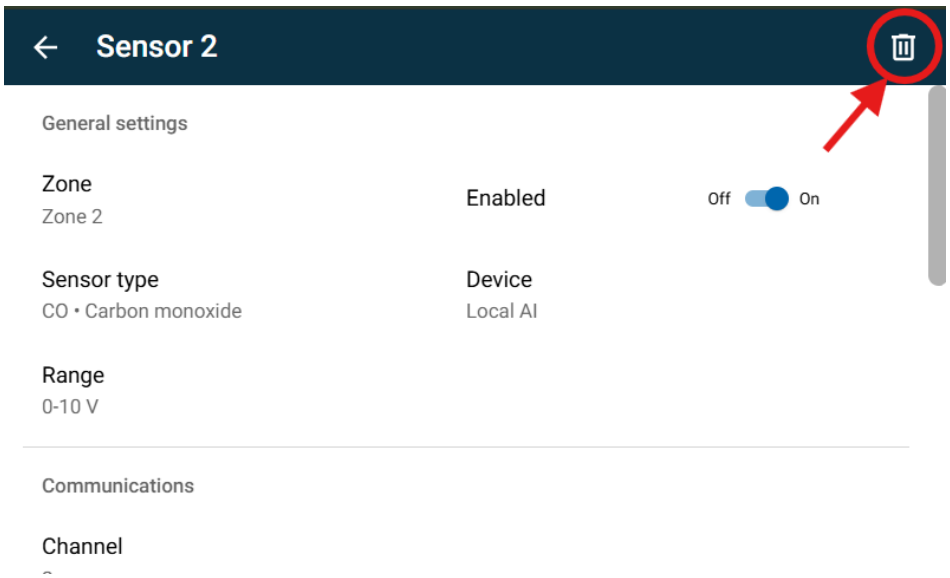


Figure 5-72: Delete Icon Button

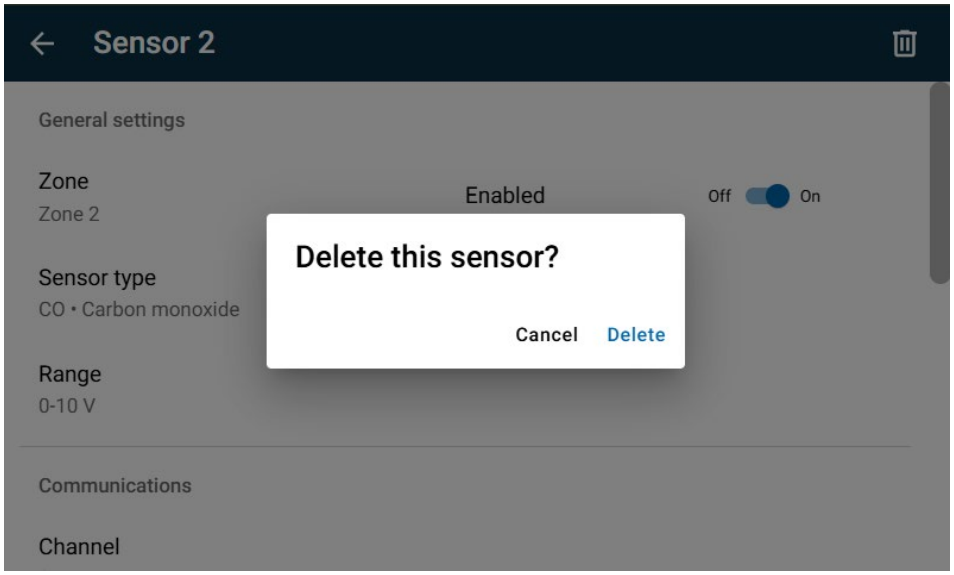


Figure 5-73: Deletion Confirmation Window

5.8 Communications

The **Communications** screen provides a filtered view of devices based on their operational status, helping users quickly identify and troubleshoot issues related to connectivity or configuration.

This screen is **not accessible from the main navigation menu**. Instead, it is launched by interacting with the **status tiles** on the dashboard:

- **Fault**
- **Disabled**

Pressing on one of these tiles will:

- Navigate to the **Communications** screen.
- Apply a pre-filter based on the selected status (e.g., only show Disabled devices).

5.8.1 Screen Overview

The Communications screen displays a table of devices with the following columns:

Column	Description
Ln (Addr:Ch)	The Modbus Lane, Address, and Channel
Device	The Device Type or Name
ID	The System-Assigned Identifier
Zones	Associated Zone(s) for the Device
Status	Current Operational State

At the top of the table, users can apply additional filters by: **Lane**, **Zone**, and **Status**. These filters allow for more granular inspection of device communication health.

5.8.2 Use Cases

- Quickly identify all devices that are **disabled** or in **fault** state.
- Filter by zone to isolate communication issues in specific areas.
- Review device types and addresses for troubleshooting or reconfiguration.

5.8.3 Device Navigation

Selecting a row in the table will redirect the user to the **device's detail view**, where full configuration and status information can be reviewed or edited. This enables a seamless workflow from identifying a problem to resolving it.

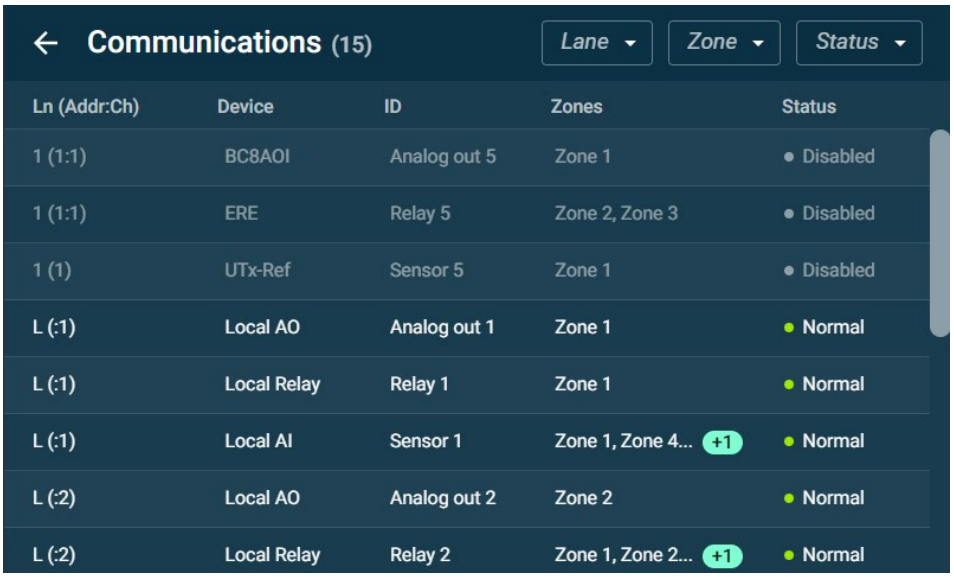


Figure 5-74: Communications Screen

5.9 Sensors

5.9.1 Sensors Overview

The Sensors section of the AMC-1DCx-L interface allows users to view, configure, and manage all connected sensors. This includes real-time monitoring of sensor values, alarm thresholds, and operational status.

The Sensors screen displays a structured table listing all connected sensors. Each row represents an individual sensor, with key operational details organized into the following columns:

ID	Unique identifier assigned to each sensor.
Ln (Addr:Ch)	Displays the Communication Lane, Modbus Address, and Channel Number for Each Sensor. For Local Sensors, this field displays in the format **L(:#)**, where **#** represents the local channel number.
Zones	Assigned zone(s) for the sensor, used for grouping and alarm logic.
Sensor	Type of measurement for being monitored, such as gas, humidity, temperature, or pressure (e.g., CO for Carbon Monoxide).
Value	Real-time concentration reading. (Unit of measurement depends on the type of sensor and its configuration.)
Status	Operational state of the sensor.

NOTE: For certain units (ppm, ppb, %LEL, %LFL, %vol, %RH), if the sensor reading is negative and if the monitor is locked, the monitor will display a value of 0.00 followed by the unit.

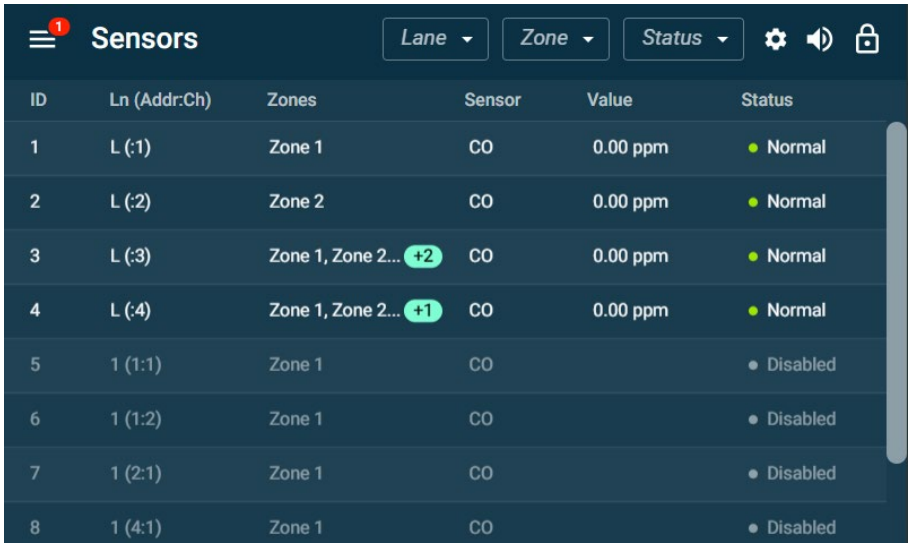


Figure 5-75: Sensors Table

5.9.2 Viewing Sensor Details

To view a sensor's details:

- Tap on any sensor row in the **Sensors** table.
- This opens the **Sensor Details Screen**, which displays key information organized into sections.

NOTE: When the monitor is **locked**, users can only view sensor information and **cannot make any changes**. This ensures that critical configuration settings remain protected from unauthorized edits.

5.9.2.1 General Settings

The **General Settings** section provides an overview of the sensor's identity and basic configuration:

- **Zone**: Displays the zone to which the sensor is assigned (e.g., *Zone 1*).
- **Enabled**: Shows whether the sensor is currently active.
- **Sensor Type**: Indicates the gas or parameter being monitored (e.g., *CO • Carbon monoxide*).
- **Device**: Identifies the connected hardware module (e.g., *UTxM*).

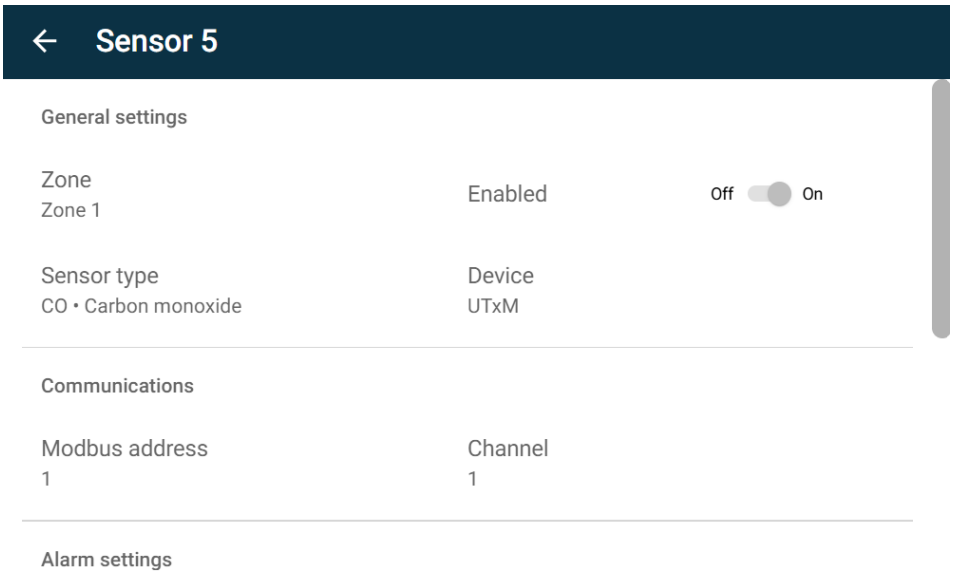


Figure 5-76: Sensor General Settings

5.9.2.2 Communications

This section displays the sensor's communication configuration. The Modbus fields are not relevant in all cases and are only visible for devices which support Modbus communications. These fields are essential for identifying how the sensor connects to the system:

- **Modbus Address**: Shows the unique address assigned to the sensor on the MODBUS network. This address must be distinct within the selected lane.
- **Channel**: Displays the channel number used by the sensor. This identifies the specific input or output line on the device.

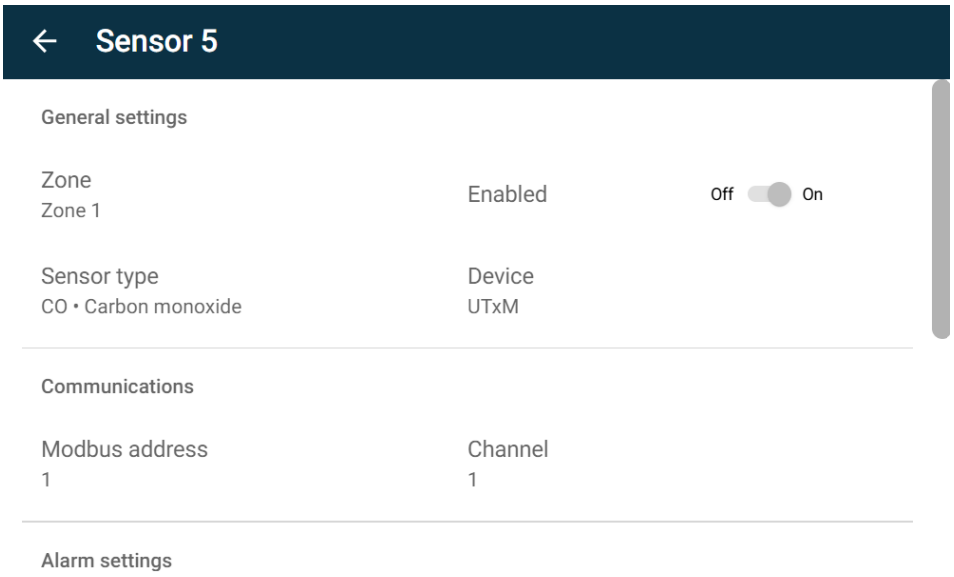


Figure 5-77: Sensor Communication Settings

5.9.2.3 Alarm Settings

This section displays the configured alarm thresholds for the selected sensor. Each alarm level includes a set point and an optional delay, as described in the following table:

Field	Description
Alarm Points	Indicates the number of alarm levels configured for the sensor (e.g., 2)
Alarm Point (1 – 3)	
Set Point	The gas concentration or value that triggers Alarm 1 (e.g., 25ppm).
Delay	The time delay before the alarm is activated after the threshold is exceeded (e.g., 0 sec).

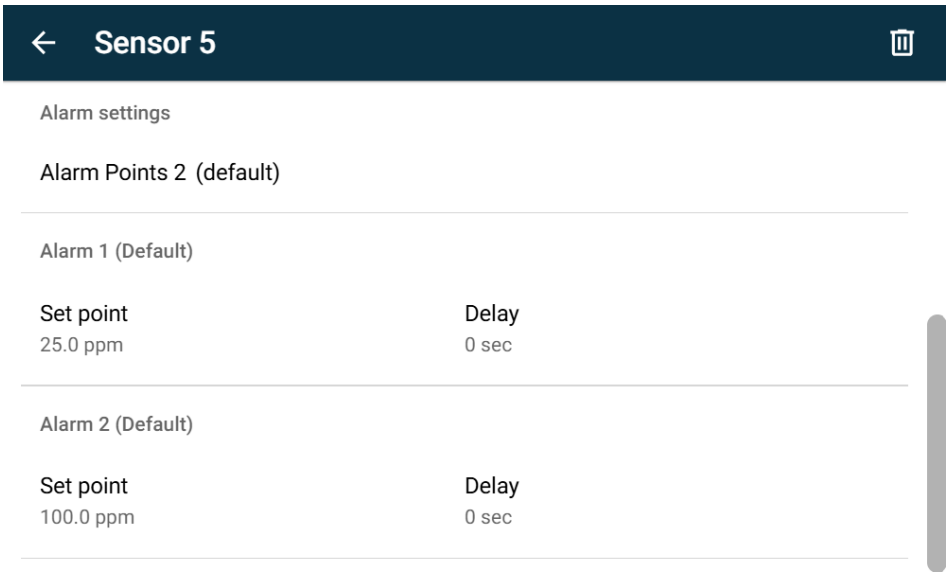


Figure 5-78: Sensor Alarm Settings

5.9.2.4 Additional Sensor Information and Calibration Details

To access detailed sensor information and calibration data, press the **Info icon** (ⓘ) in the top-right corner.

Figure 5-79: Additional Sensor Information Icon

The **Sensor Info** screen displays:

- Voltage
- Temperature
- Hardware version
- Software version
- Serial number

Calibration details include:

- Next calibration date
- Calibration interval
- Days until end of life

Calibration information helps ensure compliance with maintenance schedules.

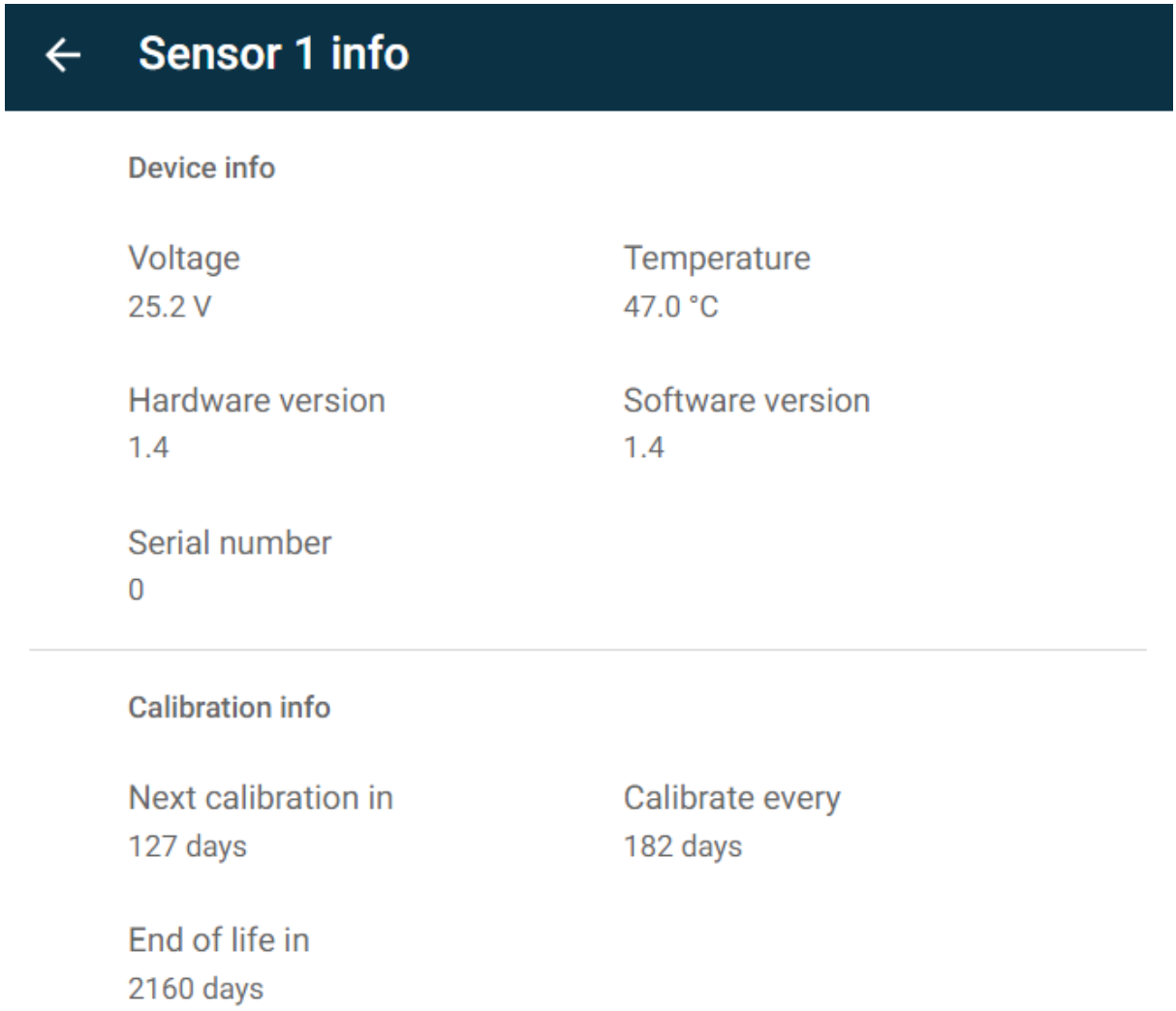


Figure 5-80: Additional Sensor Information

5.9.3 Adding a New Sensor

To add a new sensor to the AMC-1DCx-L system, from the Sensors screen, pressing the Add (+) button will launch a guided setup wizard.

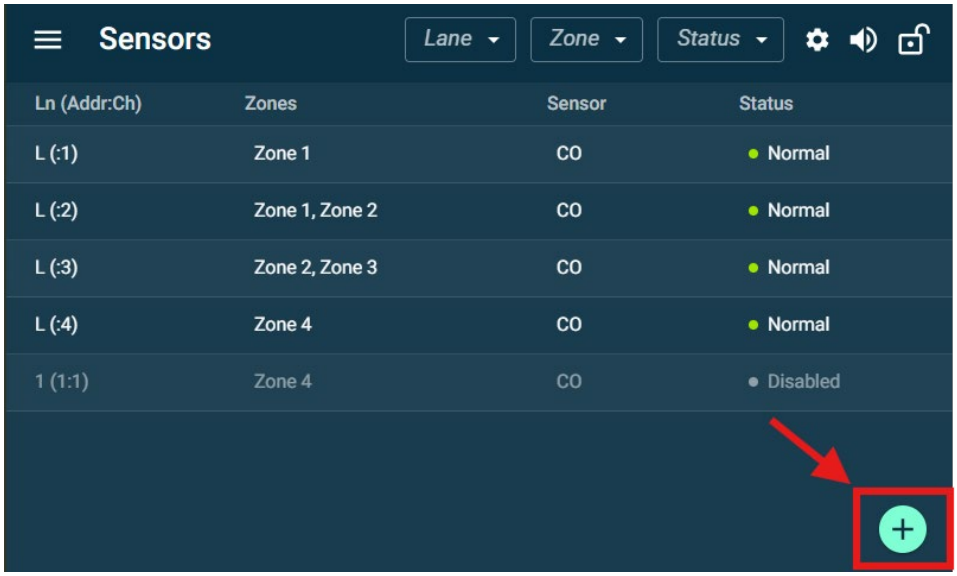


Figure 5-81: Add Sensor Button

NOTE: The Add Sensor button (+) is only available when the monitor is unlocked. If the monitor is locked, the button will not appear, and new sensors cannot be added.

5.9.3.1 Selecting a Device Type

Choose the type of device you are adding from the list of supported modules. Each option is presented with a radio button for selection.

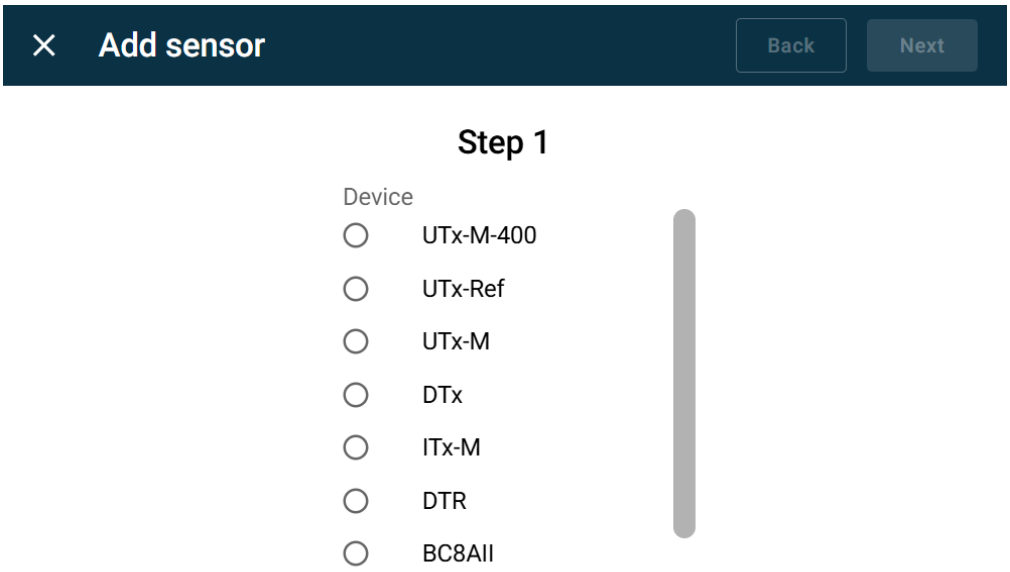


Figure 5-82: Selecting a Sensor's Device Type

Available Device Types:

Name	Description
AMC-UTx-M-400	Modbus RTU Sensor/Transmitter
AMC-UTx-REF	Refrigerant Transmitter Module
AMC-UTx-M	Modbus RTU Sensor/Transmitter (Expanded Register Set)
AMC-DTx	Digital Transmitter
AMC-ITx-M	Industrial Transmitter (Expanded Register Set)
AMC-DTR	Non-Intrusive Digital Transmitter
BC8AII (AMC-1DMB-AI)	8-Channel Analog Input Module
Local Analog Input	Onboard Analog Input Module

NOTE: BC8AII, also referred to as **AMC-1DMB-AI**, is sold separately. **BC8AII** devices can **only** be configured from Modbus addresses **1 to 127** and their address is configured to a default value of **101** when leaving the factory. Please see section **3.6 Accessories** for more information.

5.9.3.2 Selecting a Sensor Type

Specify the type of sensor being added. This determines what the sensor will monitor, its unit of measurement, and how it will be labeled in the system.

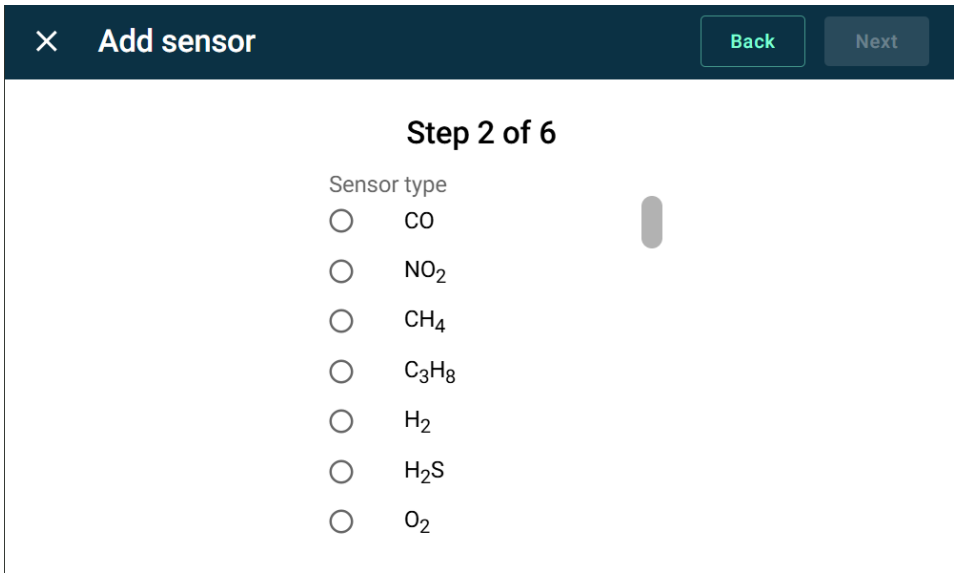


Figure 5-83: Selecting a Sensor Type

NOTE: For the full list of sensor types, please refer to **Settings → Sensor Types**, which is described in section 5.13.6 Sensor Types.

5.9.3.3 Selecting a Modbus Lane

Choose the Modbus communication lane to which the new sensor will be connected.

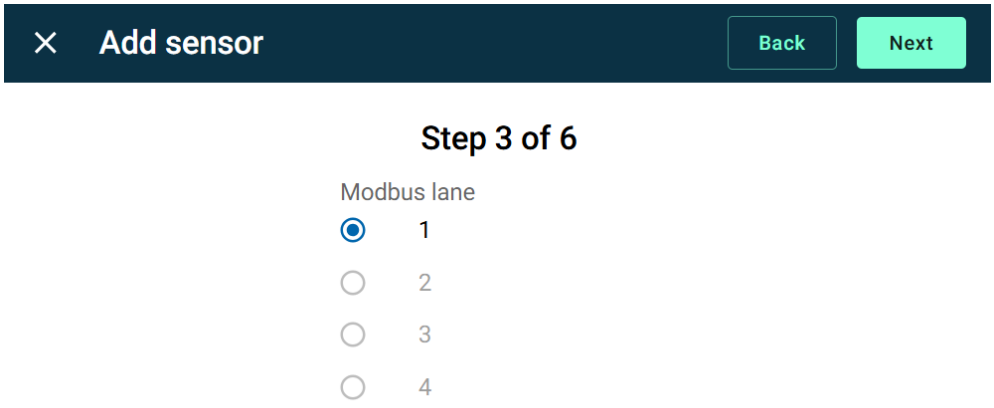


Figure 5-84: Selecting a Sensor's Modbus Lane

NOTE: The 1DCx-L is designed to operate on 1 Modbus Lane. Lanes 2-4 are only available for the 1DCx.

5.9.3.4 Entering Modbus Address

Assign a Modbus address to the new sensor. The address must be a valid Modbus address (typically **between 1 and 247**, depending on system configuration) and must match the address of the external device being configured.

NOTE: BC8AII devices can **only** be configured from Modbus addresses **1 to 127** and their address is configured to a default value of **101** when leaving the factory.

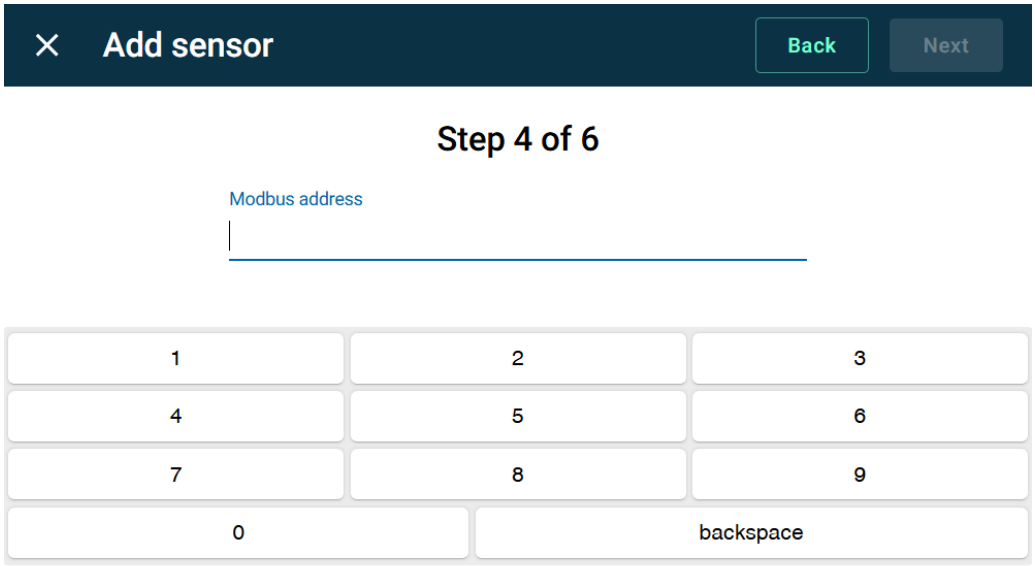


Figure 5-85: Entering a Sensor's Modbus Address

5.9.3.5 Selecting a Channel

Assign a channel number to the sensor. Channels are used to differentiate multiple sensors connected to the same device or address.

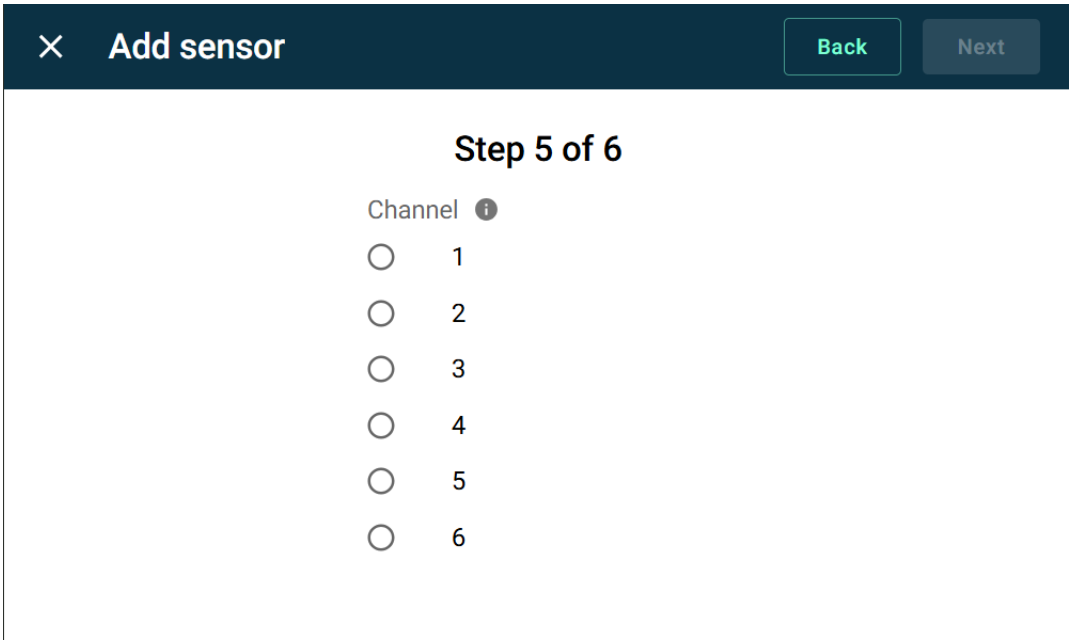


Figure 5-86: Selecting a Sensor's Channel

Device Type	Number of Channels
AMC-UTx-M	6
AMC-ITx-M	6
AMC-DTR	2
BC8AII	8
Local Analog Input	8

5.9.3.6 Assigning Zones

Assign the new sensor to one or more zones. Zones are used to group sensors by location or function.

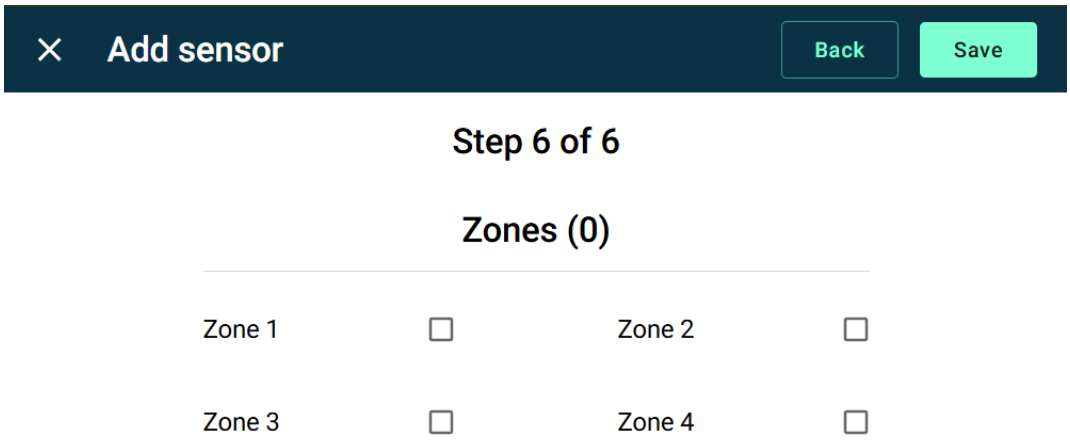


Figure 5-87: Assigning a Sensor to a Zone

5.9.3.7 Additional Step: Selecting Analog Input Type

When adding a local analog input sensor, an additional step appears to define the analog signal type.

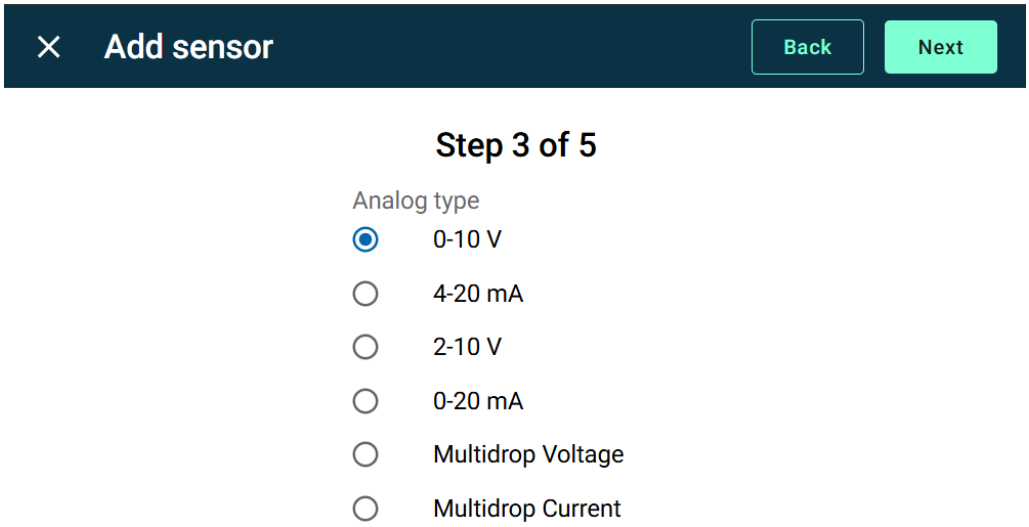


Figure 5-88: Selecting a Local AI Sensor's Analog Type

Available Analog Types:

- 0–10 V
- 2–10 V
- 0–20 mA
- 4–20 mA
- Multidrop Voltage
- Multidrop Current

Note: The following table displays the default ranges for multidrop modes.

Mode	Fault	Normal	Alarm 1	Alarm 2
Multidrop Voltage (V)	0-0.5	0.5-1.5	1.5-2.5	> 2.5
Multidrop Current (mA)	0-2	2-6	6-10	> 10

5.9.3.8 Configuring Environmental Sensors

UTx-M and **ITx-M** Transmitters support up to three environmental sensors per Sensor Module.

To add an environmental sensor:

1. Ensure the primary gas sensor/s are set up prior to adding environmental sensors
   - If not, use the (+) Sensor Wizard
2. Re-run the same (+) Sensor Wizard
3. Select the same Transmitter type from step 1
4. Choose an environmental sensor (Ambient Temperature, Pressure, or Relative Humidity)
5. Assign the Modbus Lane and Address to match your Transmitter from Step 1
6. Select correct channel number to match Sensor Module from Step 1
   Note: channels assigned to analog inputs cannot be used for environmental sensors.
7. Optionally assign it to a zone.

5.9.4 Editing Sensor Configuration

To modify a sensor's configuration, the monitor must be **unlocked** before opening the Sensor Details screen. This ensures that only authorized users can make changes to critical system settings.

5.9.4.1 Editing a Sensor's Zones

Each sensor can be assigned to one or more zones, which are used to group devices for alarm logic, reporting, and control actions.

To assign zones:

1. Open the zones multi-selection screen by pressing on the zone field under General Settings.
2. Select one or more zones by checking the corresponding boxes.
3. Press **Save**.

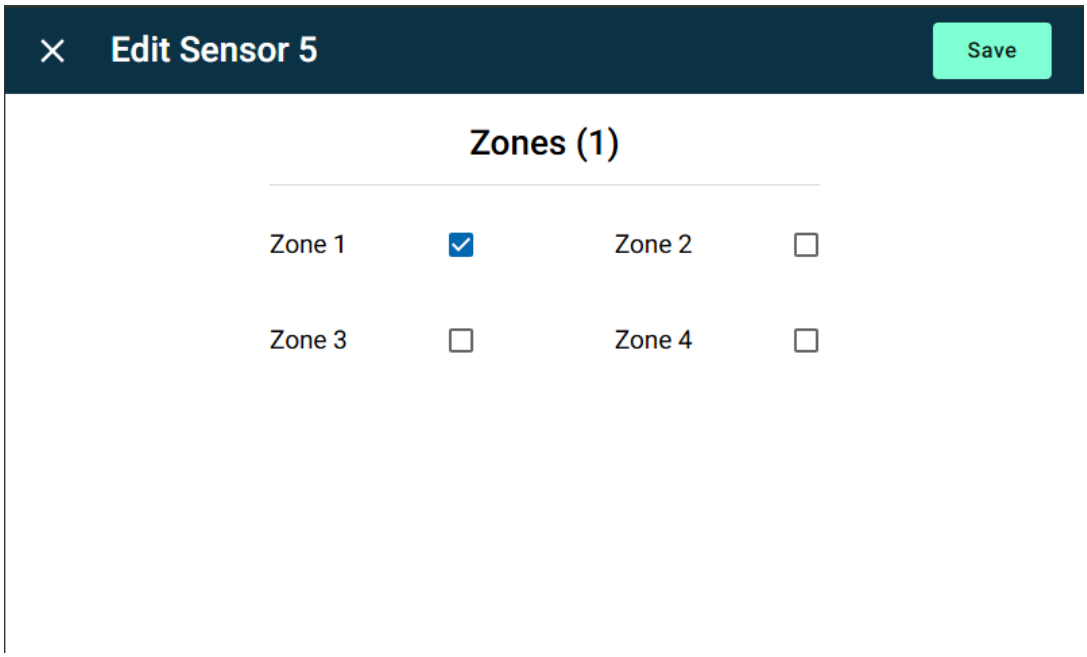


Figure 5-89: Editing a Sensor's Zones

5.9.4.2 Enabling and Disabling a Sensor

The Enabled toggle in the General Settings section allows users to activate or deactivate a sensor.

- Enabled (On): The sensor is active and will participate in monitoring, alarm logic, and data logging.
- Disabled (Off): The sensor is inactive. It will not trigger alarms, log data, or appear in active monitoring views.

5.9.4.3 Editing the Sensor Type

The Sensor Type defines what the sensor is monitoring (e.g., gas type or environmental parameter). This setting determines how the sensor is labeled and how its readings are interpreted.

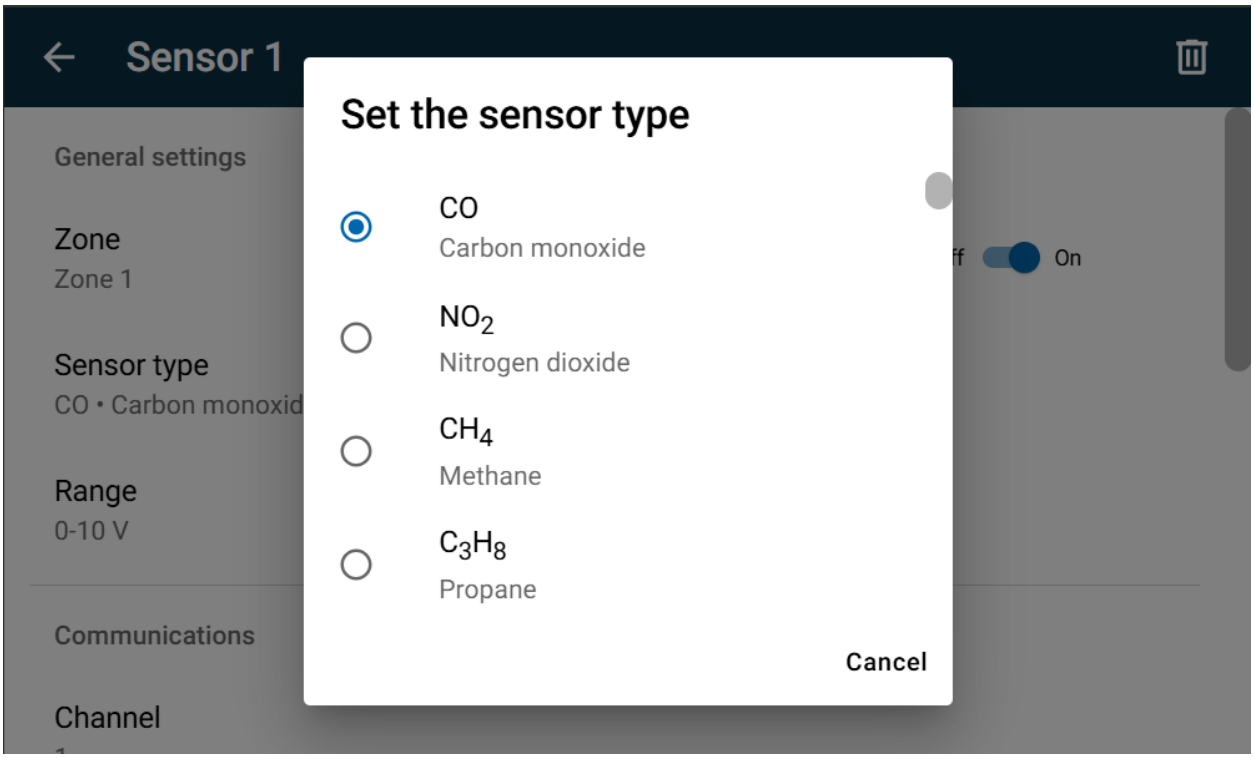


Figure 5-90: Editing a Sensor's Type

5.9.4.4 Editing a Sensor's Device

The Device field identifies the hardware module to which the sensor is connected. This setting is important for ensuring proper communication and compatibility with the selected sensor type.

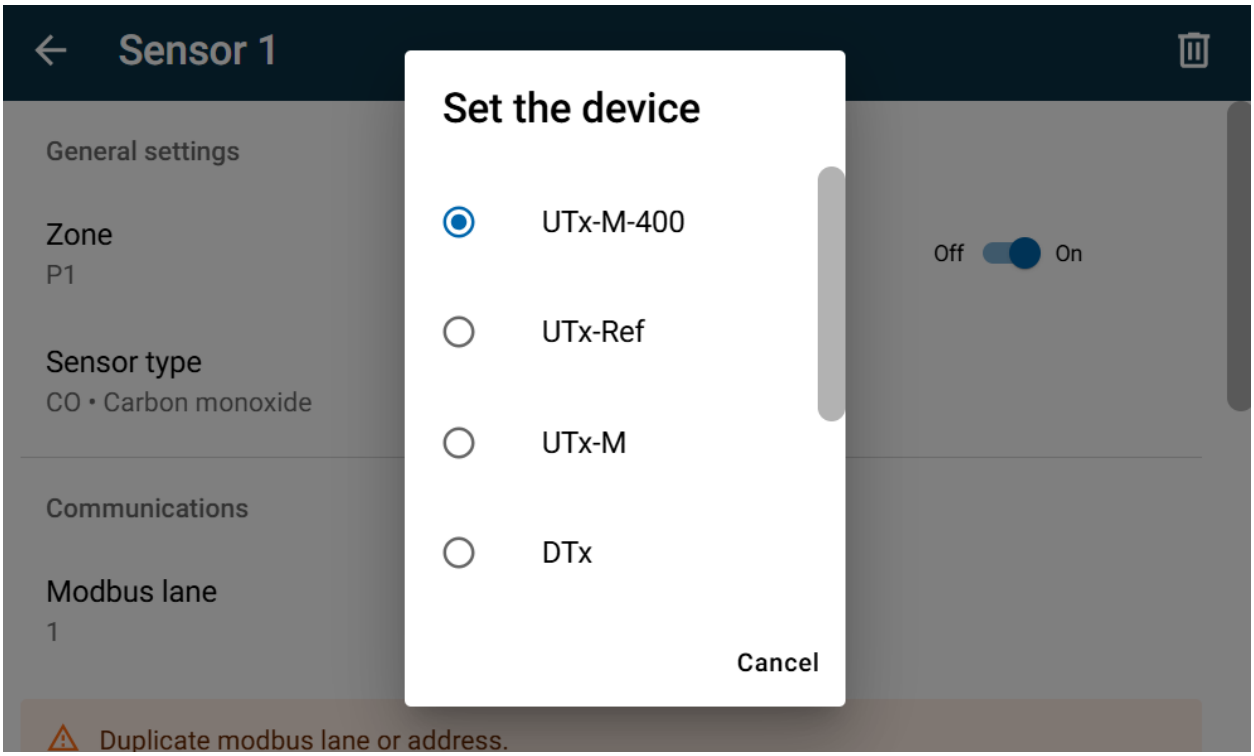


Figure 5-91: Editing a Sensor's Device Type

A pop-up window will appear with available device options:

Name	Description
AMC-UTx-M-400	Modbus RTU Sensor/Transmitter
AMC-UTx-REF	Refrigerant Transmitter Module
AMC-UTx-M	Modbus RTU Sensor/Transmitter (Expanded Register Set)
AMC-DTx	Digital Transmitter
AMC-ITx-M	Industrial Transmitter (Expanded Register Set)
AMC-DTR	Non-Intrusive Digital Transmitter
BC8AII (AMC-1DMB-AI)	8-Channel Analog Input Module
Local Analog Input	Onboard Analog Input Module

NOTE: If the sensor was initially configured to be a Local Analog Input type sensor, its device type cannot be changed.

5.9.4.5 Editing a Sensor's Range

When the selected device is a Local Analog Input, an additional Range field becomes available in the General Settings section. This field defines the expected input signal range for the sensor.

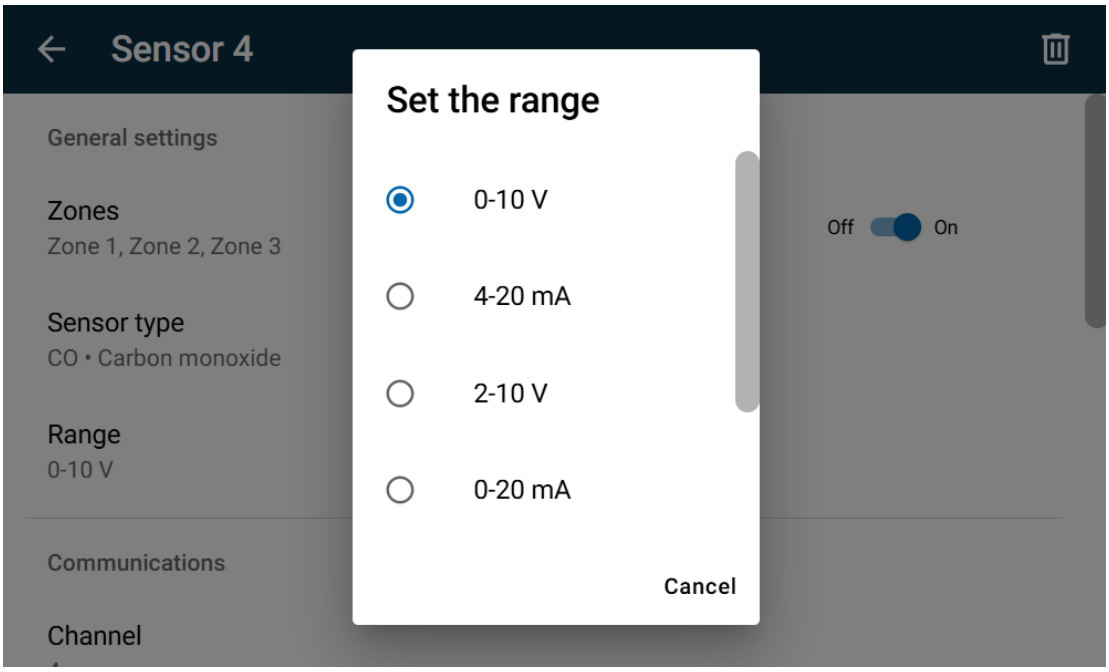


Figure 5-92: Editing a Local Analog Input Sensor's Range

A pop-up window will appear with available range options:

- 0–10 V
- 2–10 V
- 0–20 mA
- 4–20 mA
- Multidrop Voltage
- Multidrop Current

Note: The following table displays the default ranges for multidrop modes.

Mode	Fault	Normal	Alarm 1	Alarm 2
Multidrop Voltage (V)	0-0.5	0.5-1.5	1.5-2.5	> 2.5
Multidrop Current (mA)	0-2	2-6	6-10	> 10

5.9.4.6 Editing a Sensor's Alarm Points

Each sensor in the AMC-1DCx-L system can be configured with custom alarm thresholds to suit specific safety or operational requirements.

Accessing Alarm Configuration

- From the Sensors table, tap on a sensor row to open the Sensor Detail View.
- Tap the Edit icon to enter configuration mode.
- Navigate to the Alarm Settings section.

Modifying Alarm Set Points

- Each alarm level (e.g., Alarm 1, Alarm 2, Alarm 3) can be individually overridden.
- Tap the Alarm override toggle to enable editing for that alarm level.
- The Set point field becomes active. Tap it to bring up the on-screen keyboard.
- Enter the desired threshold value (e.g., 25.0 ppm for CO).
- A note below the field displays the default set point for reference.

Saving Changes

- After entering the new value, press **Save** in the top-right corner to apply the changes.
- The system will validate the input and update the sensor configuration accordingly.

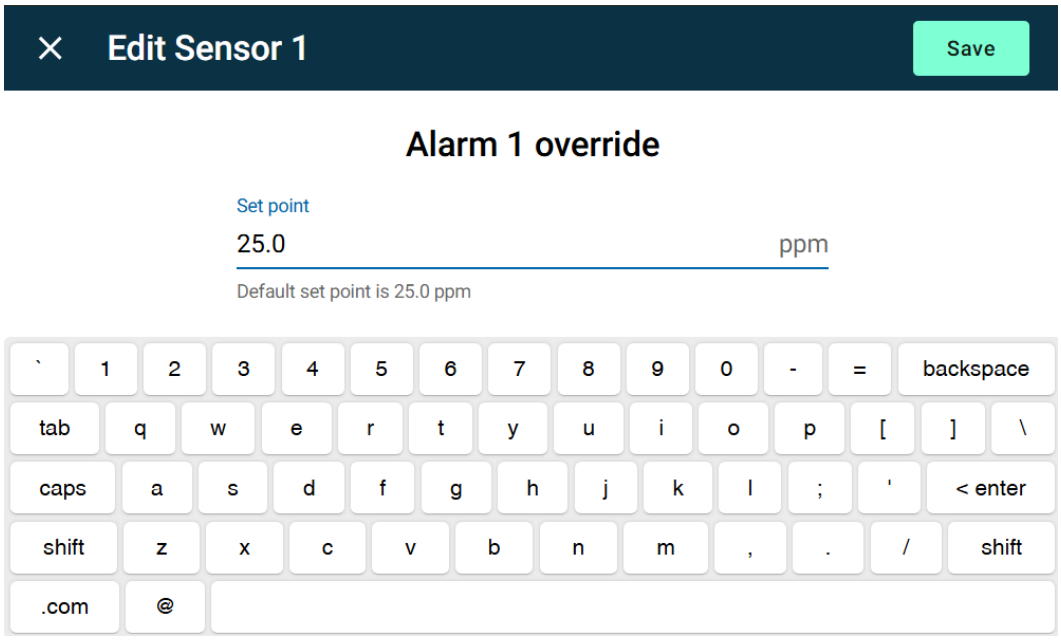


Figure 5-93: Editing a Sensor's Alarm Set Points

5.9.4.7 Editing a Sensor's Alarm Delay

The Alarm Delay setting allows users to define a time buffer before an alarm condition is triggered. This helps prevent false alarms caused by brief or transient sensor readings.

Accessing the Alarm Delay Setting

- From the Sensor Detail View, tap the Edit icon to enter configuration mode.
- Scroll to the Alarm Settings section.
- Locate the Delay field.

Setting the Delay

- Tap the Delay field to activate the on-screen numeric keypad.
- Enter the desired delay time in seconds.
- The default value is 0 seconds, meaning alarms are triggered immediately when the threshold is crossed.
- After entering the new delay, press **Save** in the top-right corner to apply the change.

Tip: Use a short delay (e.g., 5–10 seconds) to filter out brief spikes in sensor readings without significantly delaying alarm response.

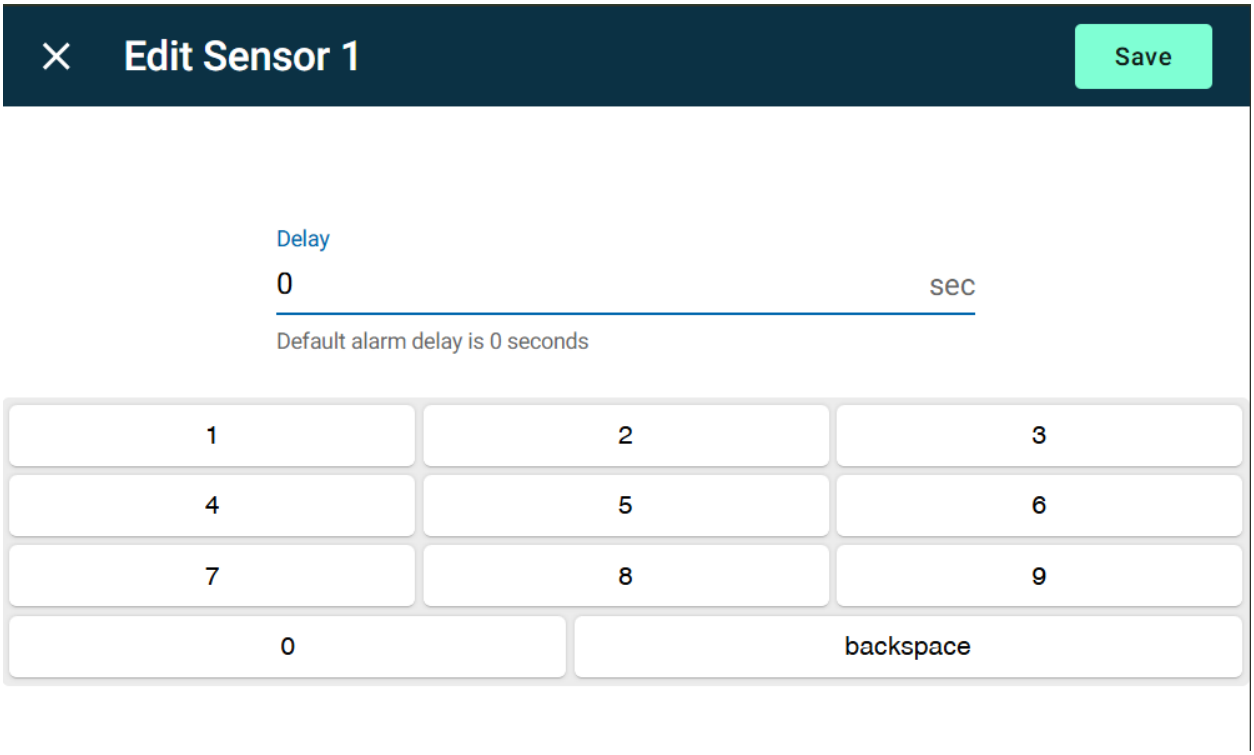


Figure 5-94: Editing a Sensor's Alarm Delay

Alarm Delay Validation

The AMC-1DCx-L interface enforces validation rules for alarm delay values. The valid range for alarm delay is 1 to 3600 seconds (i.e., 1 second to 1 hour).

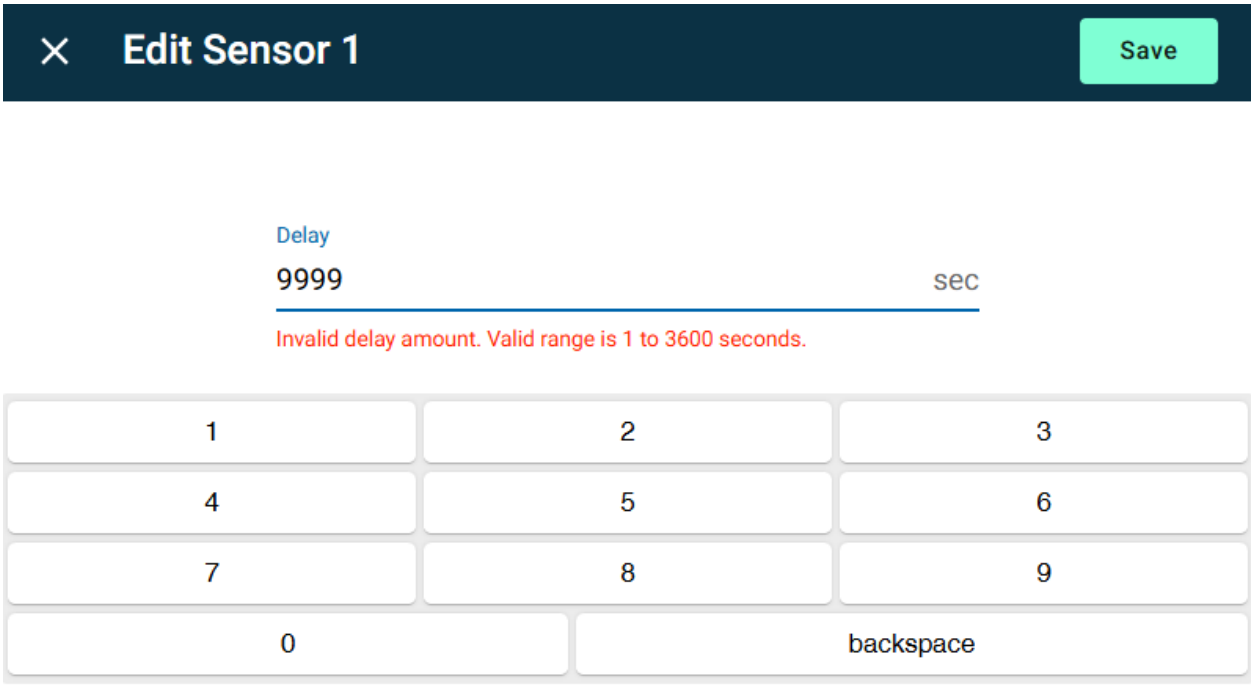


Figure 5-95: Sensor Alarm Delay Validation

5.10 Relays

5.10.1 Relays Overview

The AMC-1DCx-L monitor includes a dedicated interface for managing relay modules. Relays are used to trigger external devices such as alarms, fans, or shutdown systems based on sensor activity or system conditions.

The Relays screen displays a table listing all configured relay modules. Each row represents a single relay and includes the following columns:

ID	Unique identifier assigned to each relay.
Ln (Addr:Ch)	Communication lane and address/channel of the relay.
Zones	Assigned zone(s) for the relay, used for grouping and alarm logic.
Value	Current relay state (e.g., De-energized, Energized, Latched, Disabled).
Status	Operational status (e.g., Normal, Fault, Disabled)

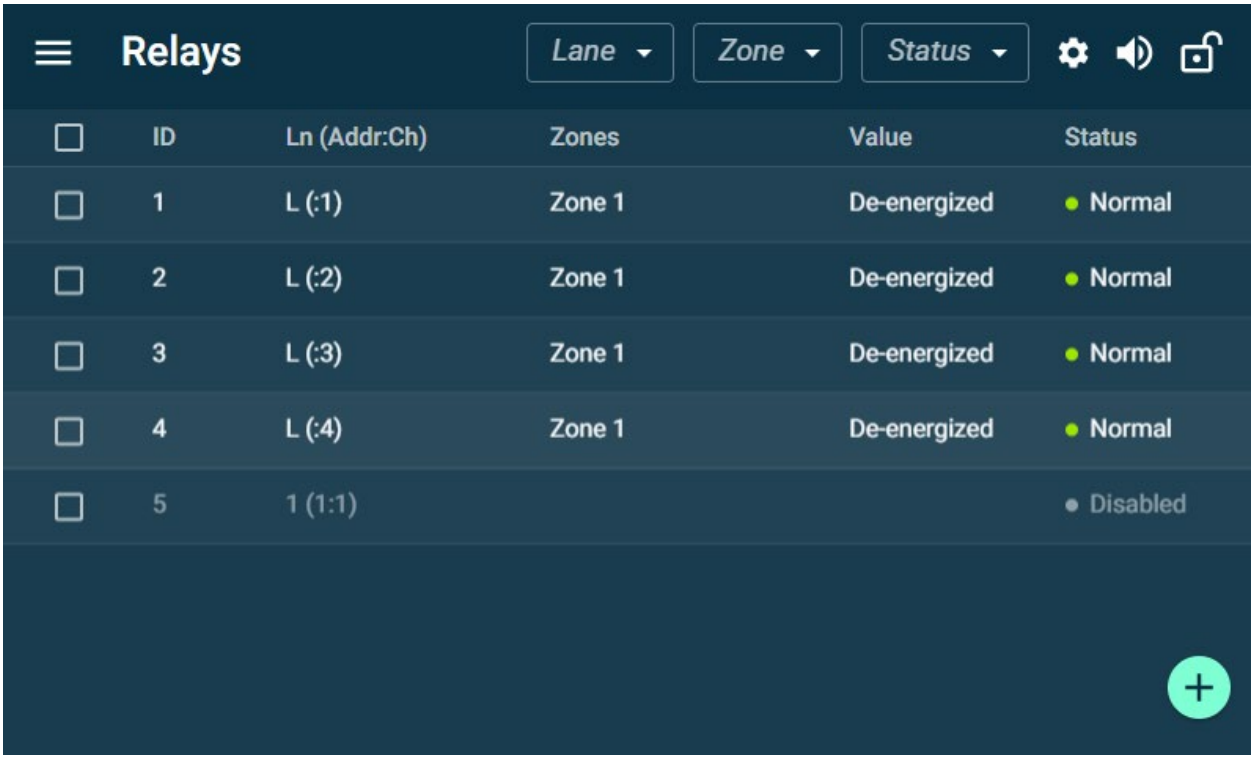


Figure 5-96: Relays Table

5.10.2 Viewing Relay Details

To view a relay's details:

- Select any relay row in the **Relays** table.
- This opens the **Relays Details Screen**, which displays key information organized into sections.

Note: When the monitor is **locked**, users can only view relay information and **cannot make any changes**. This ensures that critical configuration settings remain protected from unauthorized edits.

5.10.2.1 General Settings

The **General Settings** section provides an overview of the relay's identity and basic configuration:

- Zones/Alarm Mappings: Indicates how many zones or alarm conditions are currently linked to this relay.
- Enabled: A toggle switch that activates or deactivates the relay. When disabled, the relay will not respond to any triggers.
- Device: Identifies the connected hardware module (e.g., *UTxM*).
- Normal State: Defines the default state of the relay when inactive. Options typically include:
    - De-energized
    - Energized (default)
- Type: Specifies the relay behavior:
    - Latching: The relay remains in its triggered state until manually reset.
    - Non-latching: The relay resets automatically when the triggering condition clears.
- Minimum Run Time: Ensures the relay remains active for a minimum duration once triggered. This prevents rapid toggling.
- Post Run Time: Defines how long the relay remains active after the triggering condition clears.
- Set as System Fault Relay: When enabled, this relay will activate in response to any system fault, providing a dedicated fault output.

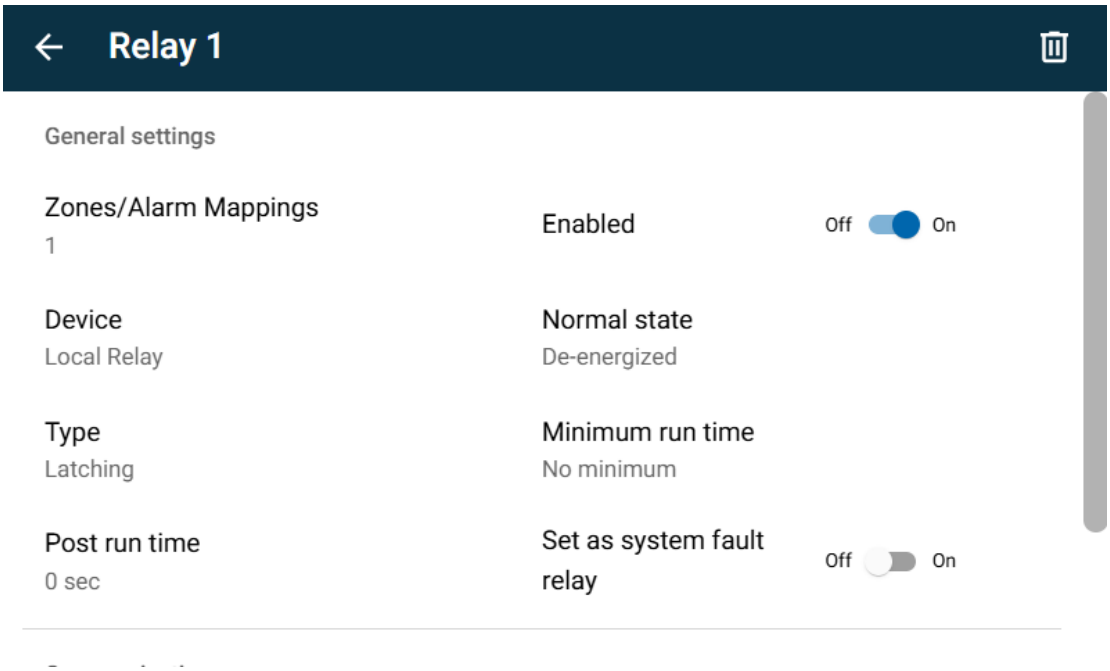


Figure 5-97: Relay General Details

5.10.2.2 Communications

This section displays the relay's communication configuration. These fields are essential for identifying how the sensor connects to the system:

- **Modbus Lane**: Indicates the communication lane used by the relay (e.g., *Lane 1*). The AMC-1DCx-L supports one Modbus lane.
- **Modbus Address**: Shows the unique address assigned to the relay on the MODBUS network. This address must be distinct within the selected lane.
- **Channel**: Displays the channel number used by the relay. This identifies the specific input or output line on the device.

5.10.3 Adding a New Relay

To add a new relay to the AMC-1DCx-L system, from the Relays screen, pressing the Add (+) button will launch a guided setup wizard.

Figure 5-98: Add Relay Button

NOTE: The Add Relay button (+) is only available when the monitor is unlocked. If the monitor is locked, the button will not appear, and new relays cannot be added.

5.10.3.1 Selecting a Device Type

When the **Add Relay** wizard is launched, the first screen prompts the user to select the type of relay device to be added.

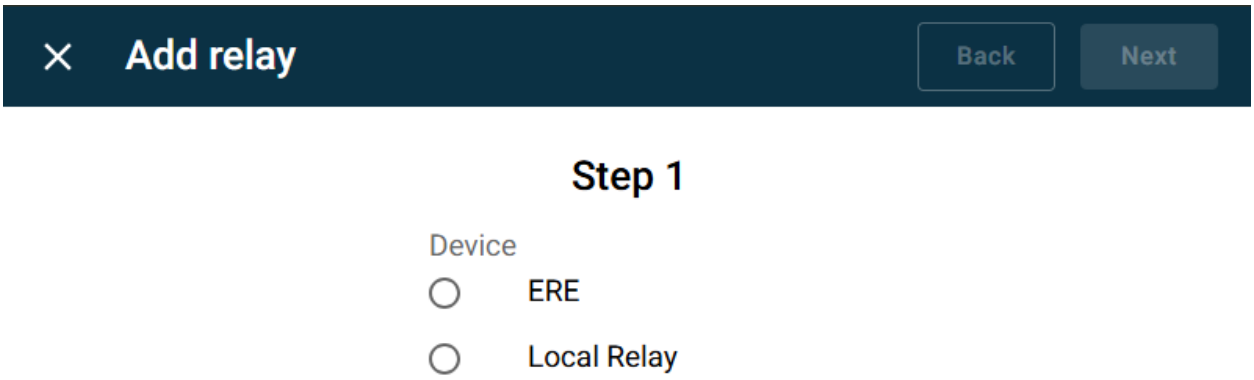


Figure 5-99: Selecting a Relay's Device Type

Available Device Types:

- **ERE (AMC-1DMB-RL):** External Relay Expansion module.
- **Local Relay:** A relay directly connected within the monitor.

NOTE: ERE, also referred to as **AMC-1DMB-RL**, is sold separately. **ERE** devices are commonly configured to a default address of **100** when leaving the factory and **cannot be changed in the field**. Please contact us if modification required. Please see section **3.6 Accessories** for more information.

5.10.3.2 Selecting a Normal State

In this step, users define the **default (inactive) state** of the relay. Choosing the correct normal state is important for ensuring the relay behaves as expected during power loss or system faults.

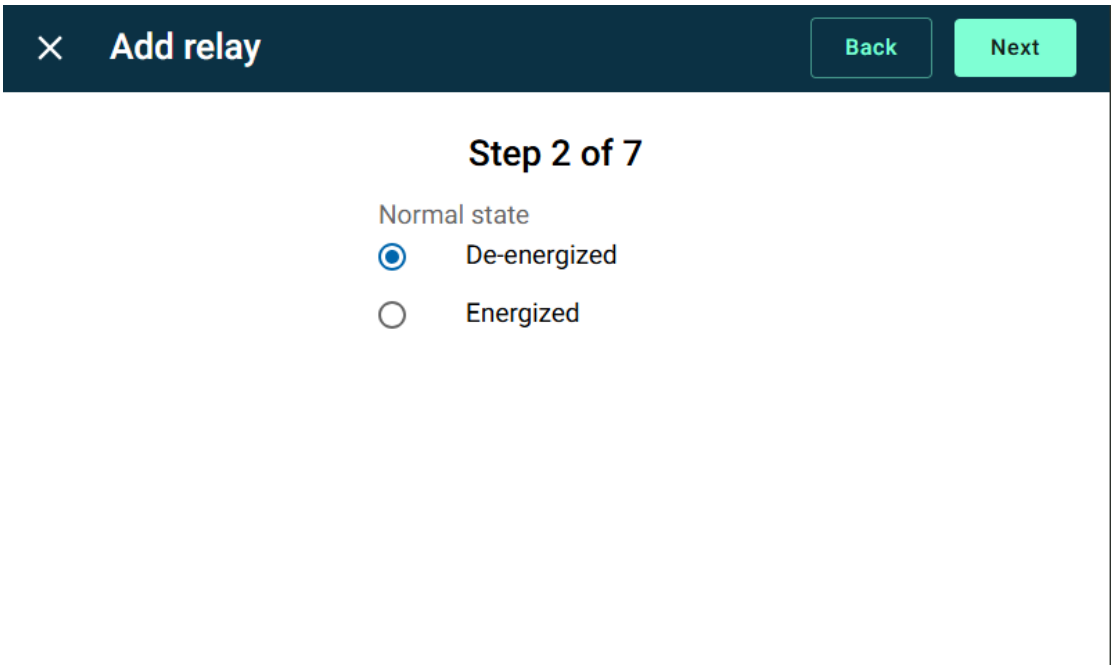


Figure 5-100: Selecting a Relay's Normal State

Options:

- **De-energized (default):** The relay coil is powered when in an 'active' state.
- **Energized:** The relay coil is powered when no 'active' state is present.
    - This is often referred to as "Failsafe" operation. Here, the relay contacts will change if the unit loses power.

5.10.3.3 Selecting the Relay Type

In this step, users define how the relay behaves once it is triggered. **Latching relays** are useful for critical alarms that require manual acknowledgment, while **non-latching relays** are ideal for temporary or self-resolving conditions.

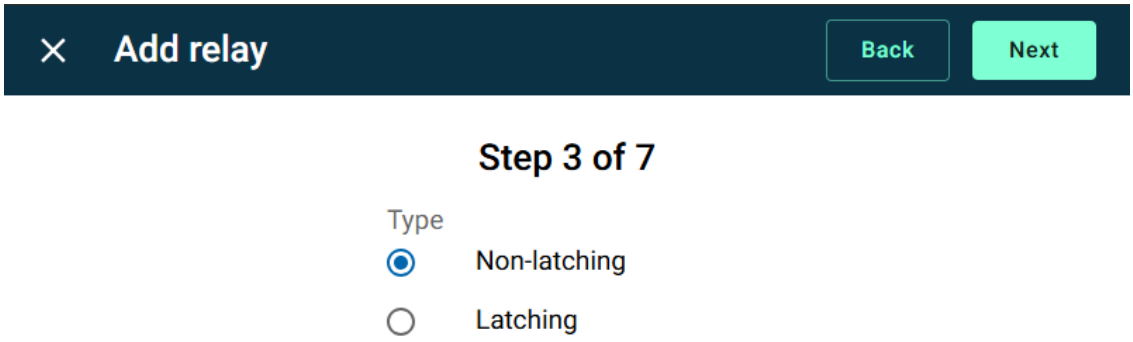


Figure 5-101: Selecting a Relay's Type

Options:

- **Non-latching (selected by default):** The relay automatically resets when the triggering condition clears.
- **Latching:** The relay remains in its active state until it is manually reset by the user.

5.10.3.4 Selecting a Modbus Lane

In this step, users assign the new relay to a specific Modbus communication lane. This determines how the relay communicates with the AMC-1DCx-L system.

NOTE: This step is only required for **ERE** (External Relay Expansions).

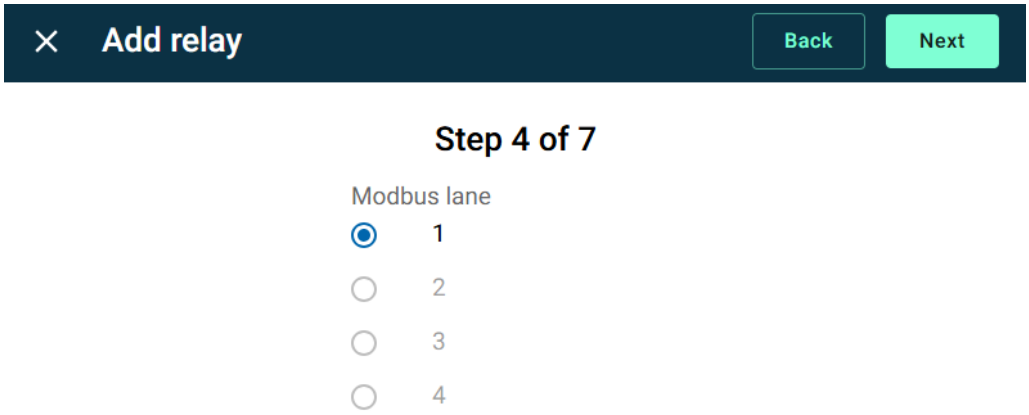


Figure 5-102: Selecting a Relay's Modbus Lane

Available Options:

- 1 (selected by default)

Unavailable Lane Options:

- 2
- 3
- 4

Lanes 2-4 are only available for the AMC-1DCx

5.10.3.5 Entering a Modbus Address

In this step, users assign a Modbus address to the new relay. This address is used by the AMC-1DCx-L system to communicate with the relay over the selected Modbus lane.

NOTE: This step is only required for **ERE** (External Relay Expansions). The **ERE** is commonly factory configured to a default address of **100** and **cannot be changed in the field**. Please contact us if modification required.

Input Field: Enter the address using the on-screen numeric keypad.

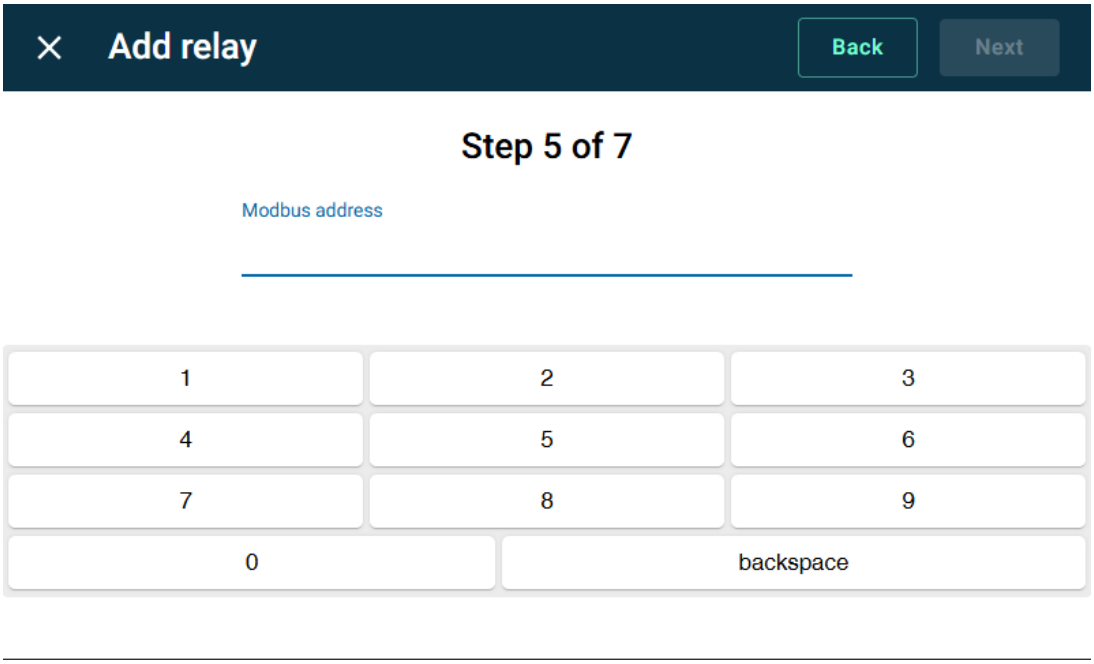


Figure 5-103: Entering a Relay's Modbus Address

5.10.3.6 Selecting a Channel

In this step, users assign a channel number to the new relay. The number of available channels depends on the selected device type:

Local Relay: Up to 4 channels are available.

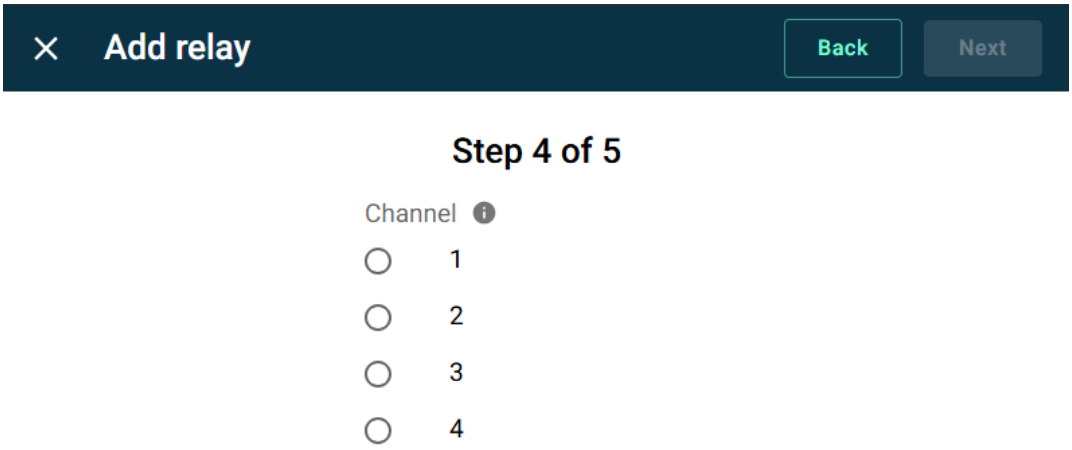


Figure 5-104: Selecting a Relay's Channel

ERE: Up to 8 channels are available for selection.

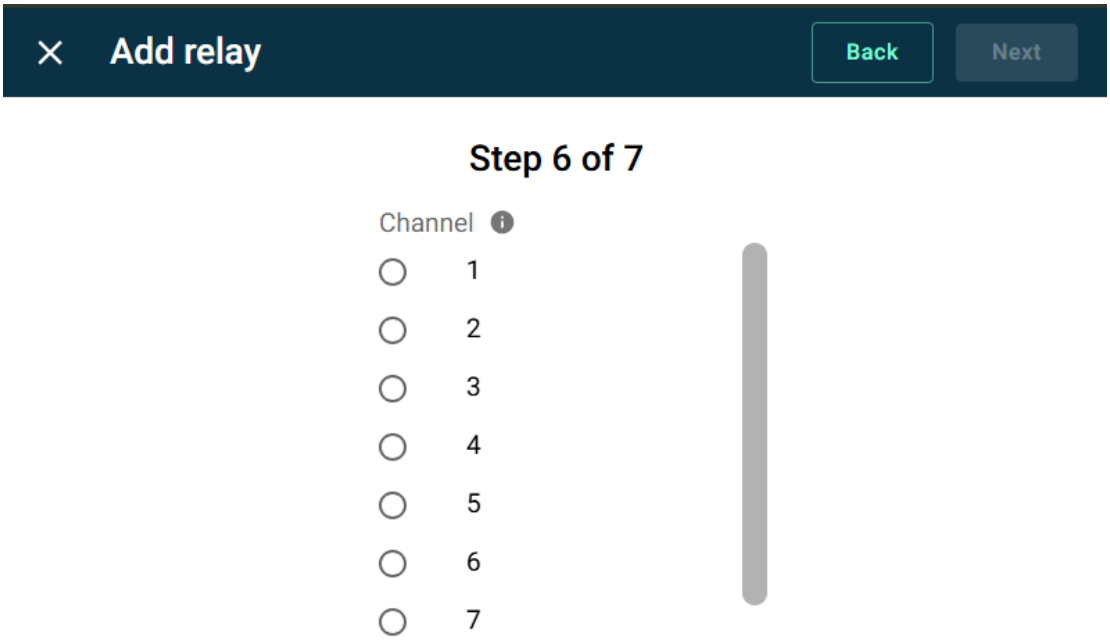


Figure 5-105: Selecting a Channel for an ERE Relay

5.10.3.7 Configure Zones and Alarm Mappings

In the final step, users define the **conditions that will trigger the relay** by mapping it to specific zones and alarm levels.

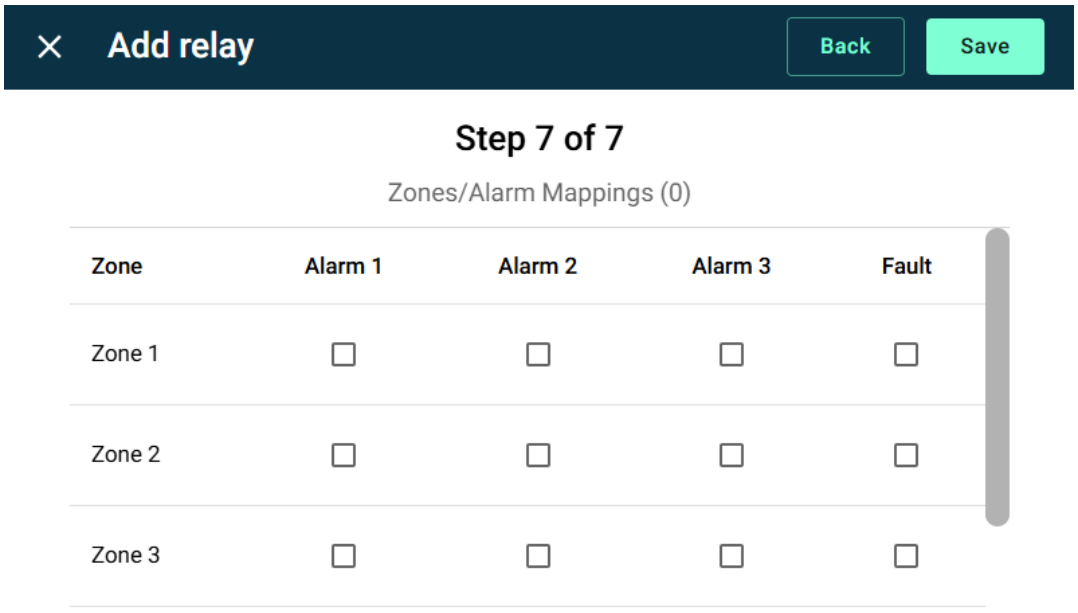


Figure 5-106: Configuring a Relay's Alarm Mappings

The screen displays a table titled **Zones/Alarm Mappings**, with the following columns:

- **Zone**: Lists all available zones.
- **Alarm 1 / Alarm 2 / Alarm 3**: Checkboxes to trigger the relay when the corresponding alarm level is active in the selected zone.
- **Fault**: Checkbox to trigger the relay when a fault condition is detected in the selected zone.

5.10.4 Editing Relay Configuration

Once a relay has been added, users can modify its behavior and mappings through the **Edit Relay** screen. This allows for fine-tuning of how and when the relay responds to system conditions.

5.10.4.1 Editing Zone/Alarm Mapping

The **Zones/Alarm Mappings** table allows users to define or update the conditions that will trigger the relay. The screen displays a table titled **Zones/Alarm Mappings**, with the following columns:

- **Zone**: Lists all available zones.
- **Alarm 1 / Alarm 2 / Alarm 3**: Checkboxes to trigger the relay when the corresponding alarm level is active in the selected zone.
- **Fault**: Checkbox to trigger the relay when a fault condition is detected in the selected zone.

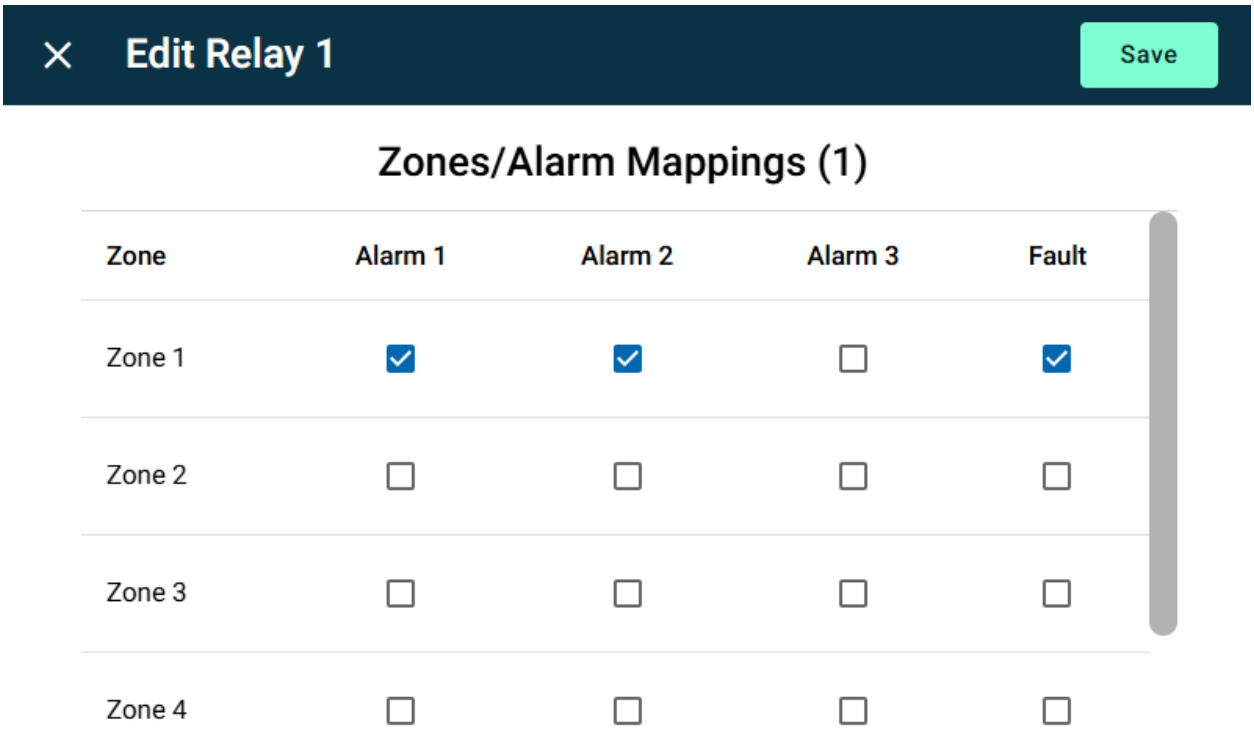


Figure 5-107: Editing a Relay's Alarm Mappings

5.10.4.2 Enabling and Disabling a Relay

Each relay includes an Enabled toggle switch that controls whether the relay is active in the system.

- Enabled (On): The relay is active and will respond to its configured alarm and fault mappings.
- Disabled (Off): The relay is disabled and will not respond to any triggers, regardless of its configuration.

Figure 5-108: Editing a Relay's Enabled Status

5.10.4.3 Editing the Relay's Normal State

The Normal State defines the default electrical condition of the relay when it is not actively triggered by an alarm or fault condition.

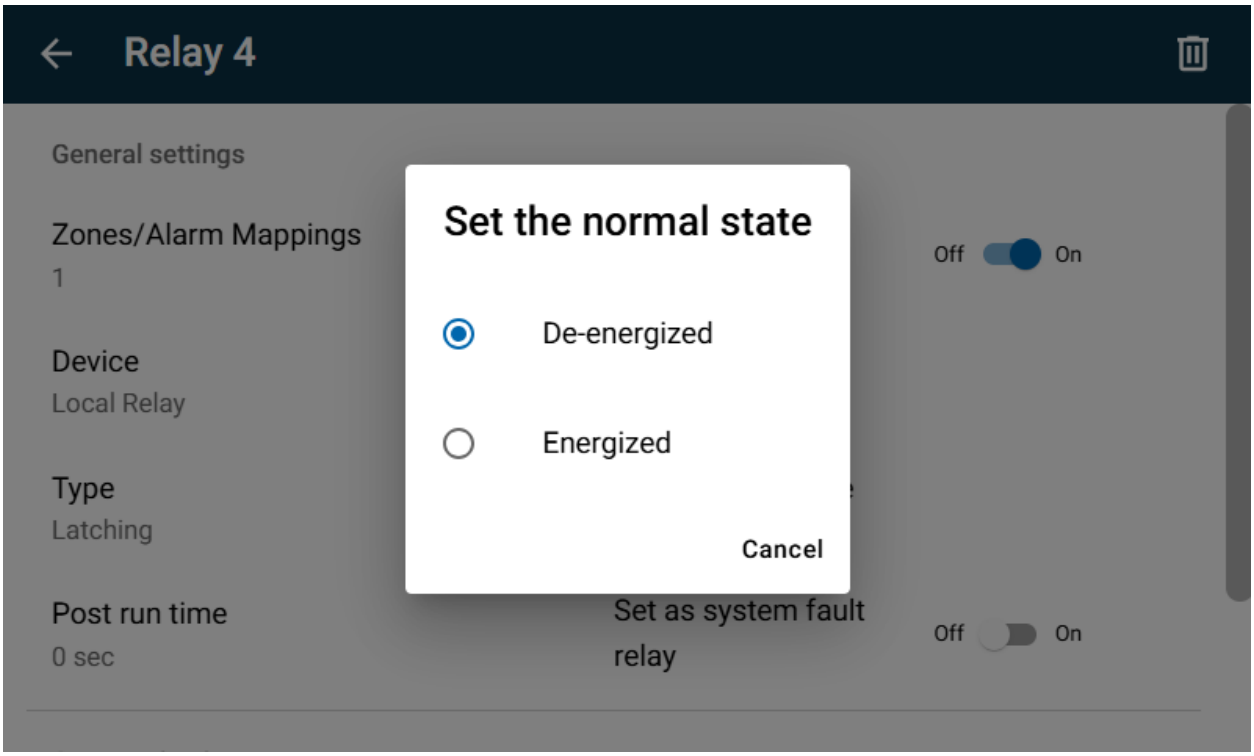


Figure 5-109: Editing a Relay's Normal State

Options:

- De-energized (default): The relay coil is powered when in an ‘active’ state.
- Energized: The relay coil is powered when no ‘active’ state is present.
    - This is often referred to as “Failsafe” operation. Here, the relay contacts will change if the unit loses power.

5.10.4.4 Editing the Relay Type

The Relay Type determines how the relay behaves once it is triggered by an alarm or fault condition.

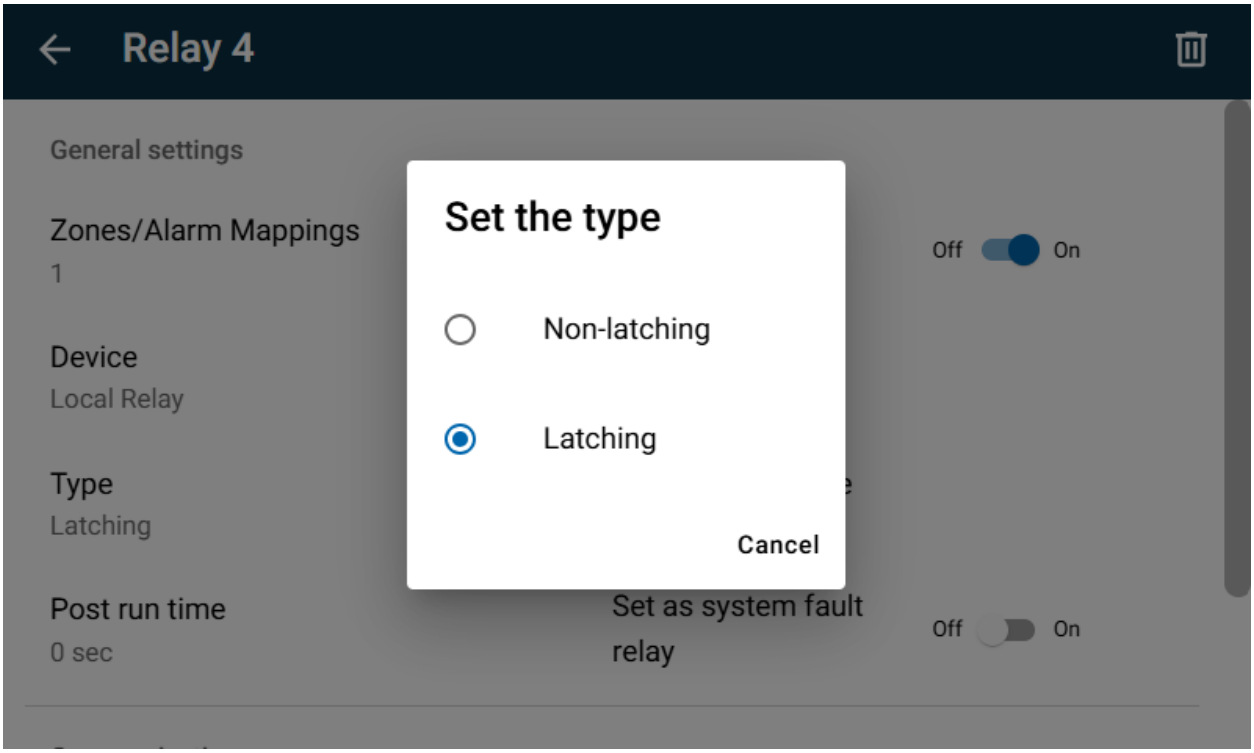


Figure 5-110: Editing a Relay's Type

Options:

- Non-latching: The relay automatically resets to its normal state when the triggering condition clears.
- Latching: The relay remains in its active state until it is manually reset by the user.

5.10.4.5 Editing the Minimum Run Time

The Minimum Run Time setting ensures that once a relay is activated, it remains energized for a specified minimum duration—even if the triggering condition clears.

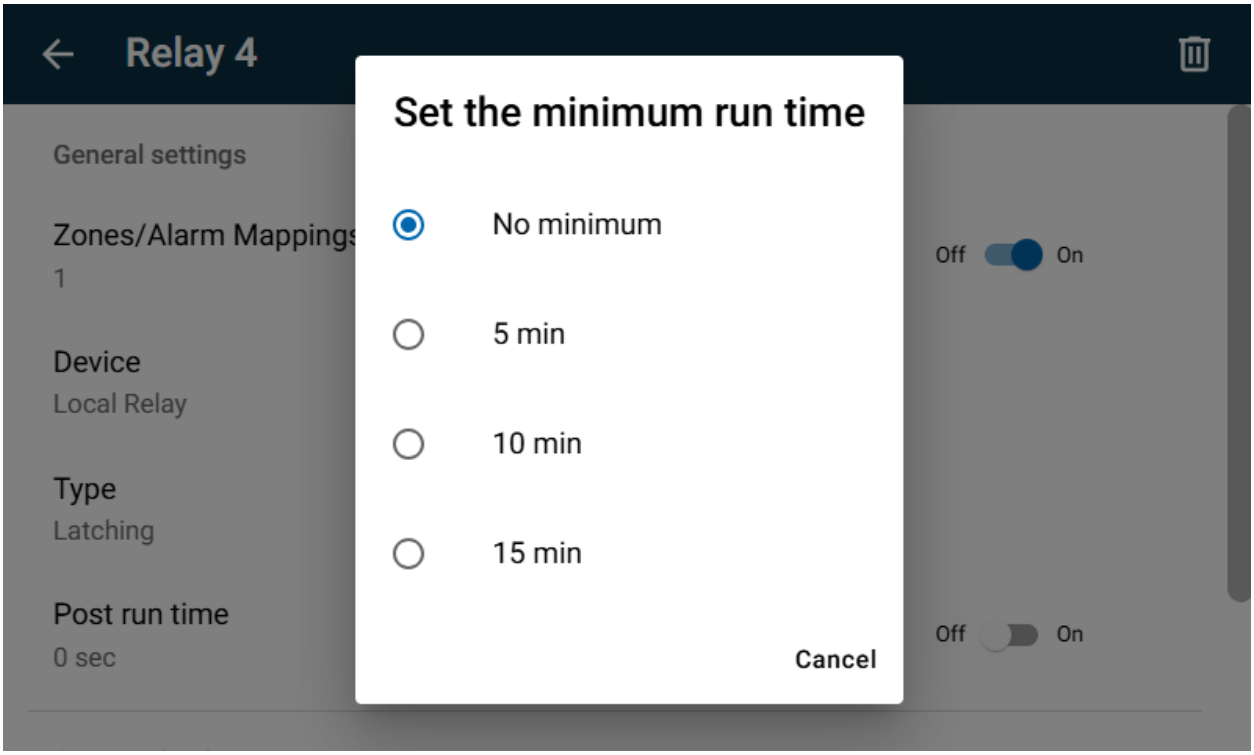


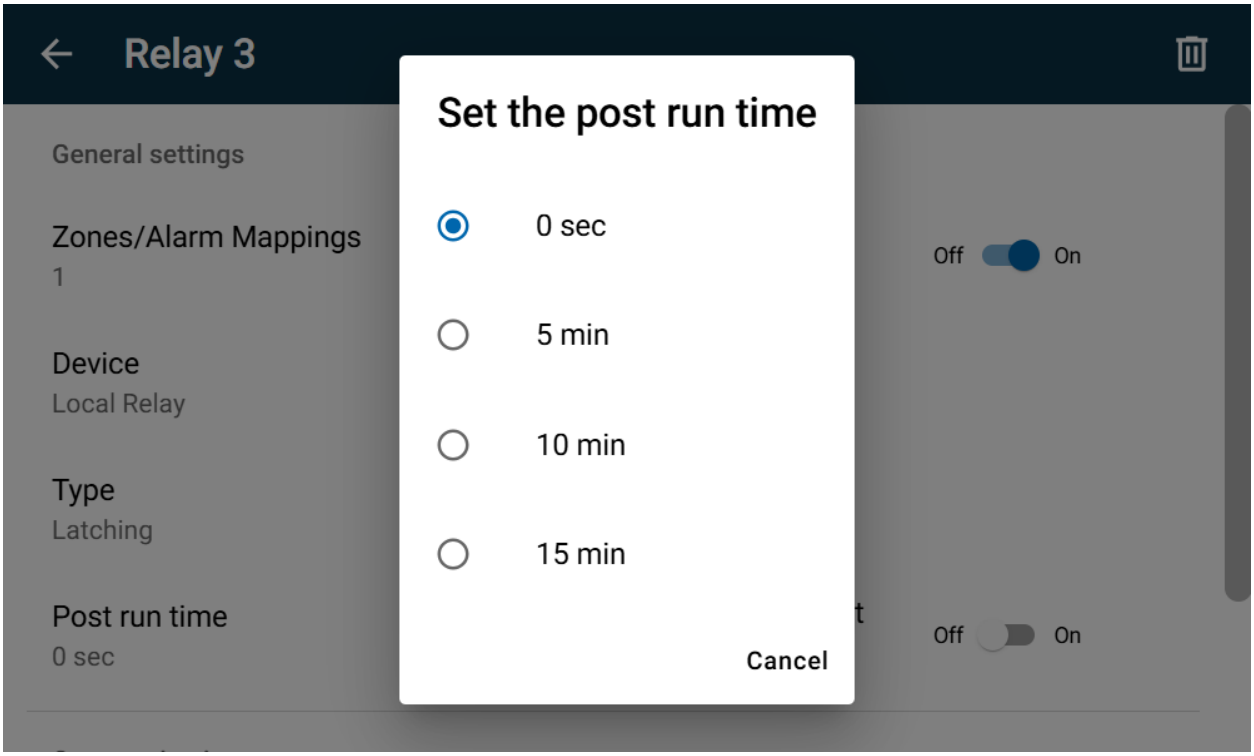
Figure 5-111: Editing a Relay's Minimum Run Time

Options:

- No minimum: The relay deactivates immediately when the condition clears.
- 5 min
- 10 min
- 15 min

5.10.4.6 Editing the Post Run Time

The Post Run Time setting defines how long a relay remains active after the triggering condition has cleared. This is useful for ensuring that connected equipment continues to operate briefly after an alarm or fault is resolved.



Options:

- 0 sec: The relay deactivates immediately when the condition clears.
- 5 min
- 10 min
- 15 min

5.10.4.7 Setting a System Fault Relay

The **System Fault Relay** option allows a relay to be designated as a dedicated output for system-wide fault conditions. When enabled, the relay will activate in response to any system fault, regardless of zone or alarm mappings. This is useful for triggering external indicators such as fault lights, sirens, or building management systems.

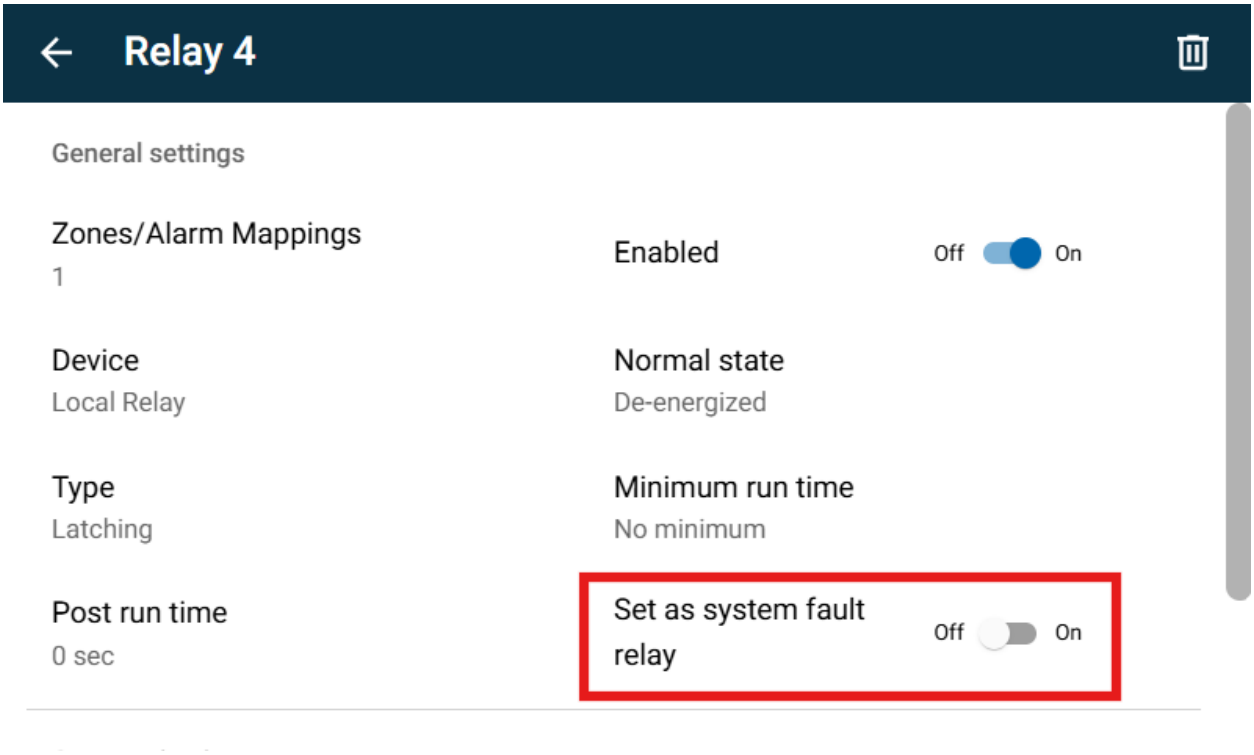


Figure 5-112: Setting a Relay as a System Fault Relay

5.11 Analog Outputs

5.11.1Analog Outputs Overview

The AMC-1DCx-L monitor supports analog output channels that can be used to transmit sensor data to external systems such as Variable Frequency Drives (VFDs), building automation controllers, Programmable Logic Controllers (PLCs), or data loggers.

These outputs can be configured to represent gas concentrations, alarm states, or other system values using industry-standard voltage or current signals. Each output can be individually configured to operate in either voltage (V) or current (mA) mode, depending on the connected hardware.

Each analog output is assigned to a specific zone and can be mapped to a sensor or group of sensors.

NOTE: An analog output cannot be assigned to more that one zone.

Analog Output States

- **During Warm Up:** Outputs will not transmit any signal.
- **Enabled:** Outputs are updated continuously to reflect their assigned current system state.
- **Disabled:** Outputs transmit a signal which represents base level, no fault (e.g., 4mA). Outputs will not transmit any signal when previously configured as disabled and power up occurs

The Analog Outputs screen displays a table summarizing all configured analog output channels. Each row represents a single output and includes the following columns:

ID	Unique identifier assigned to each output.
Ln (Addr:Ch)	Communication lane and address/channel of the output.
Zones	The zone to which the output is assigned, used for grouping.
Value	The current output signal.
Status	Operational status (e.g., Normal, Fault, Disabled)

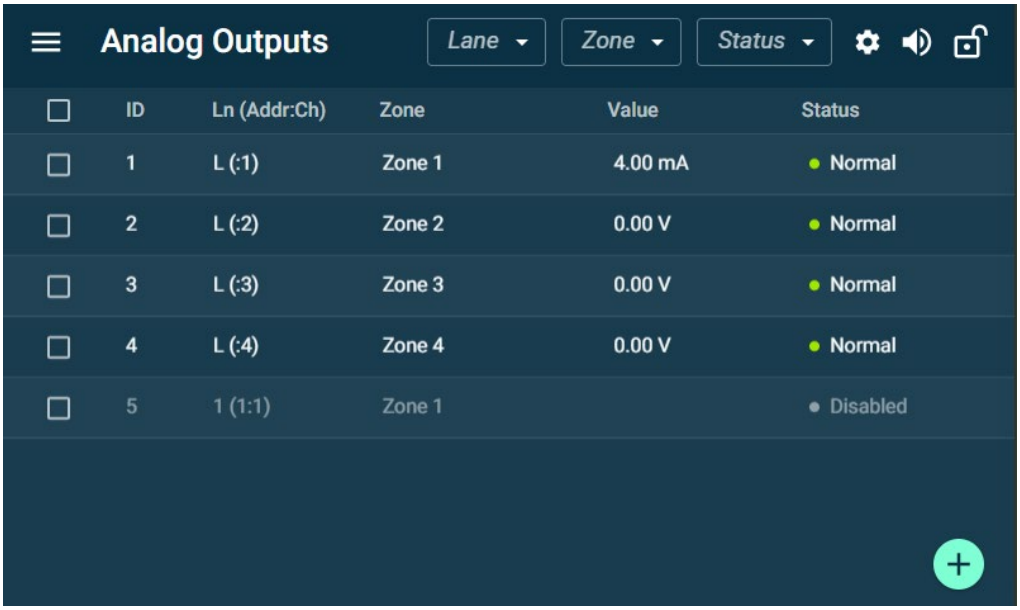


Figure 5-113: Analog Outputs Table

5.11.2 Viewing Analog Output Details

To view an analog output's details:

- Select any analog output row in the **Analog Outputs** table.
- This opens the **Analog Outputs Details Screen**, which displays key information organized into sections.

NOTE: When the monitor is **locked**, users can only view analog output information and **cannot make any changes**. This ensures that critical configuration settings remain protected from unauthorized edits.

5.11.2.1 General Settings

The **General Settings** section provides an overview of the analog output's identity and basic configuration:

Available Fields

- **Zone:** Assigns the analog output to a specific zone.
    - This determines which sensor or group of sensors the output reflects.
- **Enabled:** A toggle switch to activate or deactivate the output.
    - **Note:** When an AO is disabled and was previously active, its value is set to zero gas level (e.g 2V for 2-10V or 4mA for 4-20mA). Disabled AO(s) are not adjusted on power up and retain their power-up value.
- **Device:** Displays the hardware module used for the output (e.g., BC8AOI).
- **Normalize By Alarm 2:** When enabled, the output signal is scaled relative to the Alarm 2 threshold of the assigned sensor.
- **Range:** Defines the output signal range (e.g., 0–10 V).
    - This should match the input expectations of the receiving system.
- **Scale Factor:** A multiplier applied to the output value.
    - This can be used to fine-tune the signal for calibration or compatibility purposes.

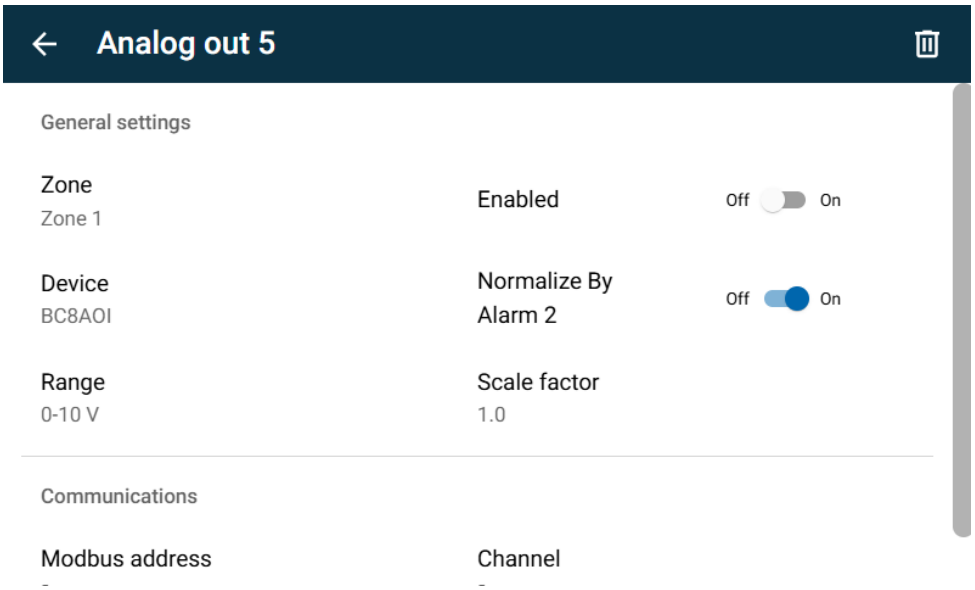


Figure 5-114: Analog Output General Settings

5.11.2.2 Communications

This section displays an external analog output's communication configuration (e.g., BC8AOI). These fields are essential for identifying how the analog output connects to the system:

- **Modbus Lane**: Indicates the communication lane used by the analog output (e.g., *Lane 1*). The AMC-1DCx-L supports one Modbus lane.
- **Modbus Address**: Shows the unique address assigned to the analog output on the MODBUS network. This address must be distinct within the selected lane.
- **Channel**: Displays the channel number used by the analog output. This identifies the specific input or output line on the device.

5.11.3 Adding a New Analog Output

To add a new analog output to the AMC-1DCx-L system, from the **Analog Outputs** screen, pressing the Add (+) button will launch a guided setup wizard.

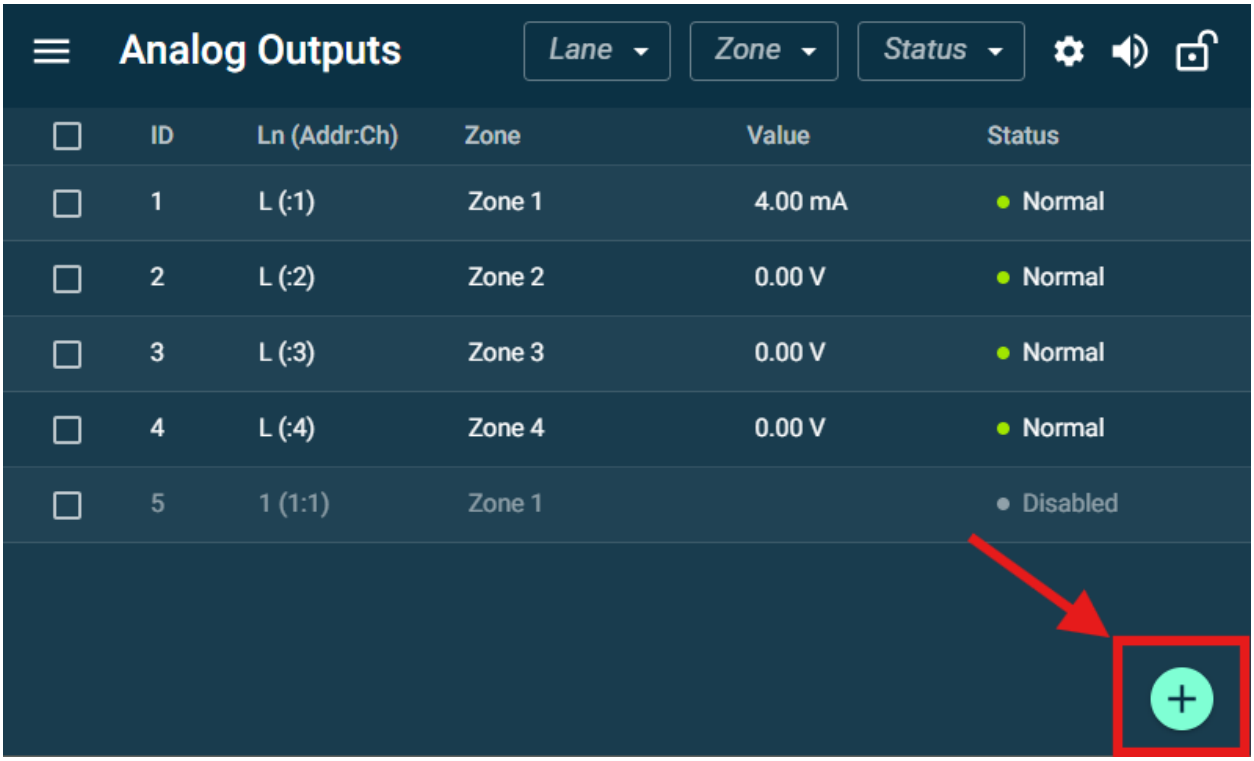


Figure 5-115: Analog Output Add Button

NOTE: The Add Analog Output button (+) is only available when the monitor is unlocked. If the monitor is locked, the button will not appear, and new analog outputs cannot be added.

5.11.3.1 Selecting a Device Type

The first step prompts the user to choose the type of analog output device being added. Local AO (Analog Output) is ideal for simpler setups or when outputs are wired directly to the monitor. For larger systems requiring multiple outputs over MODBUS, BC8AOI modules are typically used instead.

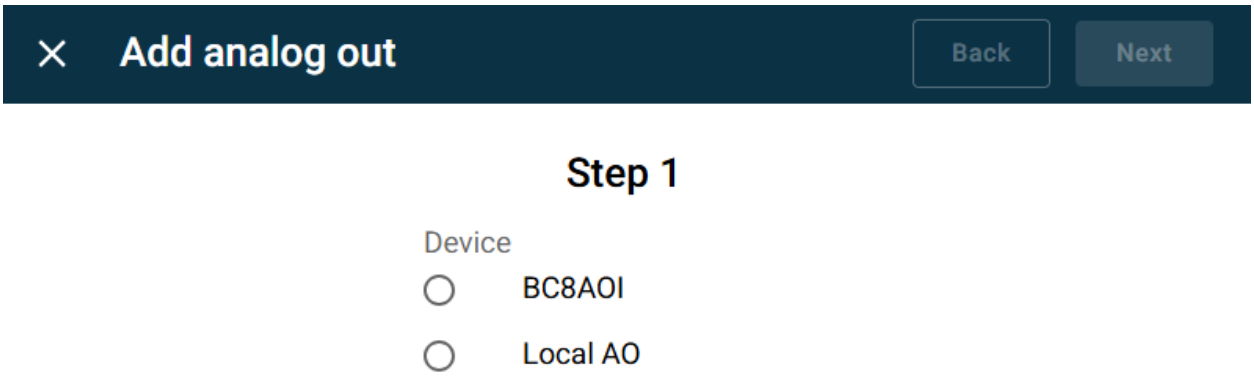


Figure 5-116: Selecting an Analog Output's Type

Options:

- **BC8AOI (AMC-1DMB-AO):** An 8-channel analog output module connected via MODBUS
- **Local AO:** A local analog output integrated directly into the AMC-1DCx-L monitor.

NOTE: BC8AOI, also referred to as **AMC-1DMB-AO**, is sold separately. **BC8AOIs** device can **only** be configured from Modbus addresses **1 to 127** and their address is configured to a default value of **102** when leaving the factory. Please see section **3.6 Accessories** for more information.

5.11.3.2 Selecting Output Range

In this step, users define the electrical output range and type of analog signal. This determines how the system transmits data to external devices.

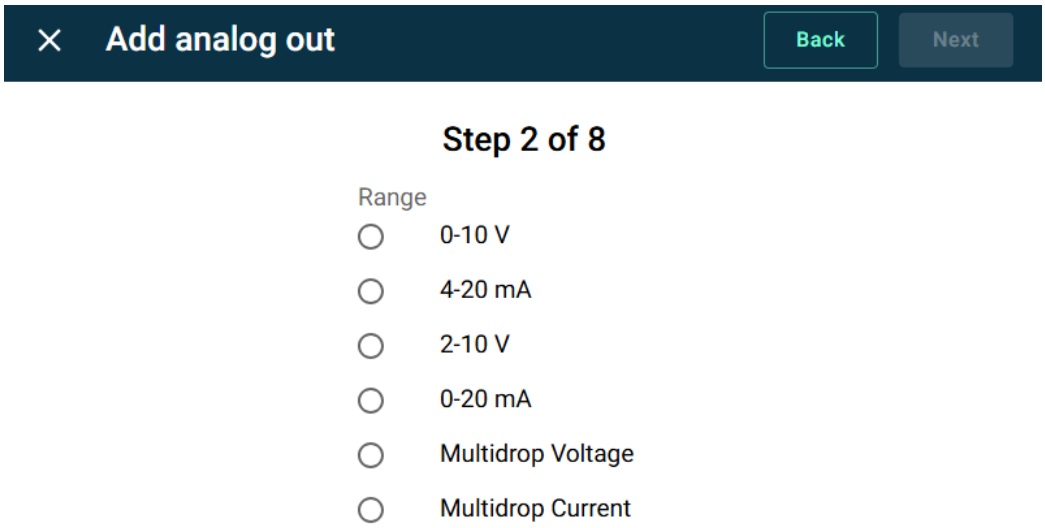


Figure 5-117: Selecting an Analog Output's Range

Local AO Options:

- **0–10 V:** Standard voltage output for general-purpose applications.
- **4–20 mA:** Common current loop used in industrial environments for long-distance and noise-resistant signaling.
- **2–10 V:** Often used in HVAC and building automation systems.
- **0–20 mA:** Similar to 4–20 mA but includes the full current range.
- **Multidrop Voltage:** Used when multiple devices share a common voltage signal on the same line.
- **Multidrop Current:** Used when multiple devices share the same current loop for reliable multi-device signaling.

BC8AOI Options:

- **4–20 mA:** Common current loop used in industrial environments for long-distance and noise-resistant signaling.

Note: The following table displays the default output values for multidrop modes.

Mode	Fault	Normal	Alarm 1	Alarm 2
Multidrop Voltage (V)	0	1	2	3
Multidrop Current (mA)	0	4	8	12

5.11.3.3 Normalize by Alarm 2

This step allows users to choose whether the analog output should be normalized based on the Alarm 2 threshold of the assigned sensor.

This setting allows users to scale the analog output signal relative to the **Alarm 2 threshold** of the assigned sensor.

Why Use This?

Enabling **Normalize by Alarm 2** ensures that the analog output reaches its **maximum signal value** when the sensor reading equals the Alarm 2 set point. This is useful for:

- **Standardizing outputs across different sensor types**: If multiple sensors have different ranges or alarm thresholds, normalization ensures consistent analog output behavior regardless of the sensor's full scale.
- **Simplifying integration with external systems**: Building automation systems, PLCs, or controllers can interpret a full-scale signal as a clear indication that Alarm 2 has been reached without needing to know the specific gas type or threshold.
- **Improving visual or control feedback**: Normalized outputs can drive gauges, indicators, or control loops that respond proportionally to alarm severity.

This linear scaling makes it easier to interpret sensor readings and trigger external responses based on alarm thresholds.

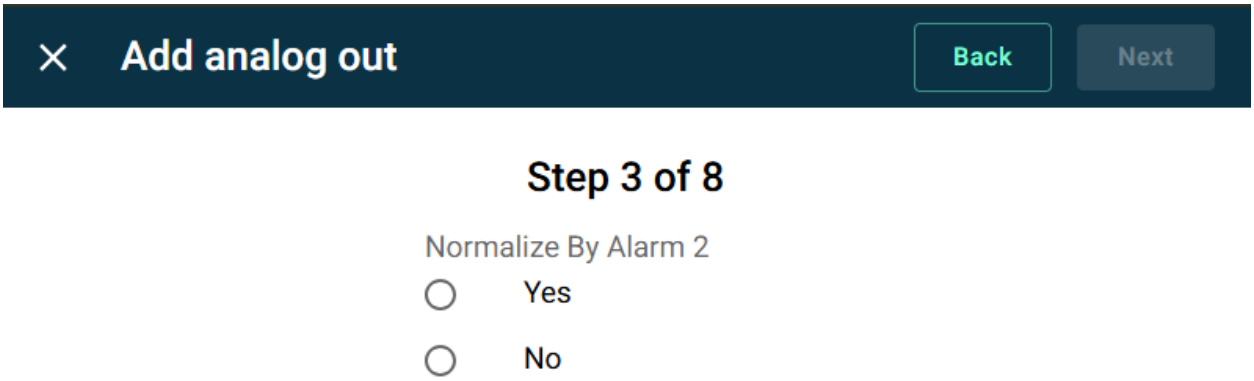


Figure 5-118: Enabling Normalization for an Analog Output

Options:

- **Yes:** The output signal is scaled relative to the Alarm 2 set point.
- **No:** The output reflects the sensor value without normalization.

5.11.3.4 Setting Scale Factor

In this step, users define a scale factor that adjusts the analog output signal. This multiplier is applied to the sensor value before it is converted to a voltage or current output.

Figure 5-119: Setting and Analog Output's Scale Factor

Examples:

- A scale factor of 1.0 does not influence the output.
- A scale factor of 0.5 halves the output.
- A scale factor of 2.0 doubles the output.

5.11.3.5 Selecting a Modbus Lane

In this step, users assign the new analog output to a specific Modbus communication lane. This determines how the analog output communicates with the AMC-1DCx-L system.

NOTE: This step is only required for BC8AOI (AMC-1DMB-AO).

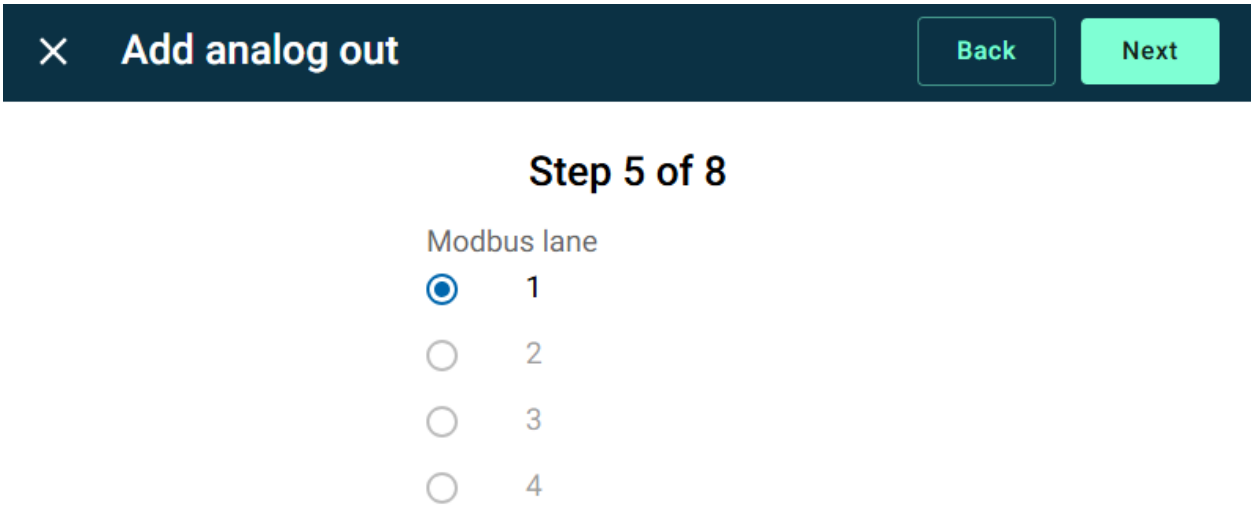


Figure 5-120: Setting an Analog Output's Lane

Available Options:

- 1 (selected by default)

Unavailable Lane Options:

- 2
- 3
- 4

Lanes 2-4 are only available for the AMC-1DCx.

5.11.3.6 Entering a Modbus Address

In this step, users assign a Modbus address to the new analog output. This address is used by the AMC-1DCx-L system to communicate with the analog output over the selected Modbus lane.

NOTE: This step is only required for **BC8AOI**. The **BC8AOI** device can **only** be configured from Modbus addresses **1 to 127** and their address is configured to a default value of **102** when leaving the factory.

Input Field: Enter the address using the on-screen numeric keypad.

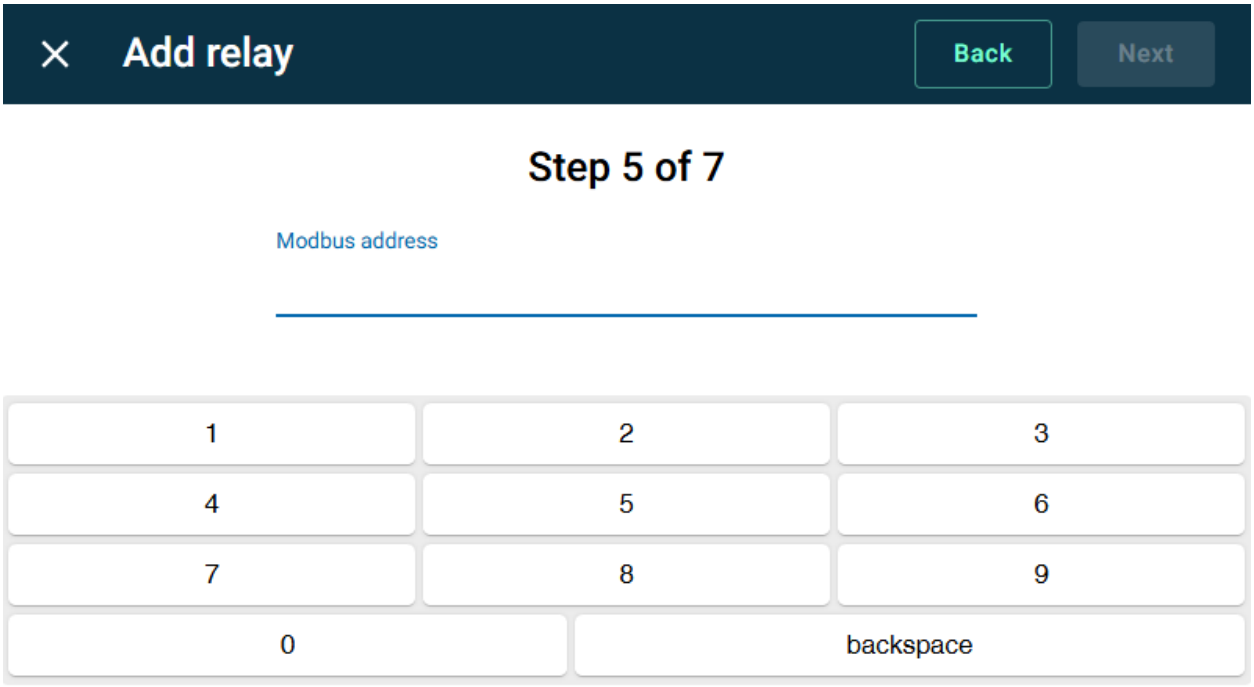


Figure 5-121: Setting an Analog Output's Modbus Address

5.11.3.7 Selecting a Channel

In this step, users assign a channel number to the new analog output. The number of available channels depends on the selected device type:

Local Analog Output: Up to 4 channels are available.

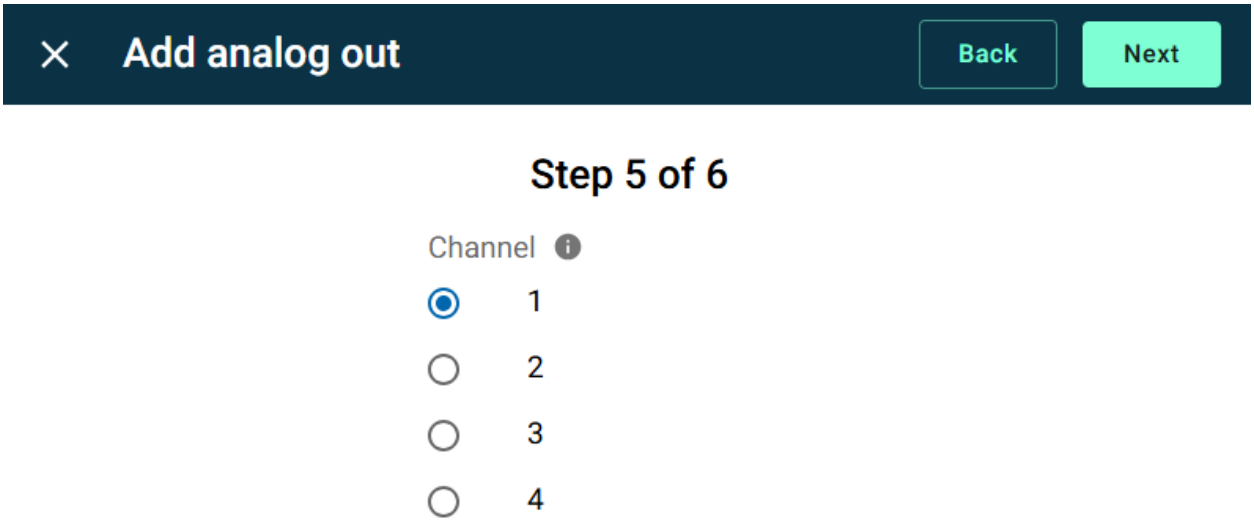


Figure 5-122: Selecting a Local Analog Output's Channel

BC8AOI: Up to 8 channels are available for selection.

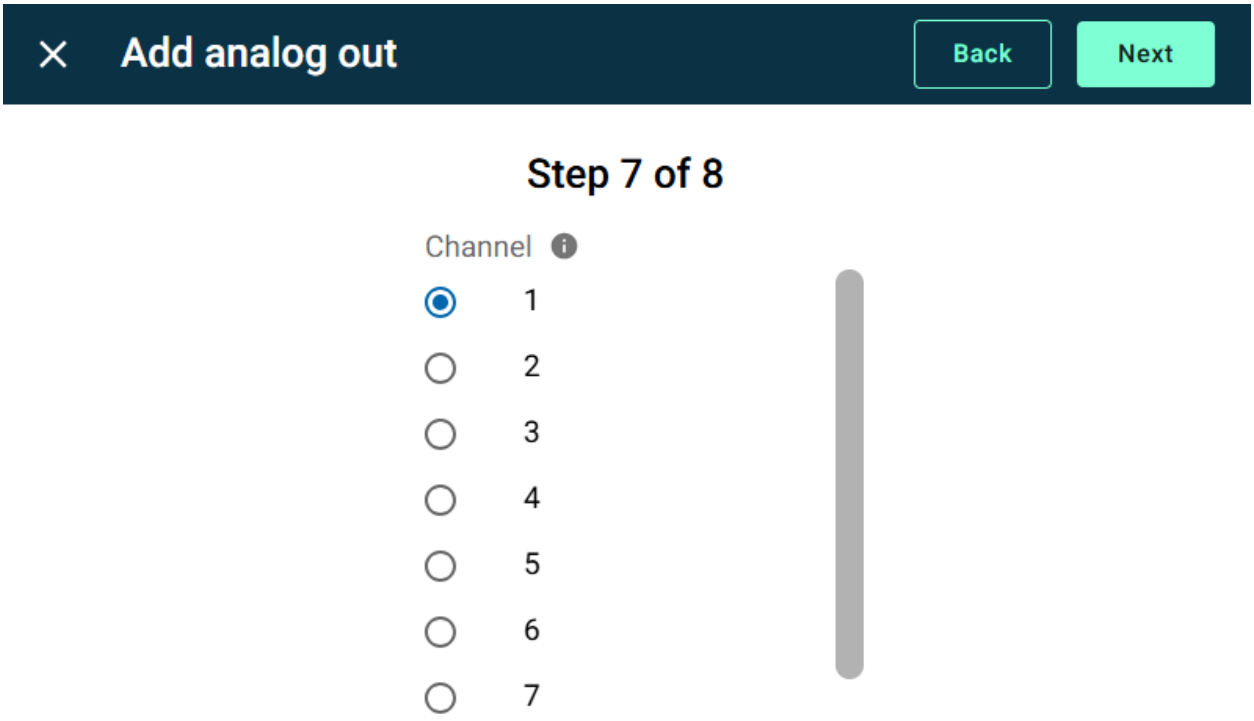


Figure 5-123: Selecting a BC8AOI Analog Output's Channel

5.11.3.8 Assigning a Zone

The final step in the Add Analog Output wizard allows the user to assign the new analog output to a specific zone. This determines which group of sensors or system area the output will represent.

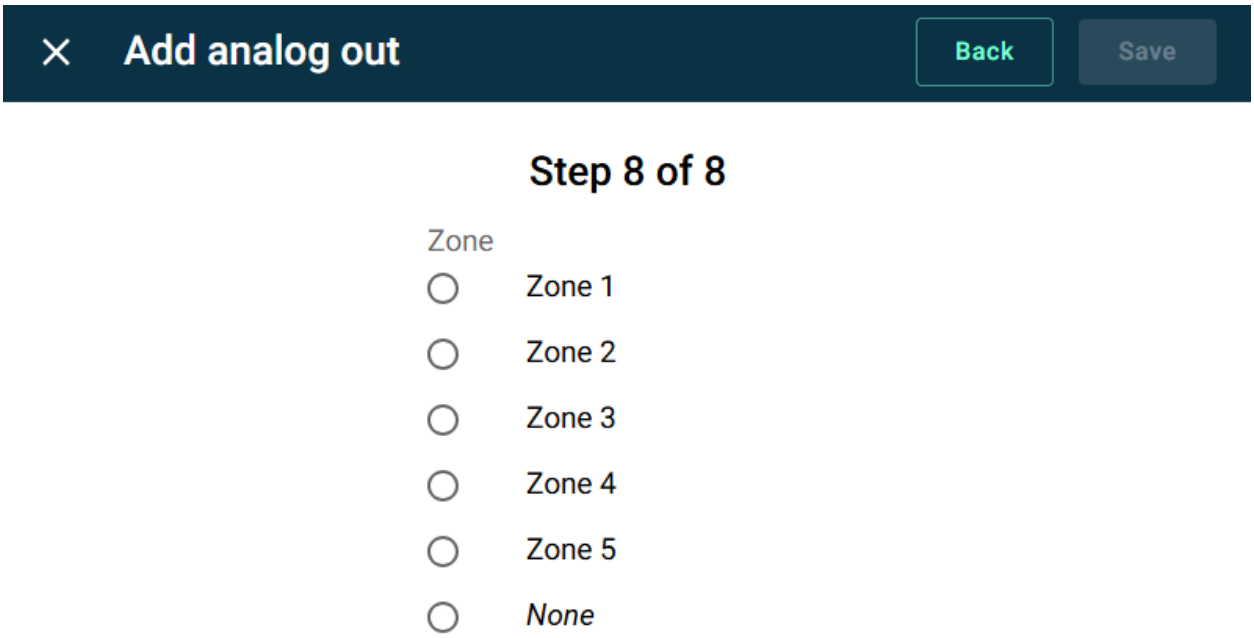


Figure 5-124: Selecting an Analog Output's Zone

Options:

- The list of configured zones
- **None:** The analog output is not assigned to any zone.

Selecting a zone ensures that the analog output reflects the correct sensor data or alarm conditions associated with that zone. If None is selected, the output will remain inactive until a zone is assigned.

5.11.4 Editing Analog Output Configuration

5.11.4.1 Editing the Analog Output Zone

The Zone setting determines which group of sensors or system area the analog output represents. This is essential for ensuring the output reflects the correct data or alarm conditions.

To edit the zone:

- Select the Zone field in the Analog Output's General Settings section.
- A pop-up window titled **Set the zone** will appear.
- Select one of the available zones from the list.

Available Options:

- The list of configured zones
- None: The analog output is not assigned to any zone.

Press **Cancel** to exit without making changes. The selected zone will be displayed in the General Settings section once saved.

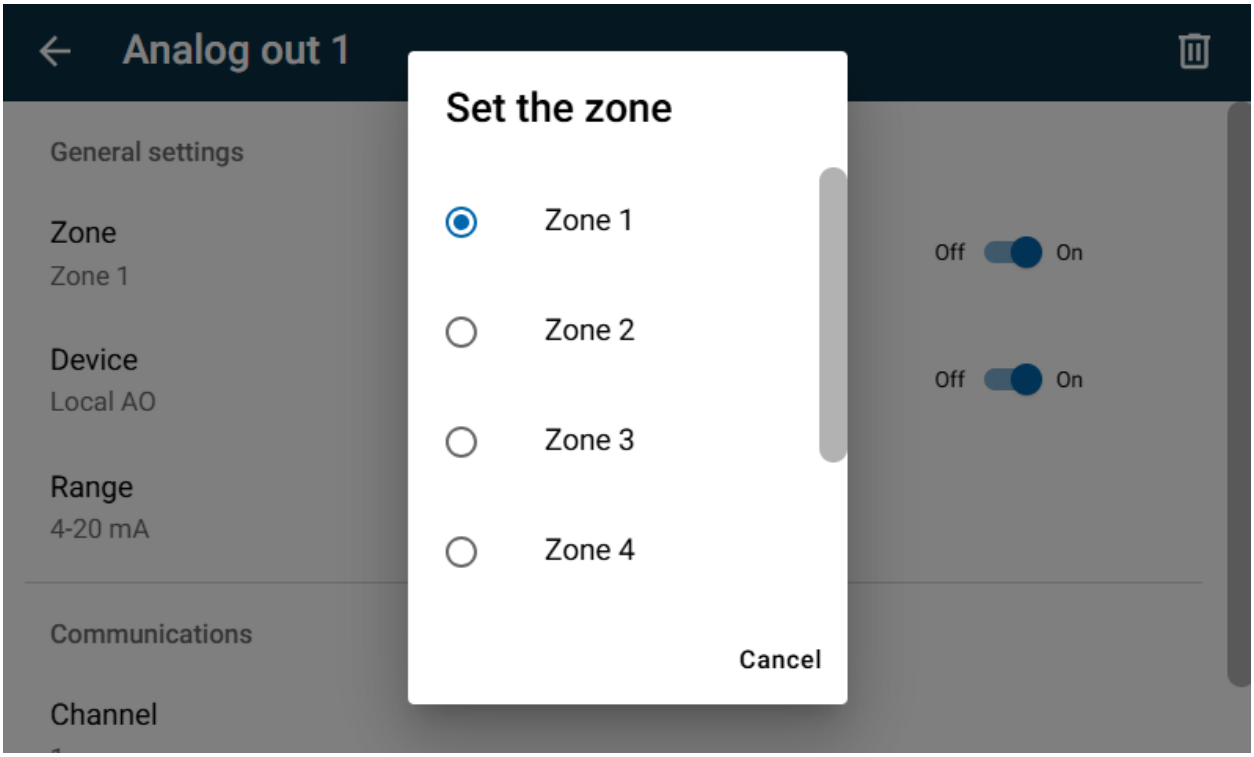


Figure 5-125: Editing an Analog Output's Zone

5.11.4.2 Enabling and Disabling the Analog Output

The Enabled toggle determines whether the analog output is active in the system. When disabled, the output will not transmit any signal, regardless of its configuration.

To change the enabled state:

- Press the Enabled toggle switch in the Analog Output's General Settings section.
- Select either On or Off to activate or deactivate the output.

Figure 5-126: Editing a Zone's Enabled Status

Options:

- **On:** The analog output is active and will transmit a signal based on its assigned zone and configuration.
- **Off:**
    - Local AO will output signal which represents base level, no fault (e.g., 4mA)
    - External AO (e.g., BC8AOI) will not transmit any signal.

This setting is useful for temporarily disabling outputs during maintenance or system reconfiguration.

NOTE: When an AO is disabled and was previously active, its value is set to zero gas level (e.g 2V for 2-10V or 4mA for 4-20mA). Disabled AO(s) are not adjusted on power up and retain their power-up value.

5.11.4.3 Editing the Analog Output Range

The Range setting defines the electrical signal output type for the analog channel. This must match the input requirements of the connected external system (e.g., PLC, BMS, or data logger).

To edit the range:

- Select the **Range** field in the Analog Output's General Settings section.
- A pop-up window titled Set the range will appear.
- Select one of the available output signal ranges.

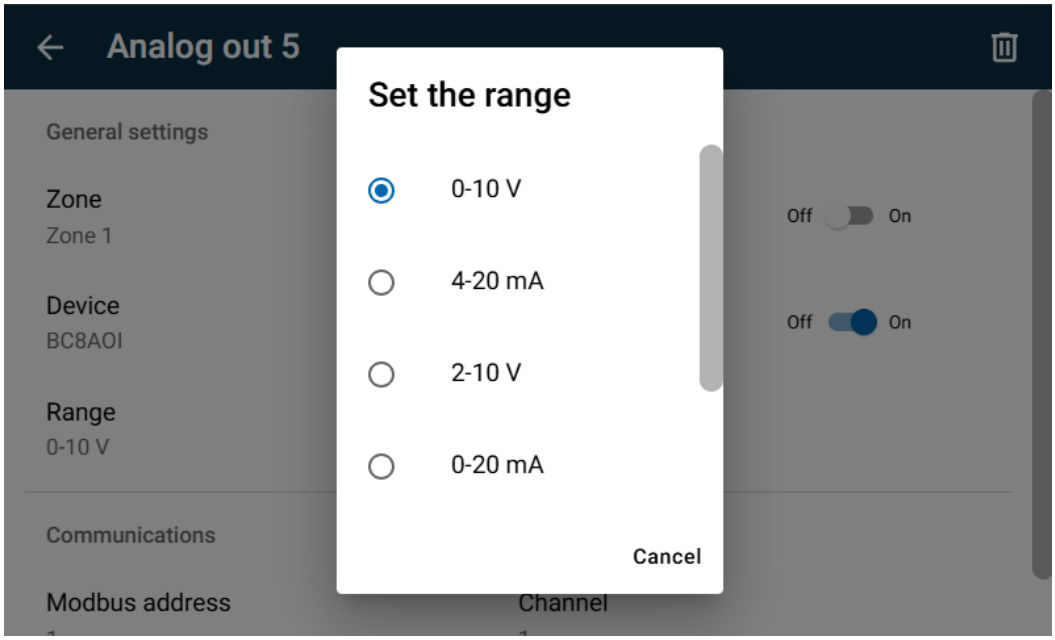


Figure 5-127: Editing an Analog Output's Range

Local AO Options:

- **0–10 V:** Standard voltage output for general-purpose applications.
- **4–20 mA:** Common current loop used in industrial environments for long-distance and noise-resistant signaling.
- **2–10 V:** Often used in HVAC and building automation systems.
- **0–20 mA:** Similar to 4–20 mA but includes the full current range.
- **Multidrop Voltage:** Used when multiple devices share a common voltage signal on the same line.
- **Multidrop Current:** Used when multiple devices share the same current loop for reliable multi-device signaling.

BC8AOI Options:

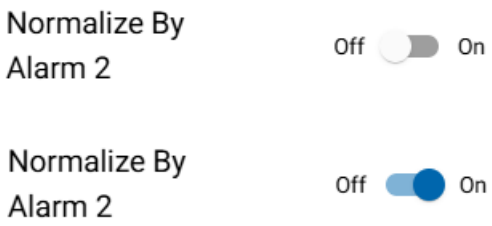
- **4–20 mA:** Common current loop used in industrial environments for long-distance and noise-resistant signaling.

Note: BC8AOI only supports 4-20mA and is selected by default. If Voltage is required, it can be achieved by placing a 500 ohm resister in parallel with the signal wires. Please contact us for more information.

Press **Cancel** to exit without making changes. The selected range will be displayed in the General Settings section once saved.

5.11.4.4 Normalize by Alarm 2

The Normalize by Alarm 2 setting determines whether the analog output signal is scaled relative to the Alarm 2 threshold of the assigned sensor. This allows for consistent output behavior across sensors with different ranges or alarm configurations.



To change this setting:

- Press the Normalize by Alarm 2 toggle switch in the Analog Output's General Settings section.
- Select either On or Off to enable or disable normalization.

Options:

- On (selected in the example): The output signal is scaled so that the Alarm 2 threshold corresponds to the maximum output value (e.g., 10 V or 20 mA).
- Off: The output reflects the raw sensor value without scaling.

This feature is useful when standardizing output signals across multiple sensor types or when integrating with systems that expect normalized values.

5.11.4.5 Editing the Scale Factor

The Scale Factor setting applies a multiplier to the analog output signal. This allows users to fine-tune the output for calibration, compatibility with external systems, or custom scaling requirements.

To edit the scale factor:

- Press the Scale Factor field in the Analog Output's General Settings section.
- An on-screen keyboard will appear.
- Enter the desired multiplier value.

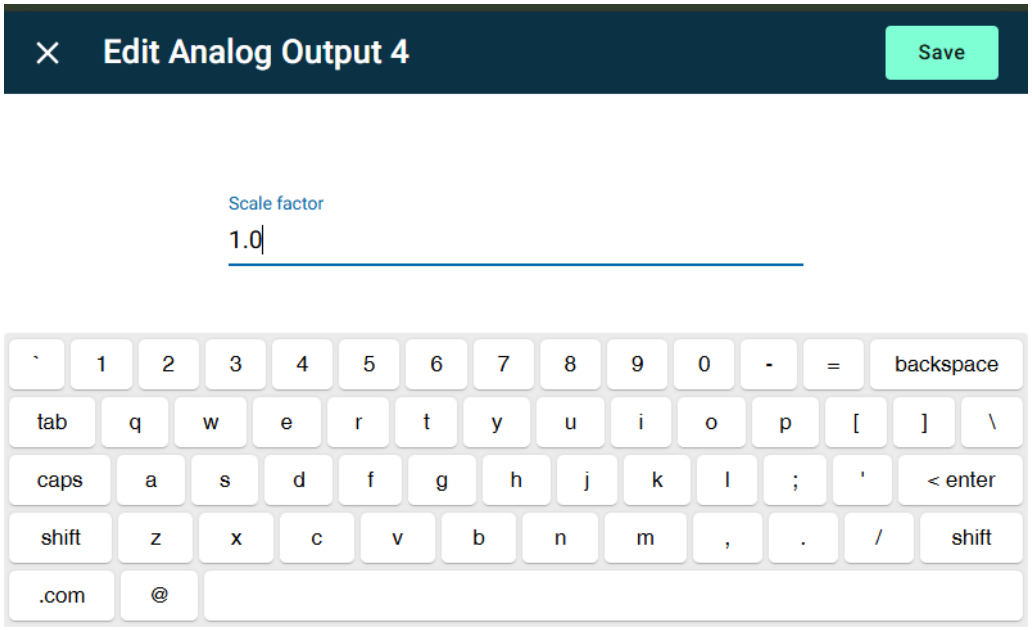


Figure 5-128: Editing an Analog Output's Scale Factor

Example Values

- 1.0 : Outputs the raw sensor value.
- 0.5: Halves the output signal.
- 2.0: Doubles the output signal.

Press **Save** to apply the changes. The updated scale factor will be used in all signal calculations for the analog output.

5.12 Zones

5.12.1 Zones Overview

Zones are logical groupings of devices—such as sensors, relays, and analog outputs—that allow the AMC-1DCx-L system to organize monitoring and control functions by area or purpose. Each zone can be configured with its own alarm logic, device assignments, and output mappings.

The Zones screen displays a table summarizing all configured zones in the system. Each row represents a single zone and includes the following columns:

ID	Unique identifier assigned to each zone.
Name	The user-defined name of the zone.
Relays (Alm1, 2, 3, Flt)	Lists the relays assigned to each alarm level and fault condition. **Note:** If multiple relays are assigned to a condition, only the first relay ID is shown followed by "..." to indicate additional relays.
Analogs	Number of analog outputs assigned to the zone.
Sensors	Number of sensors assigned to the zone.
Status	Operational status of the zone (e.g., Normal, Fault)

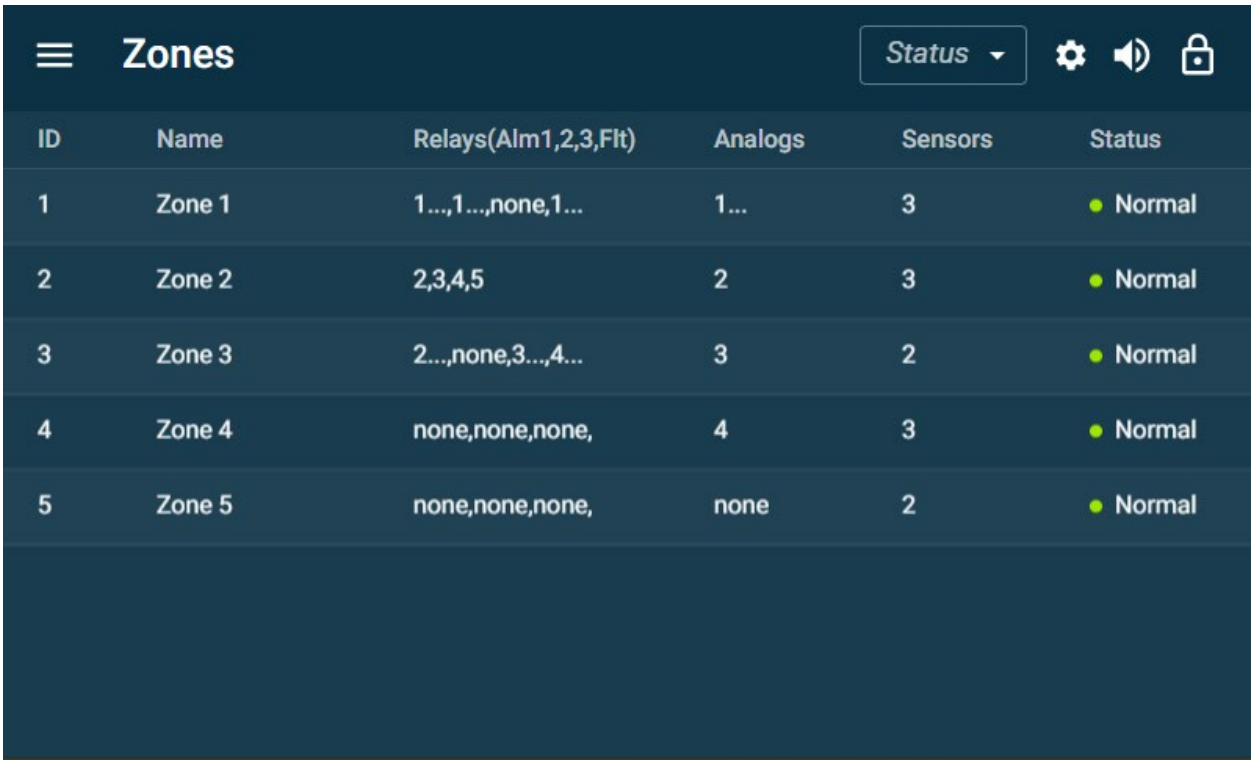


Figure 5-129: Zone's Table

5.12.2 Viewing Zone Details

Selecting a zone from the Zones table opens the Zone Details screen. This screen provides a detailed view of the zone's configuration, including general settings and output mappings.

5.12.2.1 General Settings

The General Settings section displays the zone's identity and behavior settings:

- **Name:** The user-defined name of the zone (e.g., Zone 1).
- **Aggregation Type:** Defines how sensor values are evaluated within the zone.
- **Sample Period:** The time window over which sensor values are collected and aggregated (e.g., 10 seconds means the last 10 seconds of data are used for aggregation and calculation).

These settings determine how the zone processes sensor data and triggers outputs.

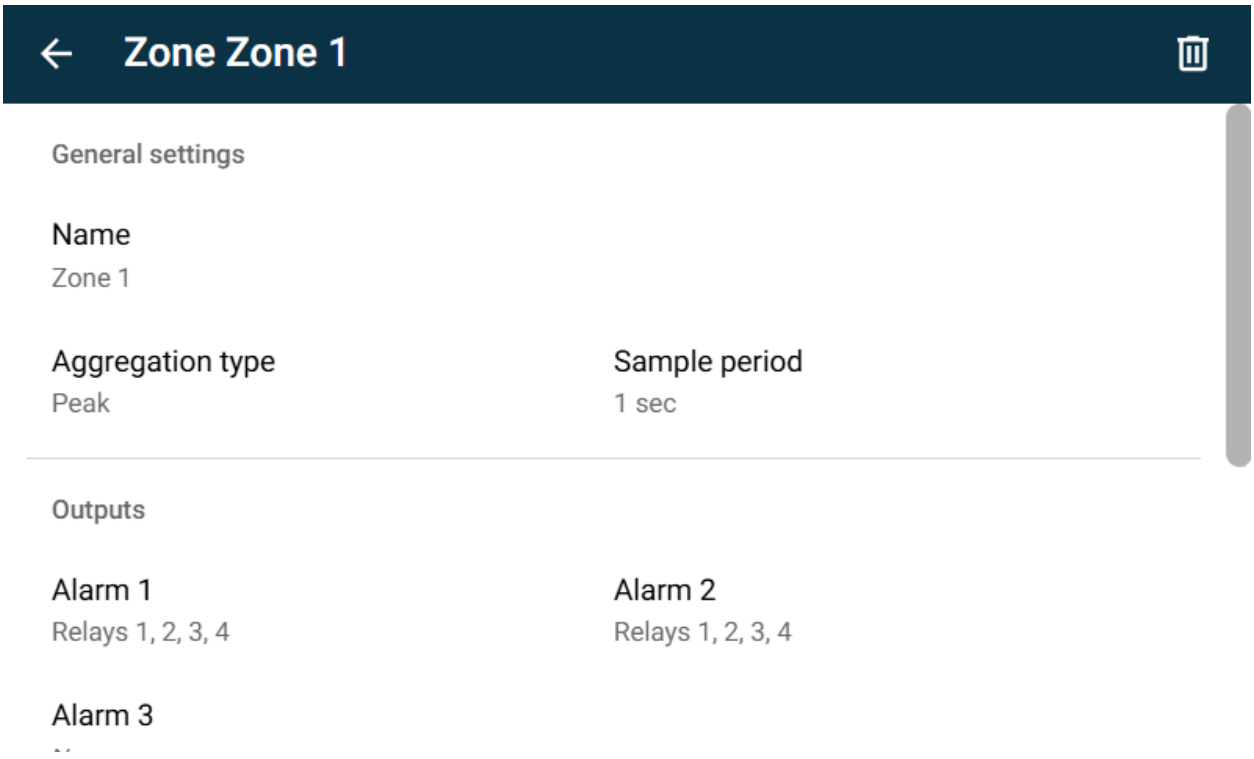


Figure 5-130: Zone General Settings

5.12.2.2 Outputs

The Outputs section lists all relays and analog outputs assigned to the zone for each alarm level and fault condition. This configuration determines how the zone responds to sensor activity.

Displayed Fields

- Alarm 1: Relays triggered when Alarm 1 conditions are met.
- Alarm 2: Relays triggered when Alarm 2 conditions are met.
- Alarm 3: Relays triggered when Alarm 3 conditions are met.
- Analogs: Analog outputs that reflect sensor values or alarm states for the zone.
- Fault Relays: Relays activated when a fault condition occurs in the zone.

These mappings allow the system to activate external devices such as alarms, fans, or controllers based on zone-specific conditions.

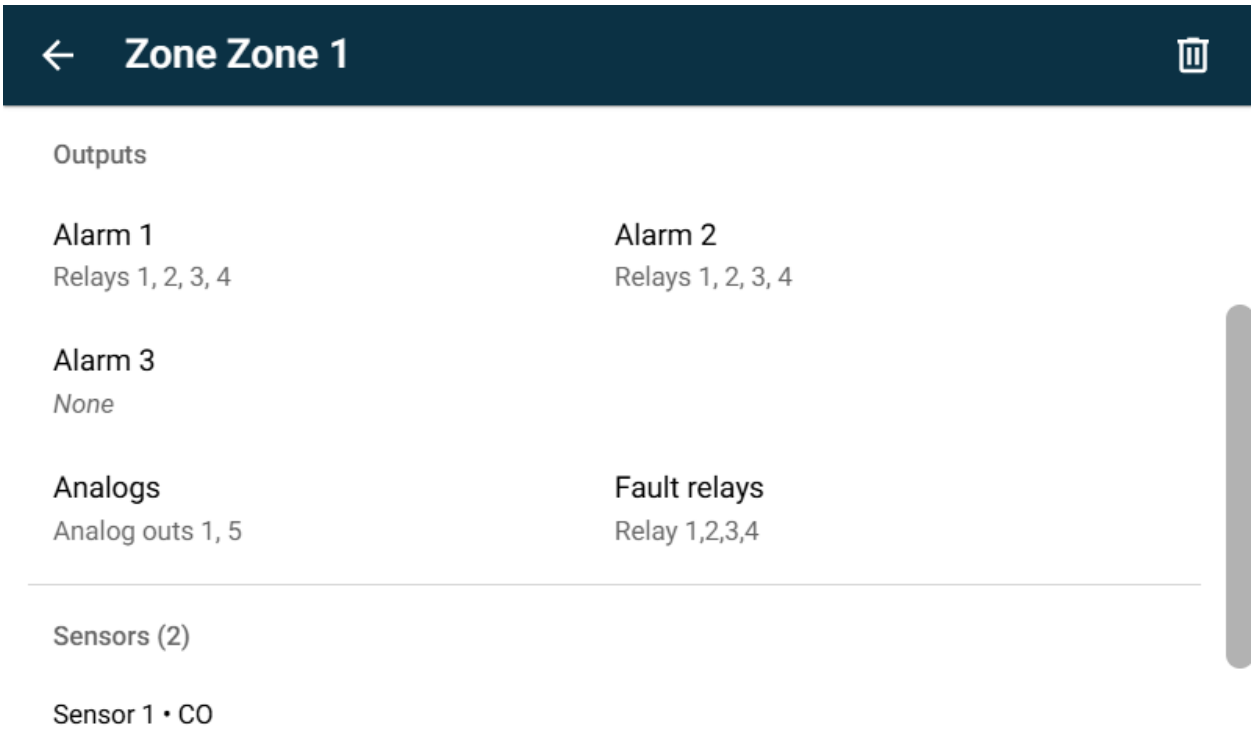


Figure 5-131: Zone Outputs

5.12.2.3 Sensors

The Sensors section lists all sensors currently assigned to the selected zone. These sensors contribute to the zone's alarm logic and output behavior.

Displayed Information

Each sensor is listed by its ID and type (e.g., gas or environmental parameter).

The number in parentheses indicates the total number of sensors assigned to the zone.

These sensors are evaluated according to the zone's aggregation type and sample period, and their readings determine whether alarms or outputs are triggered.

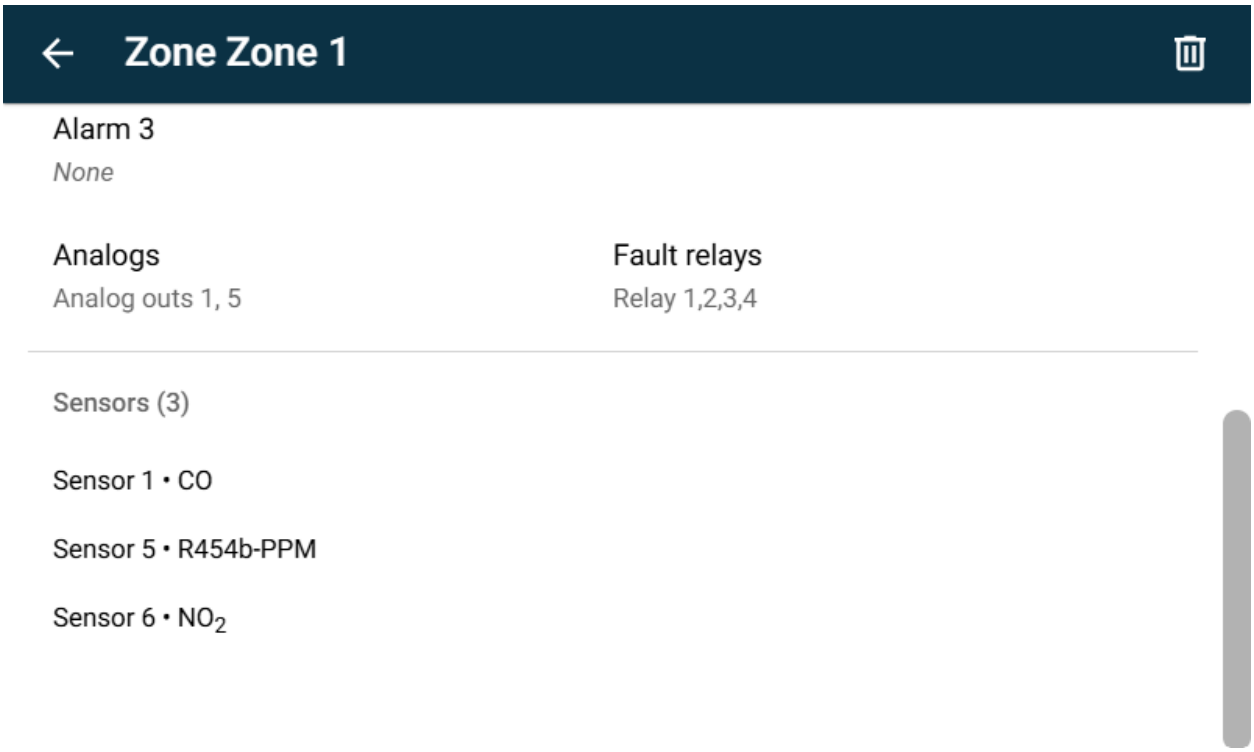


Figure 5-132: Zone Sensors

5.12.3 Adding a New Zone

To add a new zone to the AMC-1DCx-L system, from the **Zones** screen, pressing the **Add** (+) button will launch a guided setup wizard.

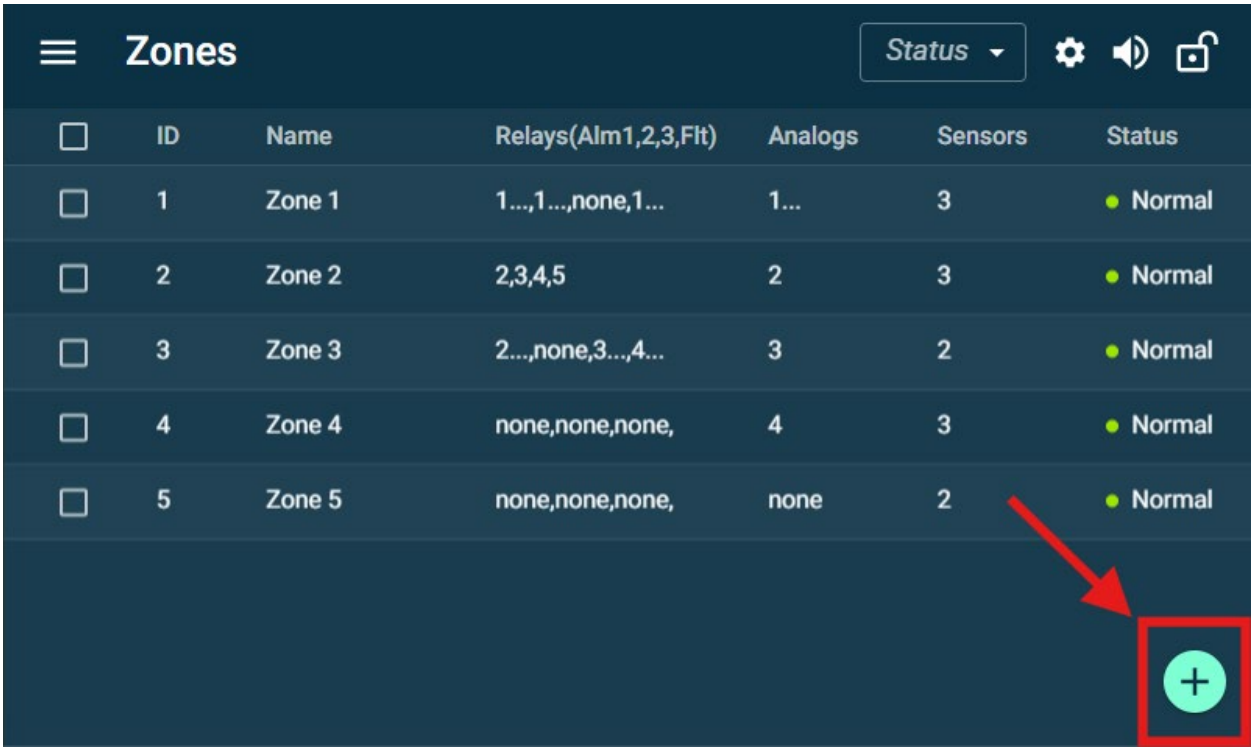


Figure 5-133: Add Zone Button

NOTE: The **Add Zone** button (+) is only available when the monitor is unlocked. If the monitor is locked, the button will not appear, and new zones cannot be added.

5.12.3.1 Naming the Zone

The first step prompts the user to enter a name for the new zone.
To enter the zone name:

- Press the Name field.
- An on-screen keyboard will appear.
- Enter the desired name for the zone.

The **Next** button will become active once a valid name is entered.

Figure 5-134: Entering a Zone Name

Duplicate Name Validation

Zone names must be unique within the system. If a name is already in use, an error message will appear below the input field:

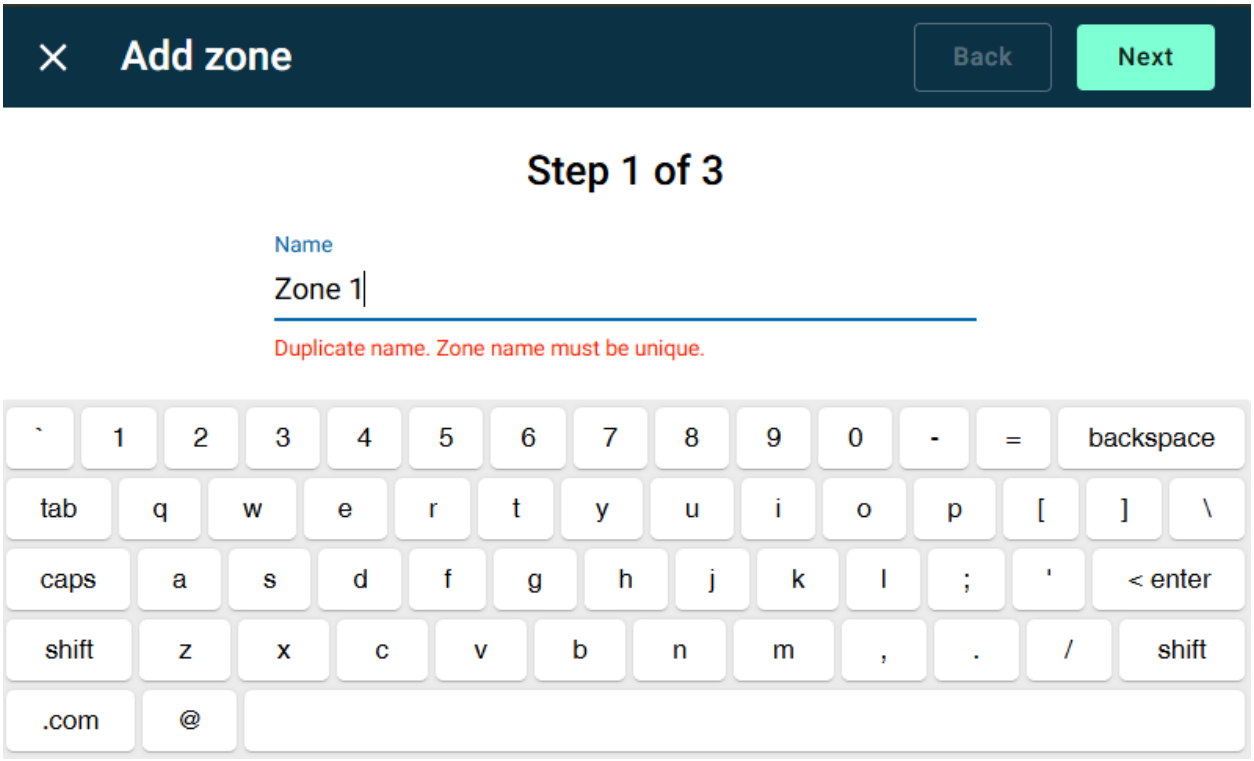


Figure 5-135: Duplicate Zone Name Validation

In this case, the **Next** button will remain disabled until a unique name is entered. Choose a distinct name to proceed with zone creation.

Character Limit Validation

Zone names must be concise and no longer than 24 characters. If the entered name exceeds this limit, an error message will appear below the input field:

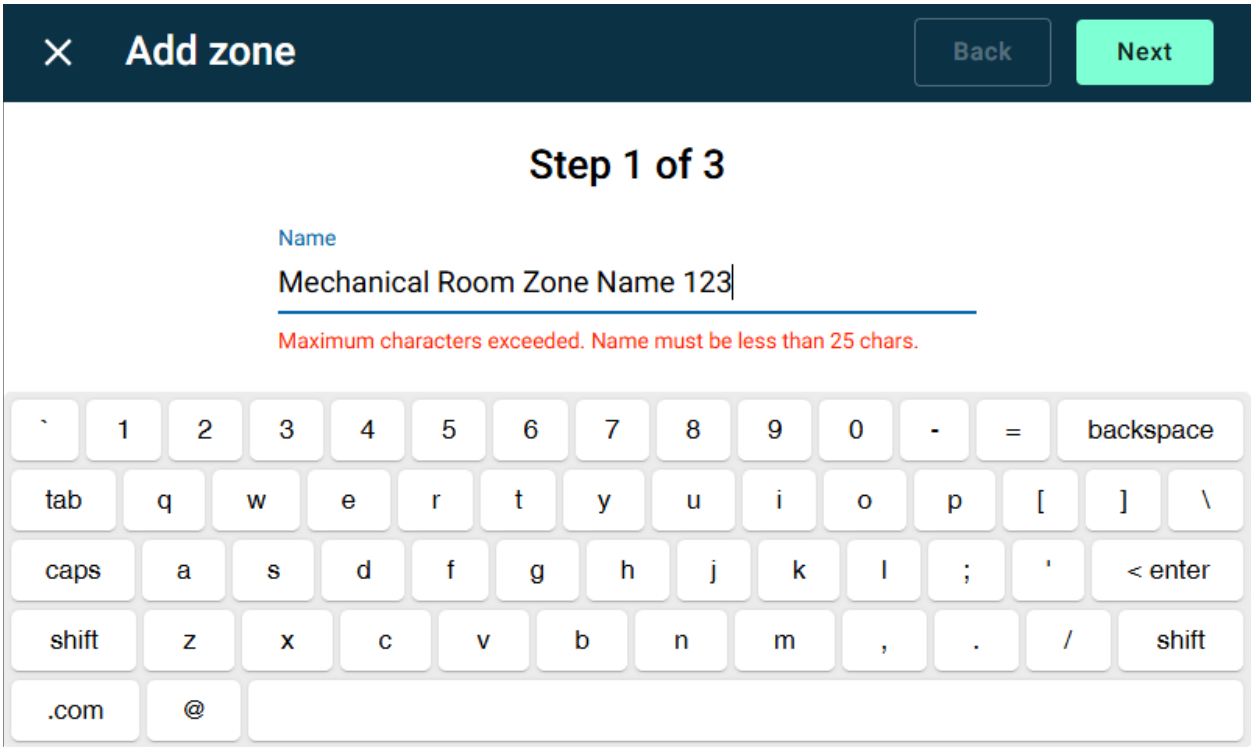


Figure 5-136: Zone Name Maximum Character Limit Validation

In this case, the **Next** button will remain disabled until the name is shortened to meet the character limit.

Tip: Use abbreviations or simplified labels when naming zones with long descriptions.

5.12.3.2 Select Aggregation Type

The second step in the Add Zone wizard prompts the user to choose how sensor values will be evaluated within the zone.

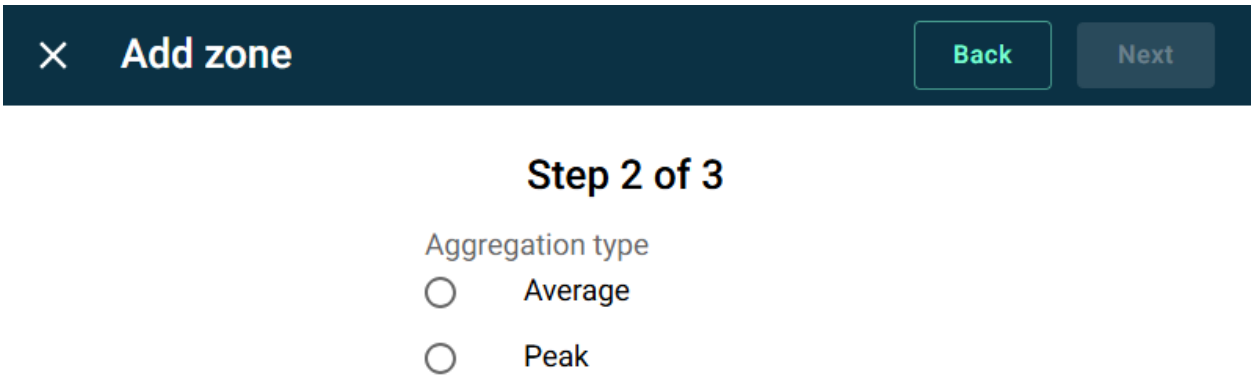


Figure 5-137: Selecting a Zone Aggregation Type

Options:

- Average: Uses the average of all sensor readings in the zone for alarm evaluation.
- Peak: Uses the highest sensor reading in the zone for alarm evaluation.

This setting determines how the zone processes sensor data and triggers alarms. Choose the method that best fits the monitoring strategy for the zone.

5.12.3.3 Set Sample Period

The final step in the **Add Zone** wizard allows the user to define how quickly sensor(s) transfer their readings to the zone's analog output(s).

To set the sample period:

- Press the Sample Period field.
- A numeric keypad will appear.
- Enter the desired interval in seconds. The valid range is between 1 and 60 seconds.
- Press **Save** in the top-right corner to complete zone creation.

NOTE: The sample period affects how quickly the system changes the assigned analog output(s).

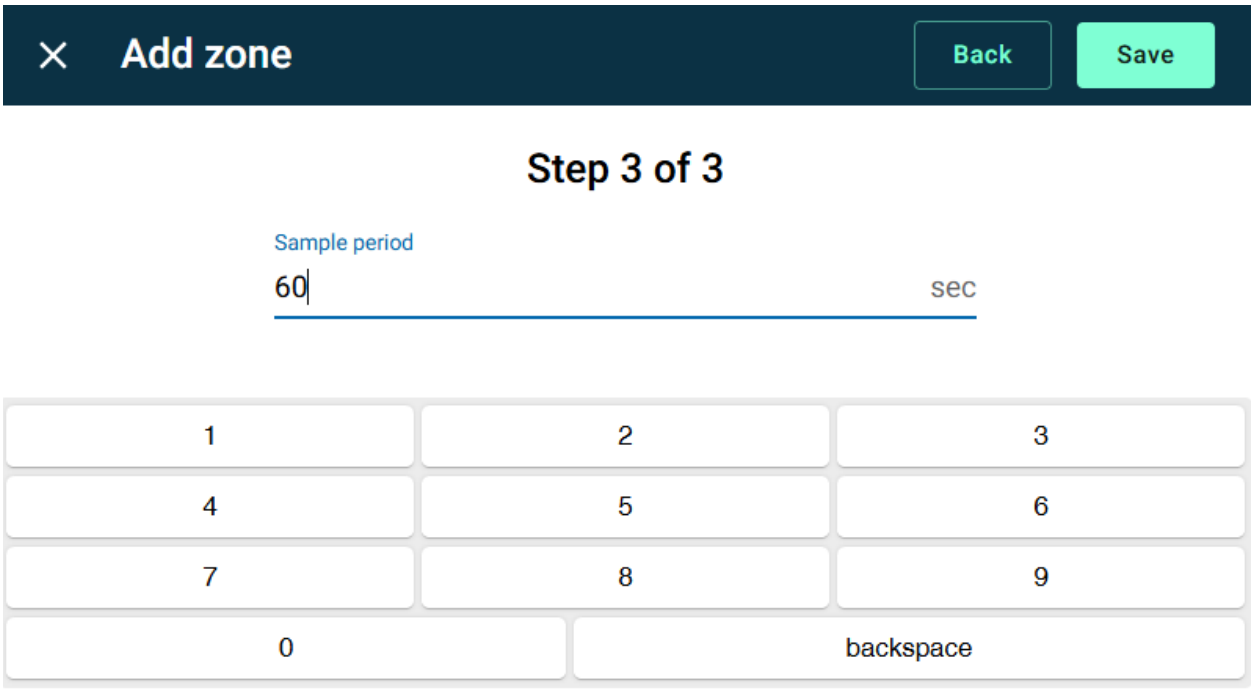


Figure 5-138: Entering a Zone's Sample Period Duration

5.12.4 Editing Zone Configuration

Zones can be customized to reflect their physical location, function, or monitoring purpose. The configuration screen allows users to modify zone properties such as name, aggregation behavior, and device assignments.

5.12.4.1 Editing the Zone Name

The Name field allows users to assign a custom label to the zone. This name appears throughout the interface and helps identify the zone in tables, alerts, and configuration menus.

To edit the zone name:

- Press the **Name** field in the **General Settings** section of the **Zone Details** screen.
- An on-screen keyboard will appear.
- Enter the desired name using the keyboard.
- Press **Save** in the top-right corner to apply the change.

Example: Changing the name from Zone 1 to Mechanical Room A.

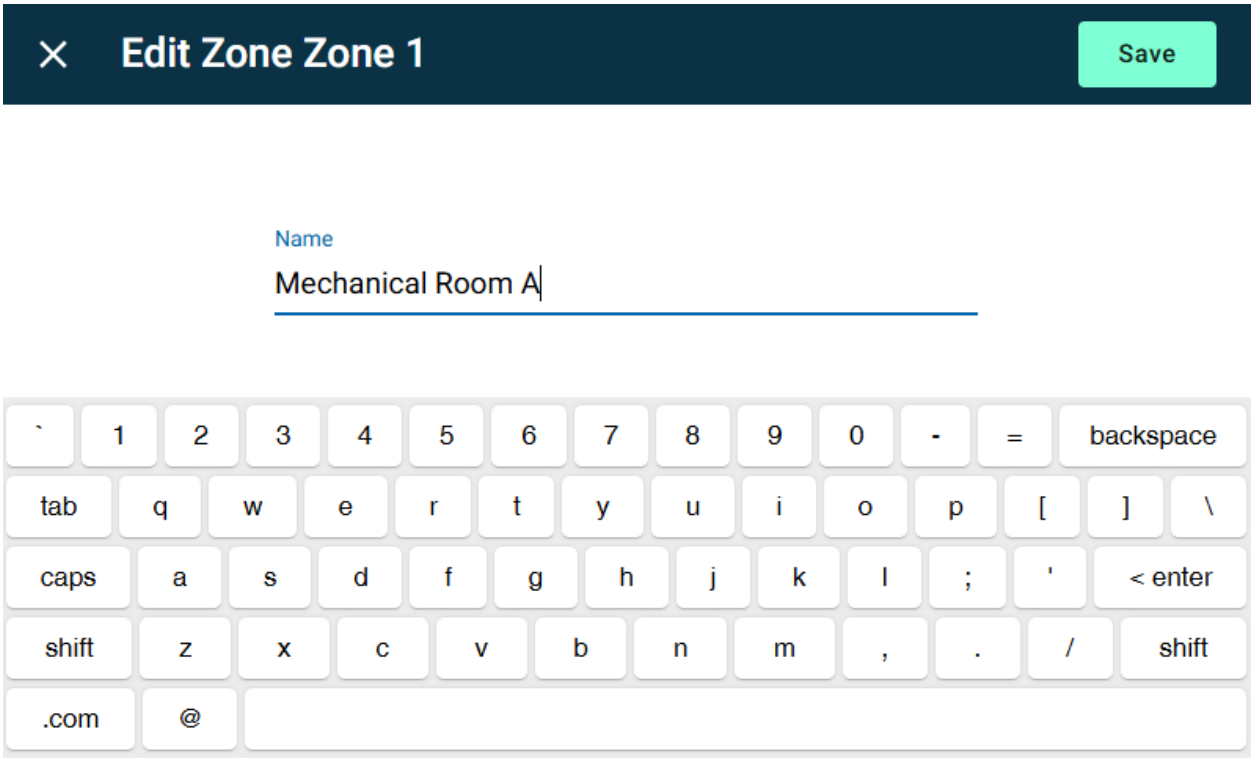


Figure 5-139: Editing a Zone's Name

Tip: A clear and descriptive name improves system clarity, especially in large installations with multiple zones.

5.12.4.2 Editing the Aggregation Type

The Aggregation Type determines how sensor values are evaluated within the zone to trigger alarms and outputs. This setting affects how the system interprets multiple sensor readings assigned to the same zone.

To edit the aggregation type:

- Press the Aggregation Type field in the **General Settings** section of the **Zone Details** screen.
- A pop-up window titled Set the aggregation type will appear.
- Select the desired aggregation method.

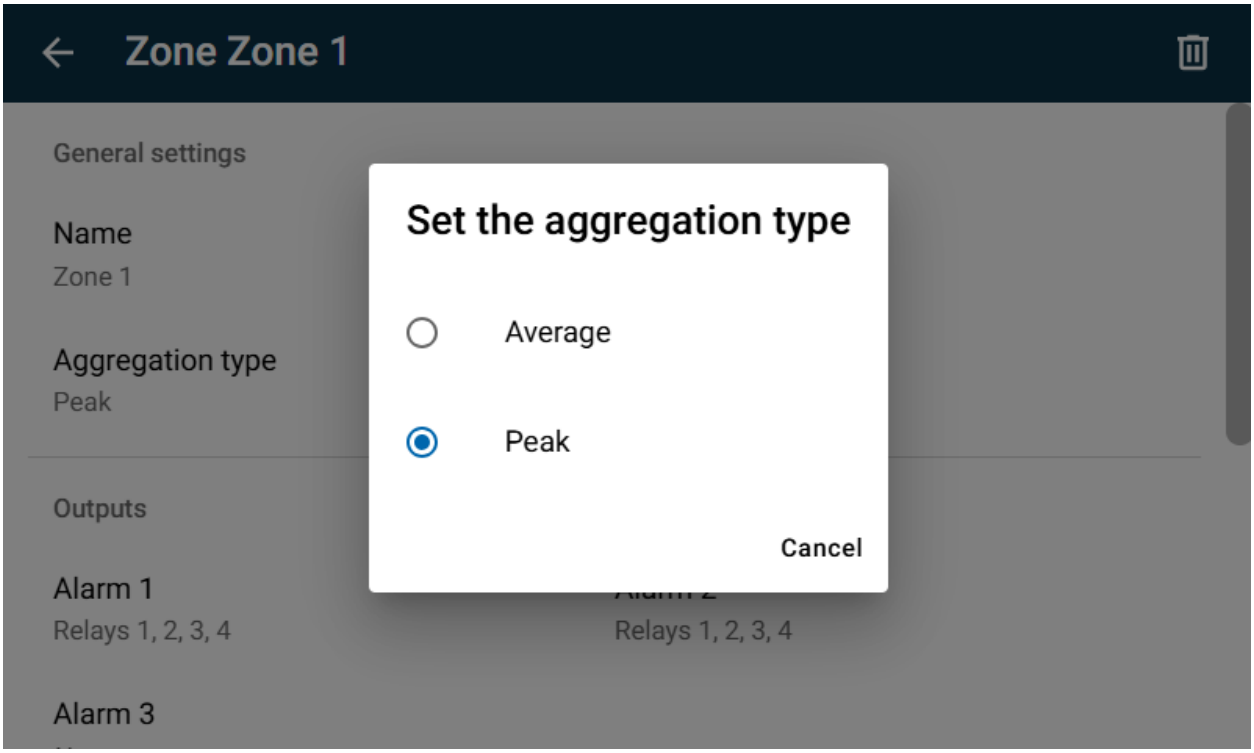


Figure 5-140: Editing a Zone's Aggregation Type

Options:

- Peak: Uses the highest sensor reading in the zone for alarm evaluation.
- Average: Uses the average of all sensor readings in the zone.

Press **Cancel** to exit without making changes. The selected aggregation type will be displayed in the General Settings section once saved.

5.12.4.3 Editing the Sample Period

The Sample Period defines how frequently sensor readings are evaluated within the zone. This setting affects how quickly the system responds to changing sensor values.

To edit the sample period:

- Press the Sample Period field in the **General Settings** section of the **Zone Details** screen.
- A numeric keypad will appear.
- Enter the desired interval in seconds.
- Press **Save** in the top-right corner to apply the change.

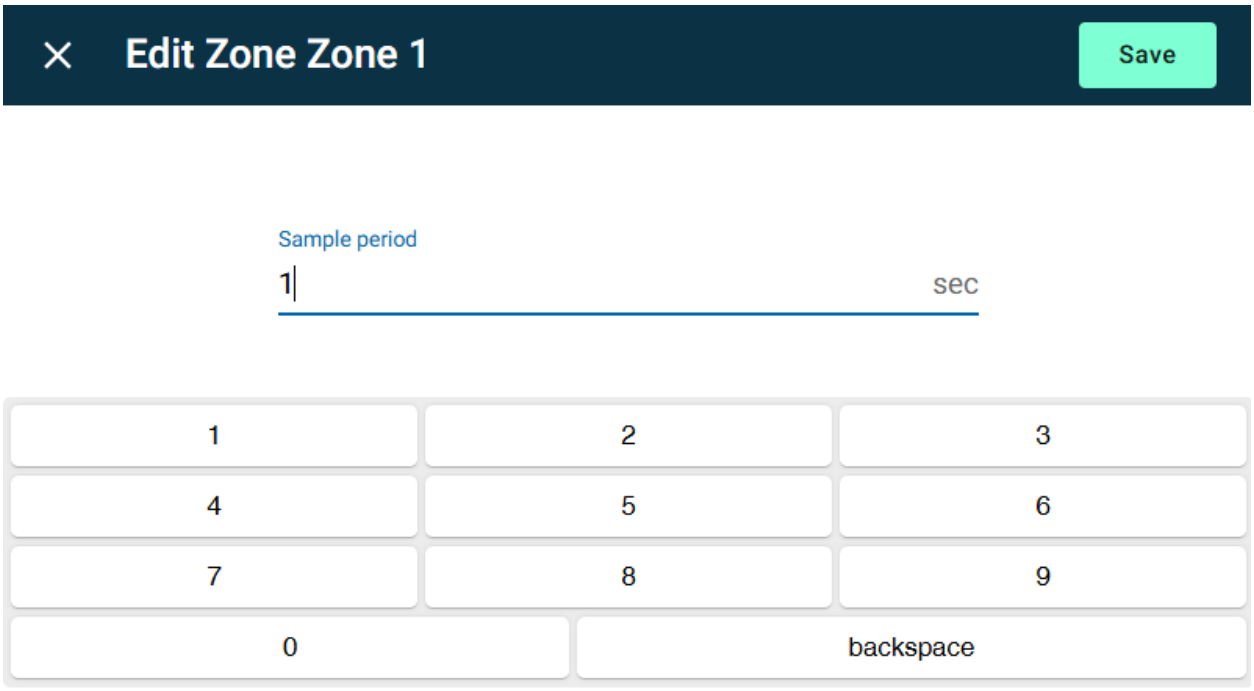


Figure 5-141: Editing a Zone's Sample Period

5.12.4.4 Editing Alarm Mappings

Alarm mappings define which relays are activated when a specific alarm level is triggered within the zone. Each alarm level (Alarm 1, Alarm 2, Alarm 3) can be mapped to one or more relays.

To edit alarm mappings:

- Press the desired alarm level field (e.g., Alarm 1) in the Outputs section of the Zone Details screen.
- A list of available relays will appear, each with a checkbox.
- Select the relays to be activated when the alarm condition is met.
- Press **Save** in the top-right corner to apply the changes.

This setting allows the system to trigger specific outputs based on the severity of the alarm condition.

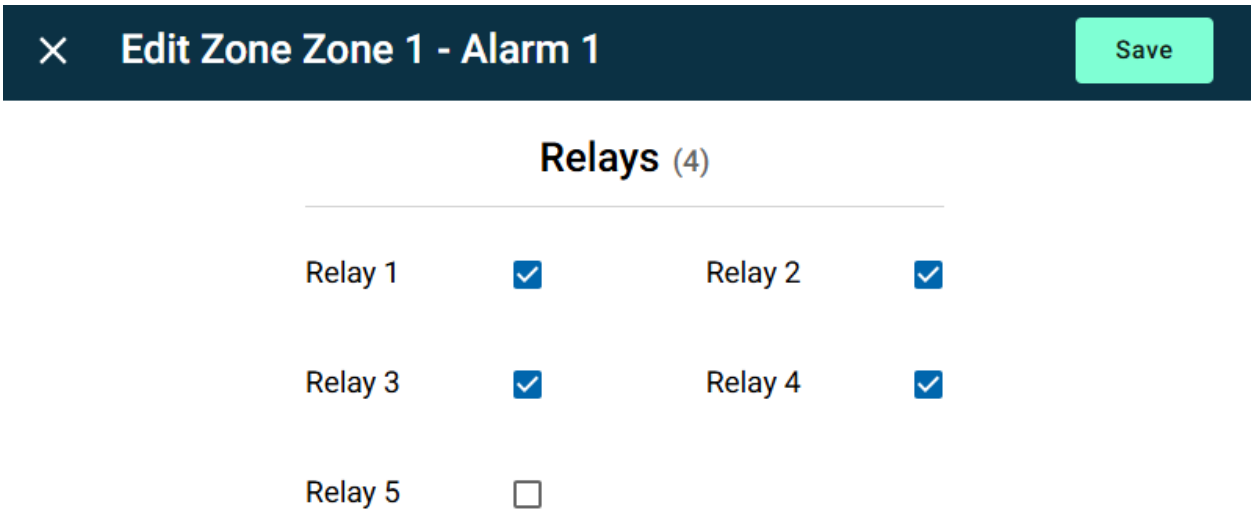


Figure 5-142: Editing a Zone's Alarm Mappings

5.12.4.5 Editing Analog Output Mappings

Analog outputs can be assigned to a zone to reflect sensor values or alarm conditions. Each analog output can only be assigned to one zone at a time.

To edit analog output mappings:

- Press the Analogs field in the Outputs section of the Zone Details screen.
- A list of available analog outputs will appear.
- Each analog output displays its ID and the currently assigned zone (if any) beneath it.
- Select the analog outputs to assign to the current zone.
- Press **Save** in the top-right corner to apply the changes.

If an analog output is already assigned to another zone, selecting it will reassign it to the current zone and remove it from the previous one.

This ensures that each analog output reflects data from only one zone, maintaining clear and consistent signal routing.

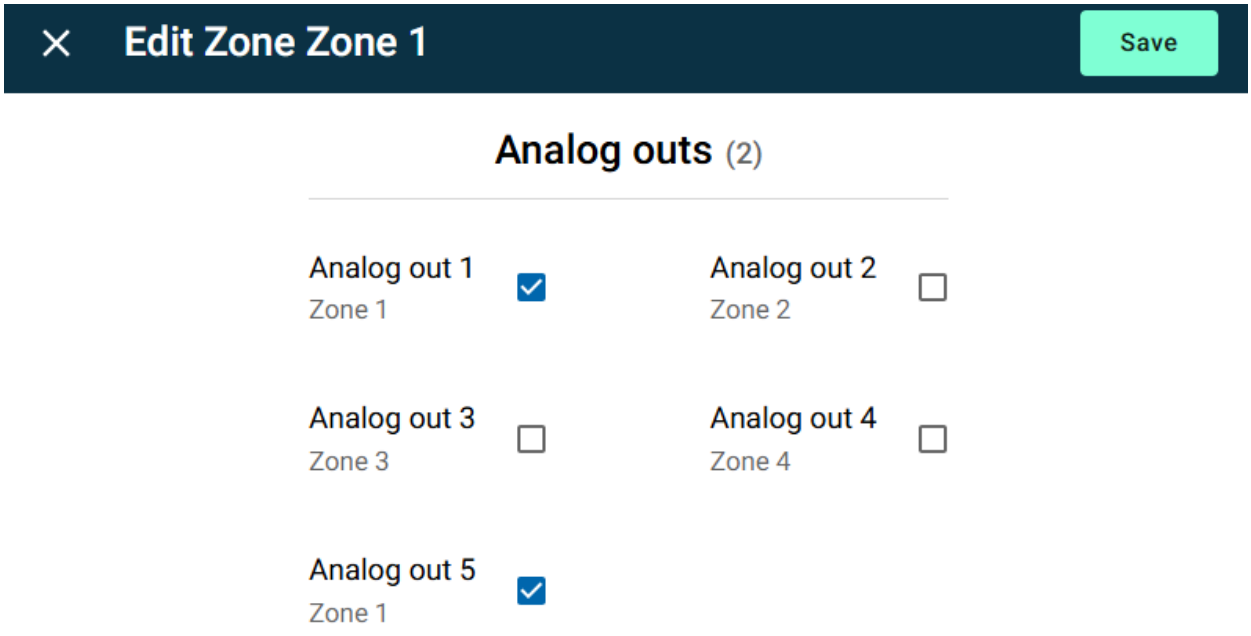


Figure 5-143: Editing a Zone's Analog Output Mappings

5.12.4.6 Editing Fault Relay Mappings

Fault relay mappings determine which relays are activated when a fault condition occurs within the zone. These faults may include sensor errors, communication failures, or other system-level issues.

To edit fault relay mappings:

- Press the Fault Relays field in the Outputs section of the Zone Details screen.
- A list of available relays will appear, each with a checkbox.
- Select the relays to be activated when a fault is detected in the zone.
- Press **Save** in the top-right corner to apply the changes.

Assigning fault relays ensures that critical issues are communicated to external systems or alarms for immediate attention.

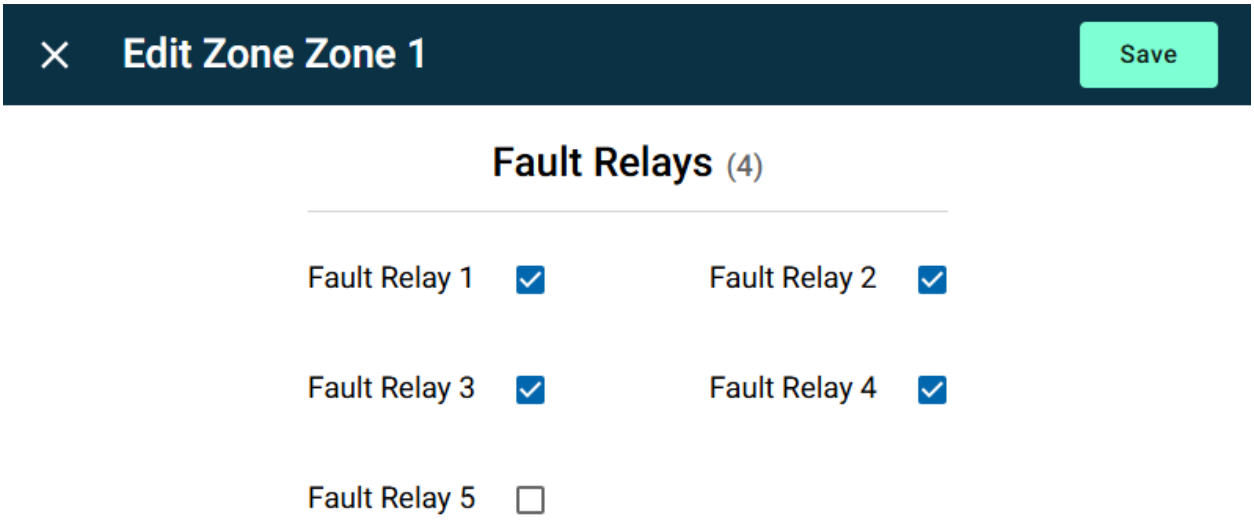


Figure 5-144: Editing a Zone's Fault Relays

5.12.4.7 Editing Sensor Assignments

The Sensors field allows users to assign or remove sensors from a zone. Assigned sensors contribute to the zone's alarm logic and output behavior.

To edit sensor assignments:

- Press the Sensors field in the Zone Details screen.
- A list of available sensors will appear, each with a checkbox.
- Select the sensors to include in the zone.
- Press **Save** in the top-right corner to apply the changes.

Each sensor entry includes:
Sensor ID and type (e.g., Sensor 1 • CO).

NOTE: A sensor can be assigned to multiple zones. Selecting a sensor adds it to the current zone without removing it from others.

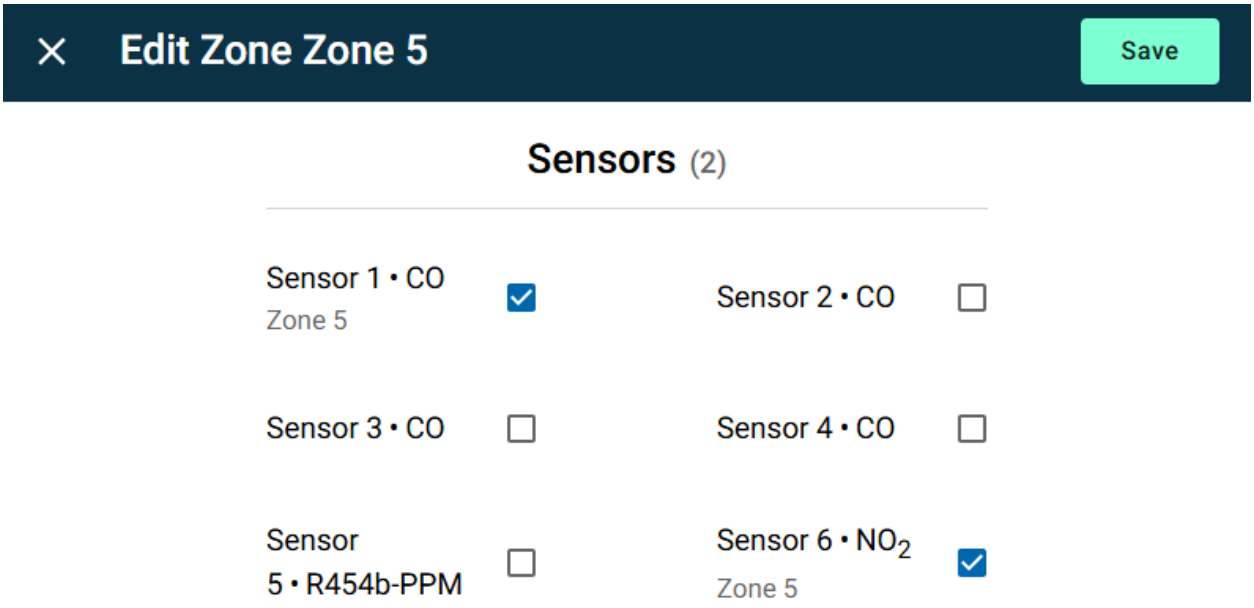


Figure 5-145: Editing a Zone's Sensors

5.13 Settings

The **Settings** screen provides access to system-wide configuration options that affect the behavior, appearance, and operation of the AMC-1DCx-L monitor. These settings are typically adjusted during initial setup or maintenance.

NOTE: The Settings screen is **read-only when the monitor is locked**. To make changes, the monitor must first be **unlocked**. Once unlocked, all editable fields become interactive.

5.13.1 General Settings

The **General Settings** section includes key parameters that define how the system operates at a global level.

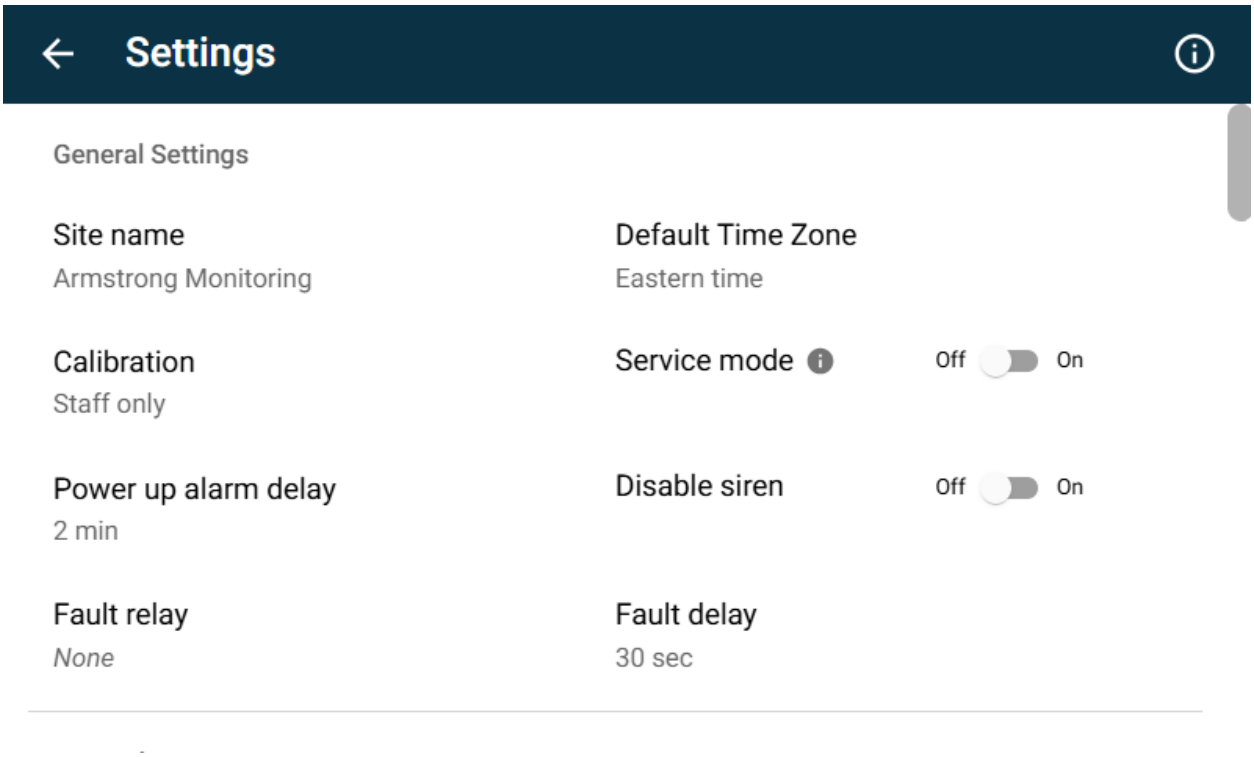


Figure 5-146: General Settings

5.13.1.1 Site Name

The **Site Name** is a customizable label that identifies the monitor within the system. It appears in reports, data logs, and alert messages. This helps users quickly recognize which monitor they are interacting with—especially in multi-monitor installations.

Editing the Site Name

To change the site name:

- **Press** the **Site Name** field in the Settings screen.
- An on-screen keyboard will appear.
- **Enter** the desired name (e.g., *Armstrong Monitoring*).
- Press **Save** in the top-right corner to apply the change.

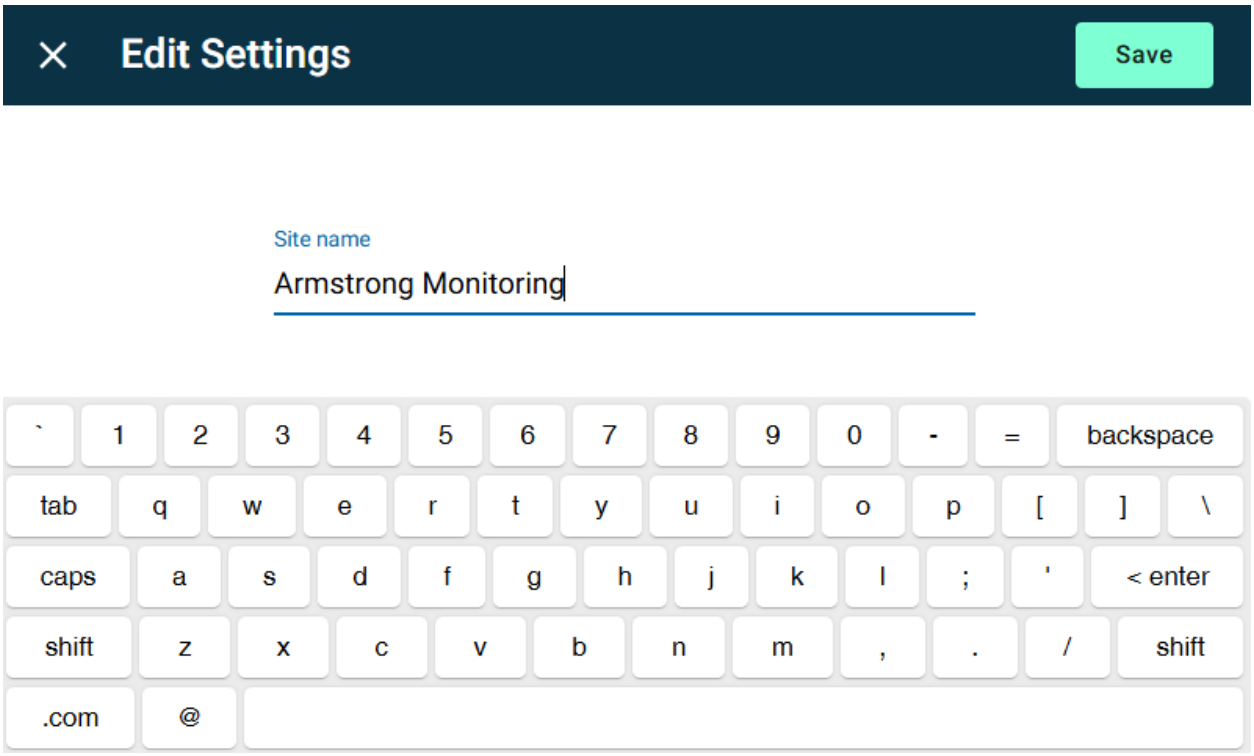


Figure 5-147: Editing the Site Name

5.13.1.2 Default Time Zone

The **Default Time Zone** setting defines the time zone used by the monitor for all time-based functions, including event timestamps, data logs, and alert messages. Setting the correct time zone ensures that all recorded data aligns with the local time of the installation site, which is essential for accurate reporting and troubleshooting.

Editing the Default Time Zone

To change the default time zone:

- **Press** the **Default Time Zone** field in the Settings screen.
- A list of available time zones will appear (e.g., Eastern, Central, Mountain, Pacific).
- **Select** the appropriate time zone for your location.
- Press **Save** in the top-right corner to apply the change.

Once saved, the system will automatically adjust all time-related functions to reflect the selected time zone.

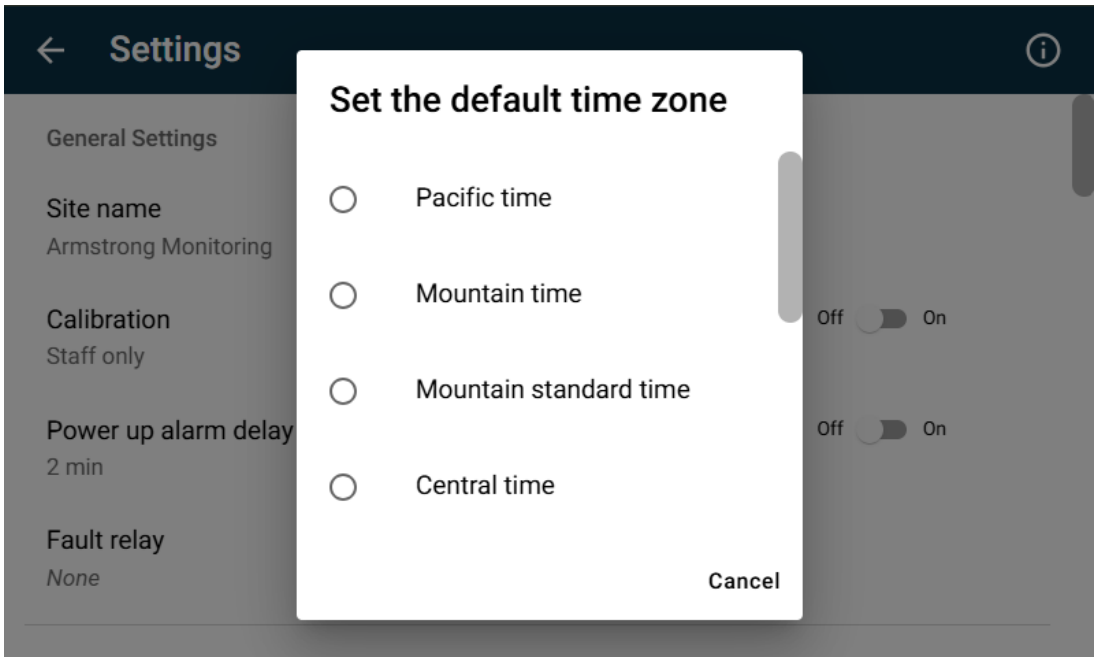


Figure 5-148: Editing the Default Time Zone

Options:

- Pacific Time
- Mountain Time
- Mountain Standard Time
- Central Time
- Central Standard Time
- Eastern Time
- Atlantic Time
- Newfoundland Time
- Coordinated Universal Time

5.13.1.3 Calibration

The **Calibration** setting controls who is authorized to perform sensor calibration procedures on the monitor. This restriction helps ensure that only qualified personnel can access and modify calibration settings, which are critical for maintaining sensor accuracy and system reliability.

By default, calibration access is limited to **Staff only**, but it can be adjusted to allow broader access if needed.

Editing the Calibration Setting

To change the calibration access level:

- **Press** the **Calibration** field in the Settings screen.
- A pop-up window titled **Set the calibration** will appear.
- **Select** one of the available options:
  - **Everyone**: Allows all users to access calibration functions.
  - **Staff only**: Restricts calibration access to authorized personnel.
- Press **Save** to apply the change, or **Cancel** to exit without making changes.

Restricting calibration access helps prevent accidental or unauthorized changes to sensor settings.

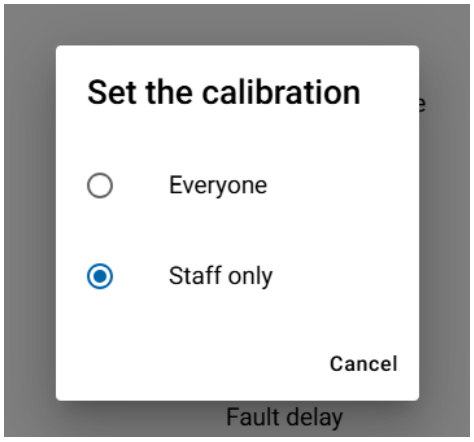


Figure 5-149: Setting Calibration Permissions

5.13.1.4 Service Mode

The **Service Mode** setting allows technicians to temporarily mute the siren and suppress alarm responses during maintenance or troubleshooting. This feature is useful when performing tasks that might otherwise trigger alarms, such as sensor replacement or system testing.

When enabled, **Service Mode** lasts for up to one hour and automatically reverts to normal operation afterward to ensure continued safety monitoring.

Enabling or Disabling Service Mode

To change the Service Mode setting:

- **Press** the **Service Mode** toggle in the Settings screen.
- Select **On** to activate Service Mode or **Off** to return to normal operation.
- A confirmation message may appear to indicate that alarms and sirens will be temporarily disabled.

Figure 5-150: Service Mode Toggle Switch

NOTE: While Service Mode is active, the system continues to monitor sensor values but will not trigger audible alarms or relay outputs.

Service Mode Banner

When Service Mode is active, an orange banner appears at the bottom of the dashboard displaying a countdown timer. This timer shows how much time remains before the system automatically exits Service Mode.

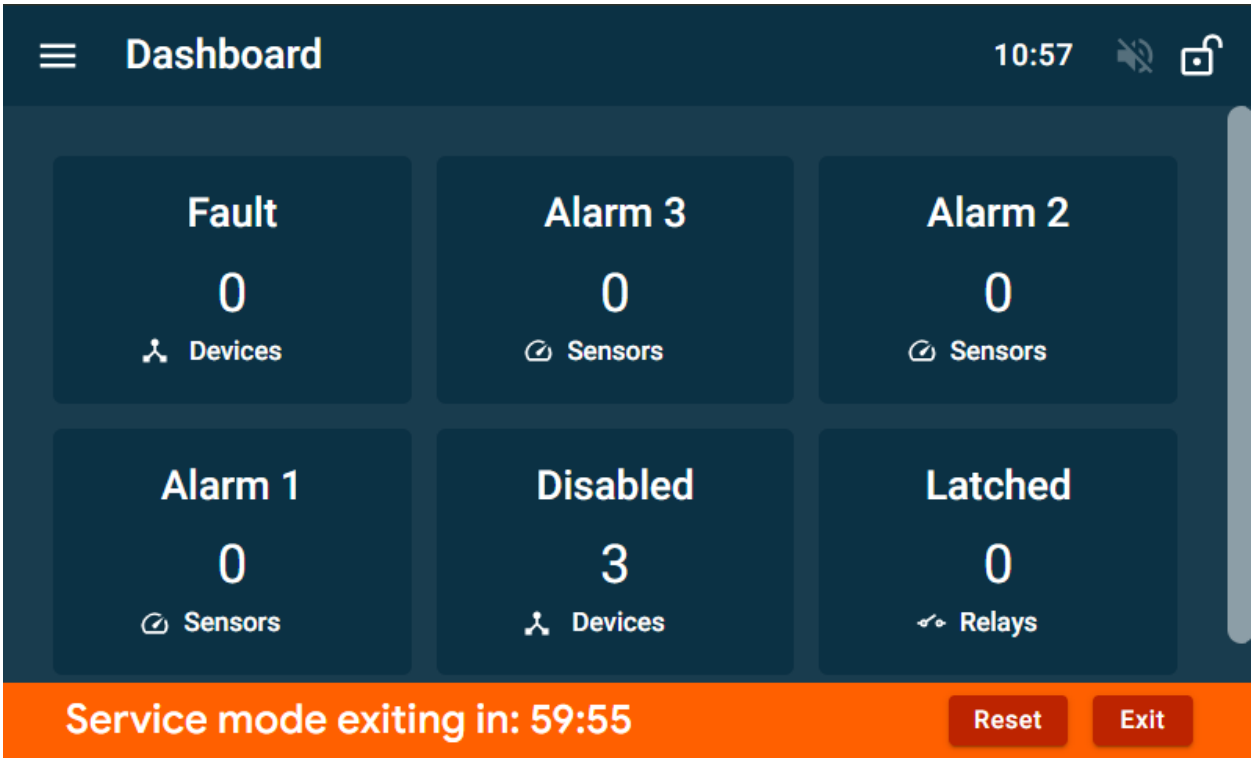


Figure 5-151: Service Mode Banner

The banner includes two buttons:

- **Reset**: Resets the countdown timer to the full one-hour duration.
- **Exit**: Immediately ends Service Mode and returns the system to normal operation.

This banner provides a clear visual indicator that the system is in a temporary maintenance state and allows users to manage the remaining time or exit early if needed.

5.13.1.5 Power Up Alarm Delay

The **Power Up Alarm Delay** setting defines how long the system waits after startup before evaluating alarms and faults. This delay allows connected devices—such as sensors, relays, and analog outputs—to initialize and stabilize without triggering false alarms.

This feature is especially important in systems with MODBUS-connected devices that may require additional time to become fully operational after a power cycle or restart.

Editing the Power Up Alarm Delay

To change the delay duration:

- **Press** the **Power Up Alarm Delay** field in the Settings screen.
- A pop-up window titled **Set the power up alarm delay** will appear.
- **Select** the desired delay time (e.g., **2 min** or **5 min**).
- Press **Save** to apply the change.

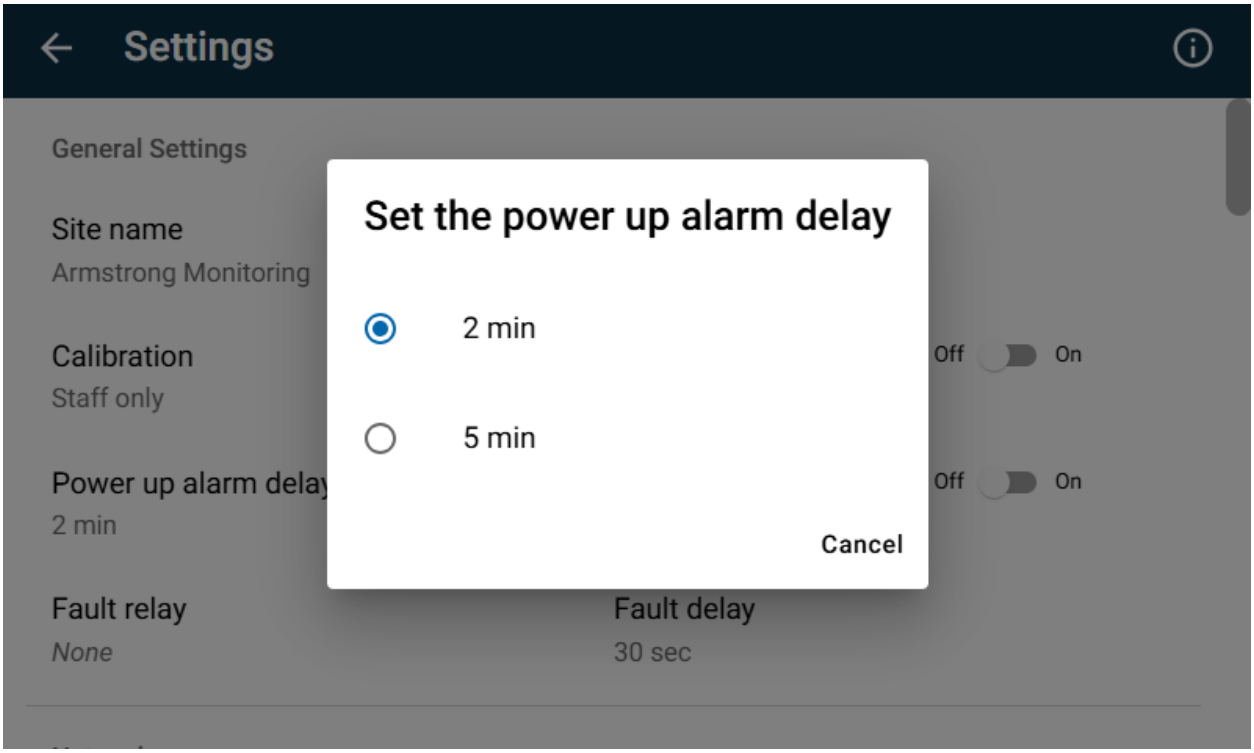


Figure 5-152: Power Up Alarm Delay Options

During the delay period, the system enters **Warm-Up Mode**, during which alarms and faults are temporarily suppressed. Once the delay expires, the system resumes normal monitoring and alert behavior.

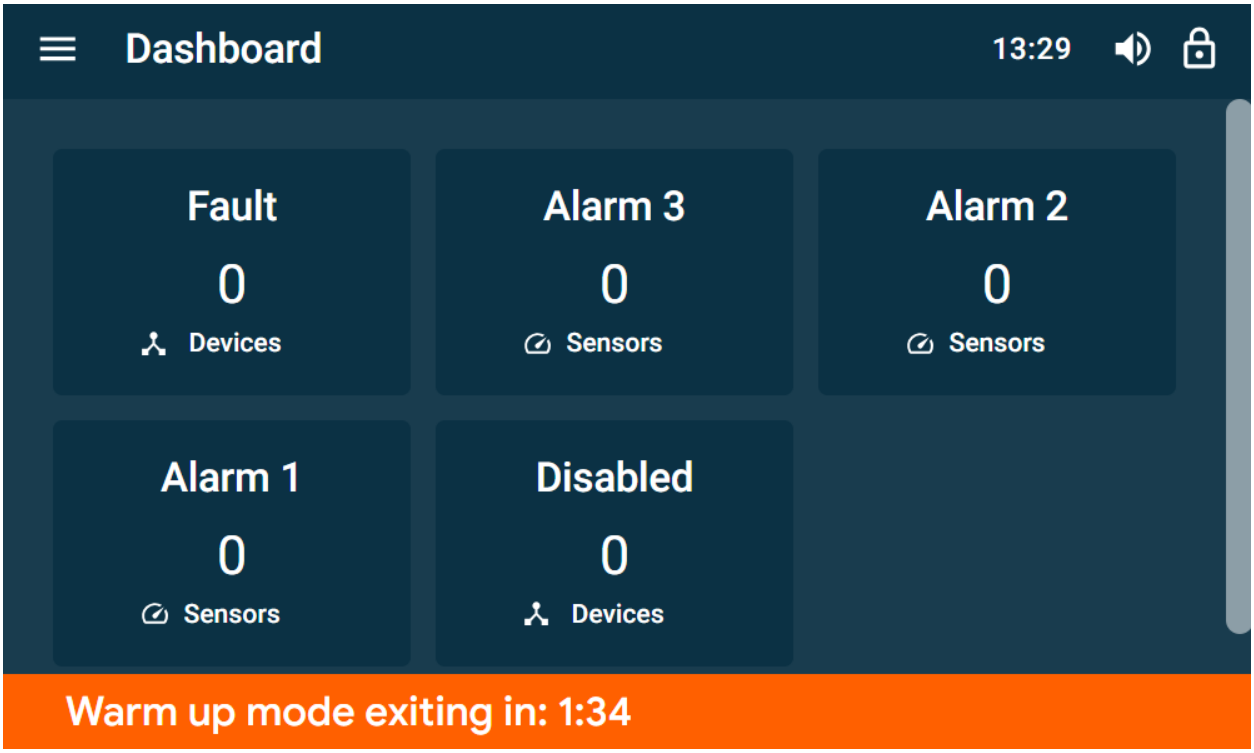


Figure 5-153: Warm Up Mode Banner

5.13.1.6 Disable Siren

The **Disable Siren** setting allows users to permanently mute the system's audible alarm. When this setting is enabled, the siren will not sound under any circumstances, and the **mute icon** on the dashboard is hidden. This is useful in environments where audible alarms are not permitted or where external signaling is handled through other means.

> **IMPORTANT:** Disabling the siren mutes all sound from the siren. Use this setting with caution to avoid missing critical alerts.

Disabling the Siren

To permanently disable the siren:

- **Press** the **Disable Siren** toggle in the Settings screen.
- A confirmation dialog will appear informing the user that siren will not sound until this setting is turned off.
- **Press OK** to confirm and apply the change.

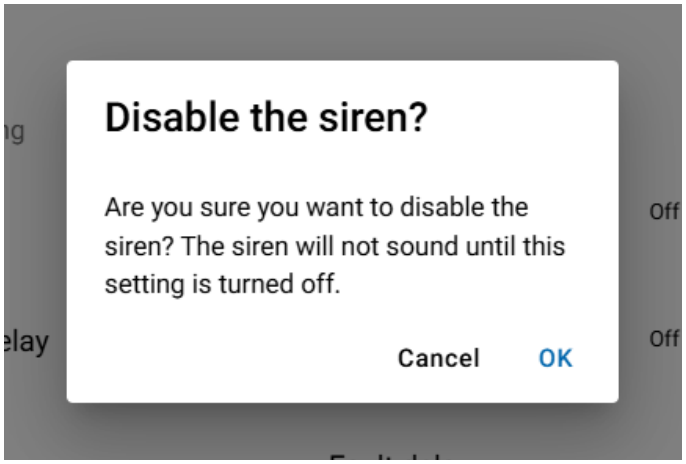


Figure 5-154: Permanently Mute Siren Confirmation

Once disabled, the siren will remain muted until the setting is manually turned off. The mute icon on the dashboard will also be disabled, indicating that audible alerts are no longer available.

Figure 5-155: Permanently Muted Siren Indicator Icon in App Bar

5.13.1.7 Fault Relay

The **Fault Relay** setting allows users to assign one or more relays to activate when a system fault occurs. This provides a dedicated output for alerting external systems—such as building management systems, sirens, or indicator lights—when a fault condition is detected.
Fault conditions may include sensor errors, communication failures, or hardware issues.

Configuring the Fault Relay
To assign fault relays:

- **Press** the **Fault Relay** field in the Settings screen.
- The **Edit System Fault Relays** screen will appear, listing available relays.
- **Select** one or more checkboxes to assign relays that should activate during a fault.
- Press **Save** in the top-right corner to apply the changes.

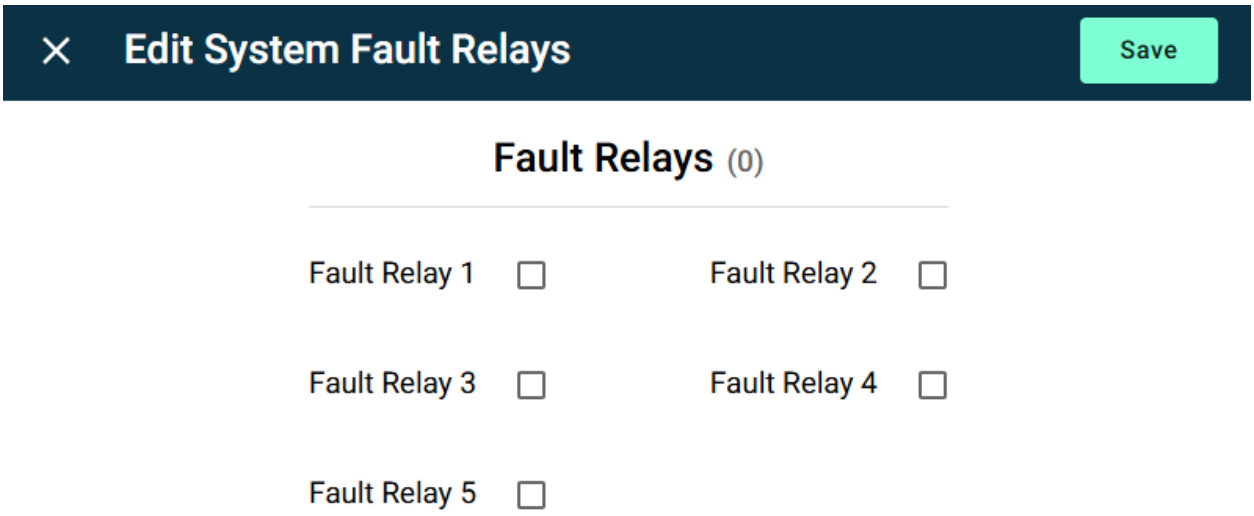


Figure 5-156: System Fault Relays Settings

Once configured, the selected relays will automatically activate whenever a system fault is detected, ensuring timely notification of critical issues.

5.13.1.8 Fault Delay

The **Fault Delay** setting defines how long the system waits after detecting a fault condition before activating the assigned fault relay(s). This delay helps prevent unnecessary alerts caused by brief or transient issues, such as temporary communication interruptions.

Editing the Fault Delay

To change the fault delay:

- **Press** the **Fault Delay** field in the Settings screen.
- A pop-up window titled **Set the fault delay** will appear.
- **Select** one of the available delay options:
  - **No delay**
  - **10 sec**
  - **30 sec** (default)
  - **5 min**
- Press **Save** to apply the change.

The selected delay will be applied to all configured fault relays. Once the delay period expires, the system will activate the fault relay(s) if the fault condition is still present.

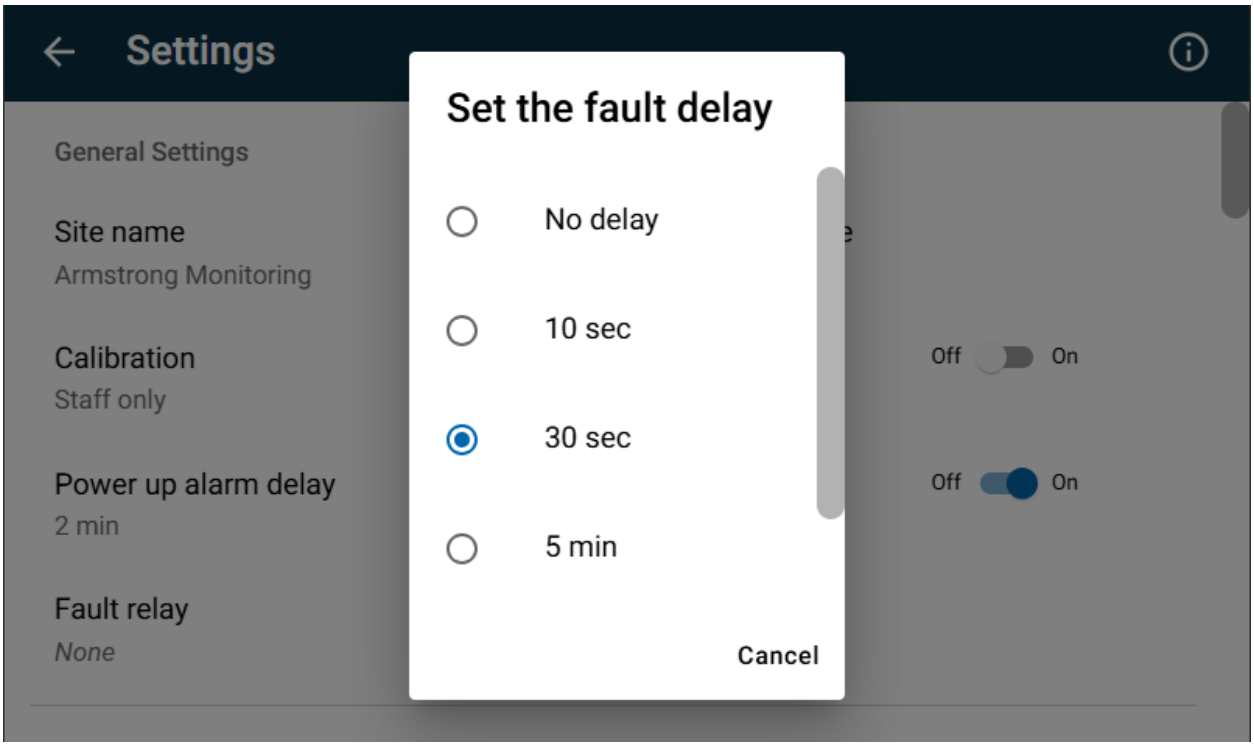


Figure 5-157: Fault Delay Settings

5.13.2 Network Settings

The **Network** section allows users to configure the AMC-1DCx-L monitor's Ethernet settings. These parameters are essential for enabling communication with external systems such as building automation platforms, remote monitoring tools, or time synchronization services.

Available Fields

- **IP Assignment**: Determines how the monitor obtains its network configuration.
- **IPv4 Address**: The current IP address assigned to the monitor.
- **Gateway**: The default gateway used for routing traffic outside the local network.
- **MAC Address**: The Medium Access Control (MAC) address is the unique hardware address of the monitor's network interface.
- **DNS Server**: The IP address of the Domain Name System (DNS) server used for resolving domain names.

These fields (Excluding the MAC address) are editable when **Manual (static)** IP assignment is selected.

Editing IP Assignment

To change how the monitor obtains its network settings:

- **Press** the **IP Assignment** field in the Network section.
- A pop-up window titled **Set the IP Assignment** will appear.
- **Select** one of the following options:
    - **Automatic (DHCP)**: The monitor automatically receives its IP address and network settings from a Dynamic Host Configuration Protocol (DHCP) server. The assigned values are displayed for reference but cannot be edited.
    - **Manual (static)**: The user manually enters the IP address, subnet, gateway, and Domain Name System (DNS) server. Ideal for fixed installations requiring a consistent address.
    - **Standalone**: Disables all Ethernet communication. Use this mode when the monitor is not connected to a network or when isolation is required for security or operational reasons. All network fields are hidden in this mode.
- Press **Save** to apply the selected mode.

NOTE: When **Standalone** is selected, some network-dependent features—including remote access, and BACnet over IP—are disabled and hidden.

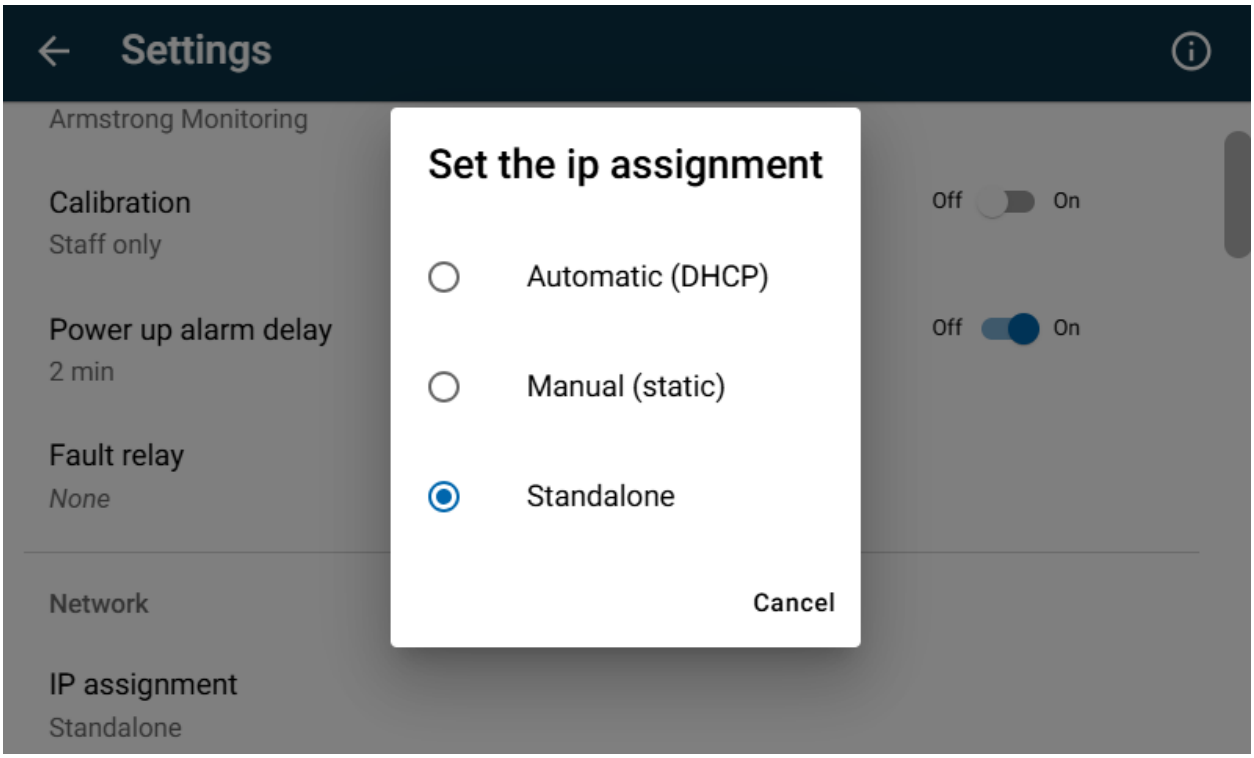


Figure 5-158: Setting the IP Assignment

Manual IP Configuration Wizard

If **Manual (static)** is selected, a three-step wizard guides the user through entering the required network information:

Step 1 of 3: Set IPv4 Address

Enter the monitor's IP address in Classless Inter-Domain Routing (CIDR) format.
Format: <0–255>.<0–255>.<0–255>.<0–255>/<0–32>

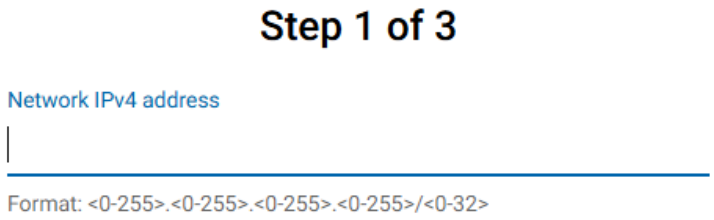


Figure 5-159: Setting Network IPv4 Address

Step 2 of 3: Set Gateway
Enter the default gateway address.
Format: <0–255>.<0–255>.<0–255>.<0–255>

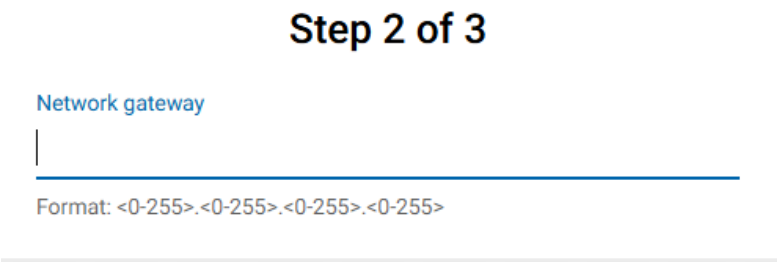


Figure 5-160: Setting Network Gateway Address

Step 3 of 3: Set DNS Server
Enter the IP address of the DNS server.
Format: <0–255>.<0–255>.<0–255>.<0–255>

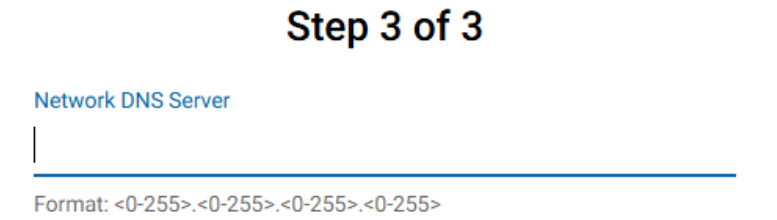


Figure 5-161: Setting Network DNS Server Address

Each step includes a virtual keyboard for input and a **Next** or **Save** button to proceed.

Applying Changes

After completing the configuration, the system displays a confirmation message:

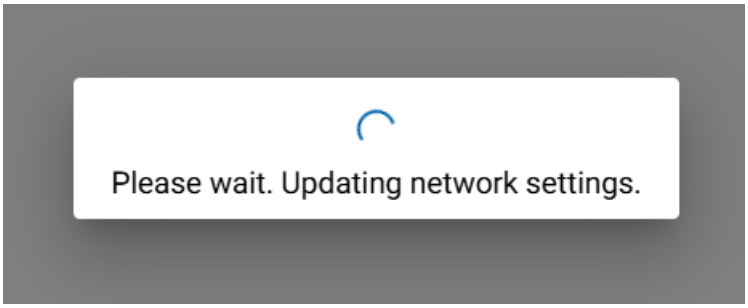


Figure 5-162: Confirmation of Updating Network Settings

Once the update is complete, the monitor automatically enters **Warm-Up Mode**. During this period, alarms and faults are temporarily suppressed to allow connected devices to reinitialize and stabilize. The system resumes normal monitoring after the warm-up period expires.

5.13.3 BACnet Settings

The **BACnet** section allows users to configure the AMC-1DCx-L monitor for integration with BACnet/IP networks. These settings are essential for enabling communication with Building Automation Systems (BAS) that use the BACnet protocol.

5.13.3.1 Device Name

The **Device Name** is a user-defined label that identifies the AMC-1DCx-L monitor on the BACnet/IP network. This name is used by building automation systems (BAS) to reference the device in dashboards, logs, and configuration tools.

A clear and descriptive name helps distinguish the monitor from other BACnet devices, especially in large or multi-building installations.

Editing the Device Name

To change the BACnet device name:

- **Press** the **Device Name** field in the BACnet settings section.
- An on-screen keyboard will appear.
- **Enter** the desired name using letters, numbers, or special characters.
- Press **Save** in the top-right corner to apply the change.

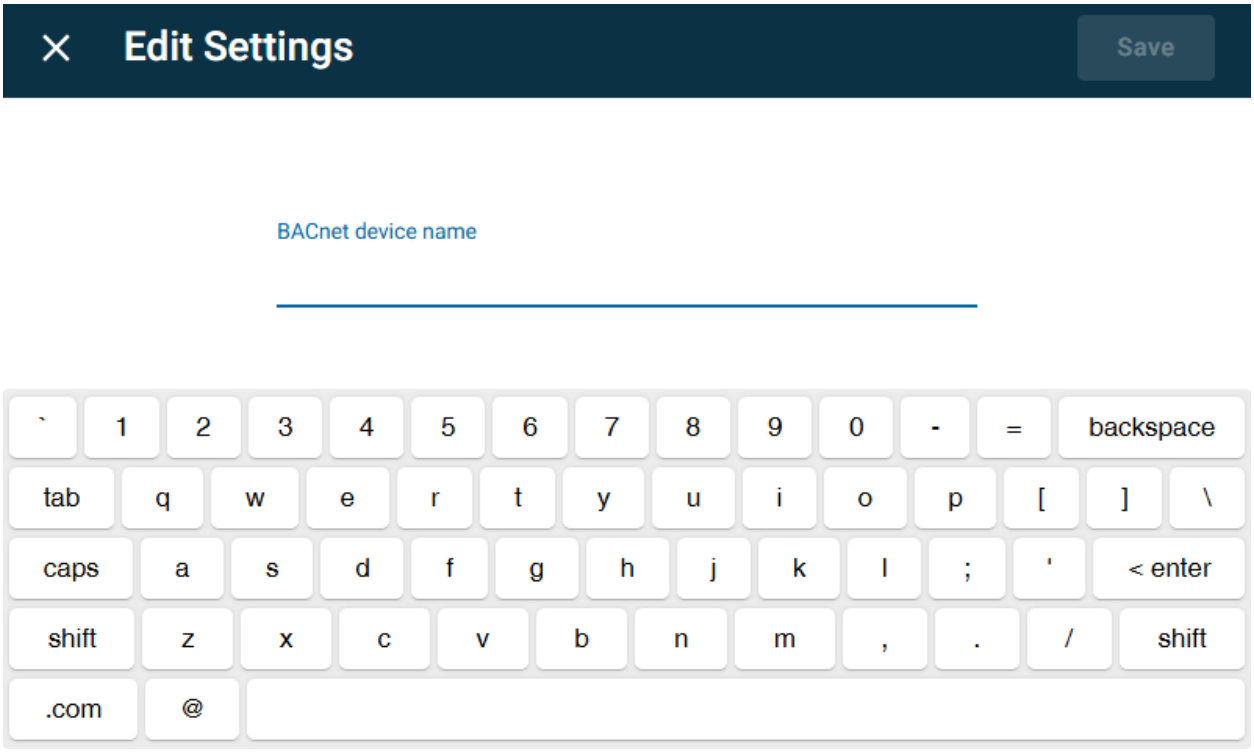


Figure 5-163: Editing the BACnet Device Name

5.13.3.2 Device ID

The **Device ID** is a unique numerical identifier assigned to the AMC-1DCx-L monitor on the BACnet/IP network. This ID is used by building automation systems (BAS) to distinguish between devices and must be unique across the entire BACnet network.

IMPORTANT: Duplicate device IDs can cause communication conflicts and should be avoided.

Editing the Device ID

To change the BACnet device ID:

- **Press** the **Device ID** field in the BACnet settings section.
- A numeric keypad will appear.
- **Enter** a new numeric value using the keypad.
- The **Save** button will become active once a valid number is entered.
- Press **Save** in the top-right corner to apply the change.

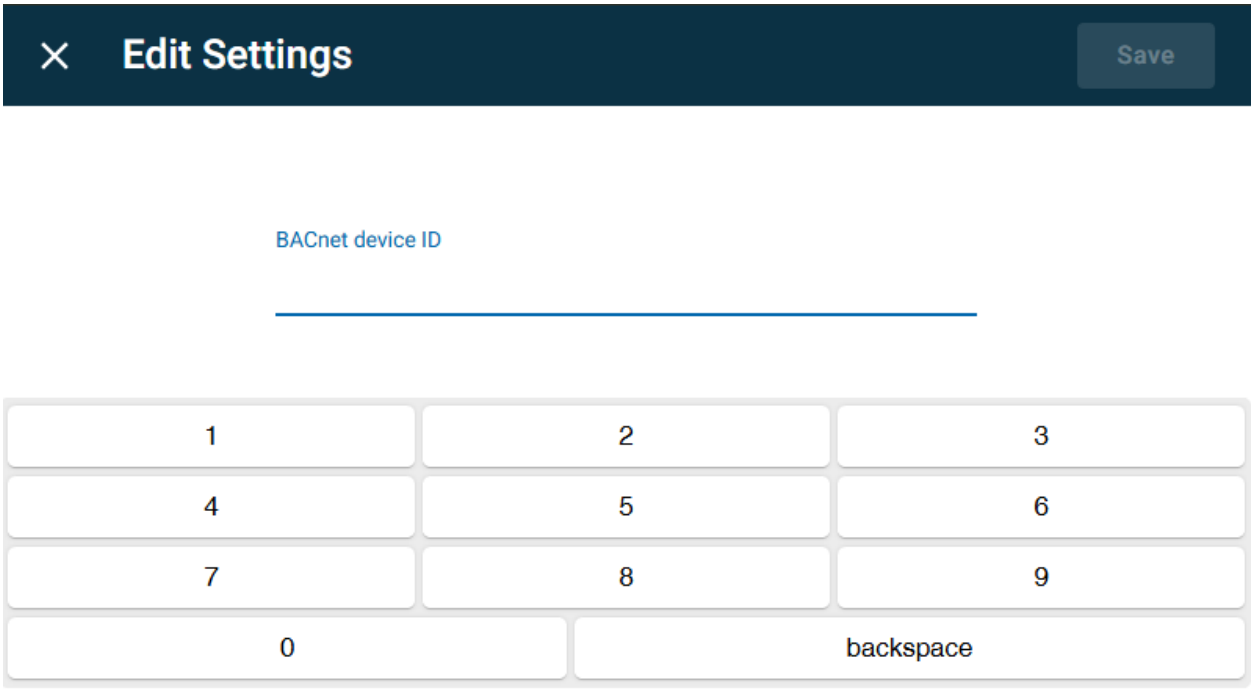


Figure 5-164: Editing the BACnet Device ID

5.13.3.3 Port

The **Port** field specifies the UDP port number used for BACnet/IP communication. This value must match the port used by the BACnet network to ensure successful communication between the AMC-1DCx-L monitor and other BACnet devices.

The default BACnet/IP port is **47808**, but this can be changed if the network uses a non-standard configuration. The port can be set to a number within the ranges **47808–47823** or **49152–65535.**

Editing the Port

To change the BACnet port:

- **Press** the **Port** field in the BACnet settings section.
- A numeric keypad will appear.
- **Enter** the desired port number.
- Press **Save** in the top-right corner to apply the change.

NOTE: Only change the port if instructed by your network administrator or if required by your BACnet system configuration.

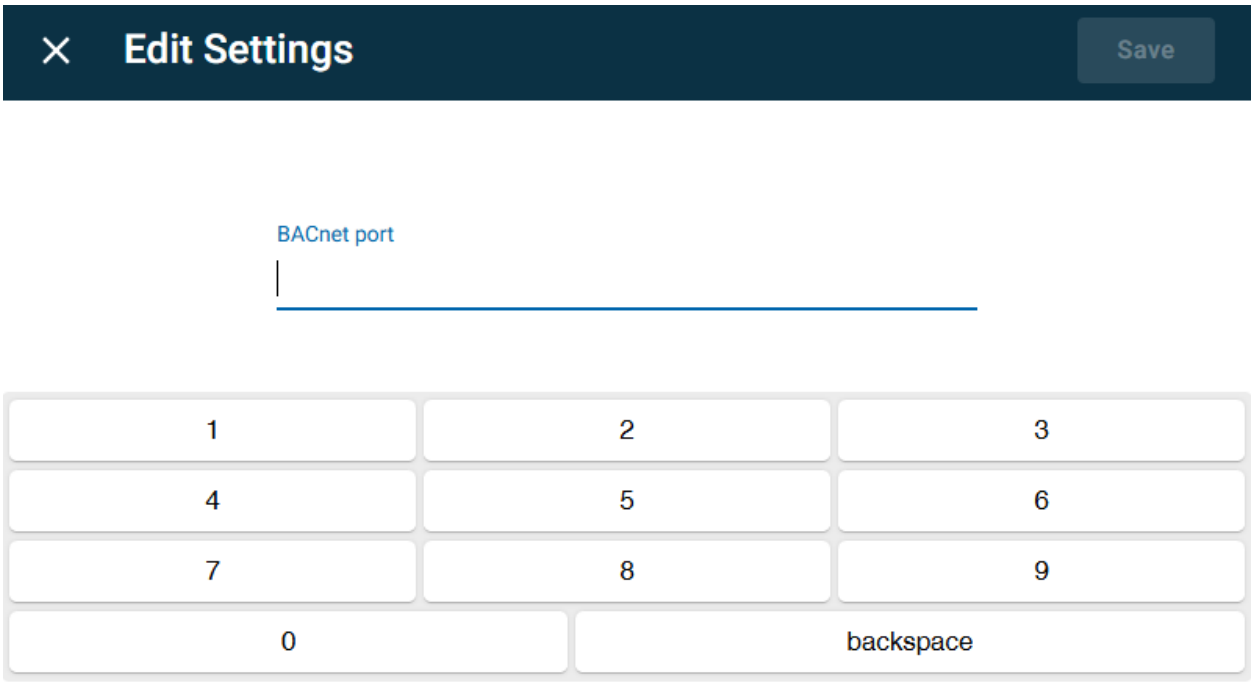


Figure 5-165: Editing the BACnet Port

5.13.3.4 Foreign Device BACnet Broadcast Management Device Address

The **FD BBMD Address** field is used to configure the monitor as a **BACnet Foreign Device**. This allows the AMC-1DCx-L to communicate across subnets by registering with a **BACnet Broadcast.**

Management Device (BBMD).
This setting is only required in networks where BACnet devices are distributed across multiple IP subnets and need to exchange broadcast messages.

Accepted Formats

- **IP only**: 192.168.1.100
- **IP with port**: 192.168.1.100:47808
  (Port must be within the ranges **47808–47823** or **49152–65535**)

Editing the FD BBMD Address
To configure the BBMD address:

- **Press** the **FD BBMD Address** field in the BACnet settings section.
- An on-screen keyboard will appear.
- **Enter** the IP address of the BBMD, with or without a port number.
- Press **Save** in the top-right corner to apply the change.

NOTE: If no BBMD is required, leave this field blank or set it to None.

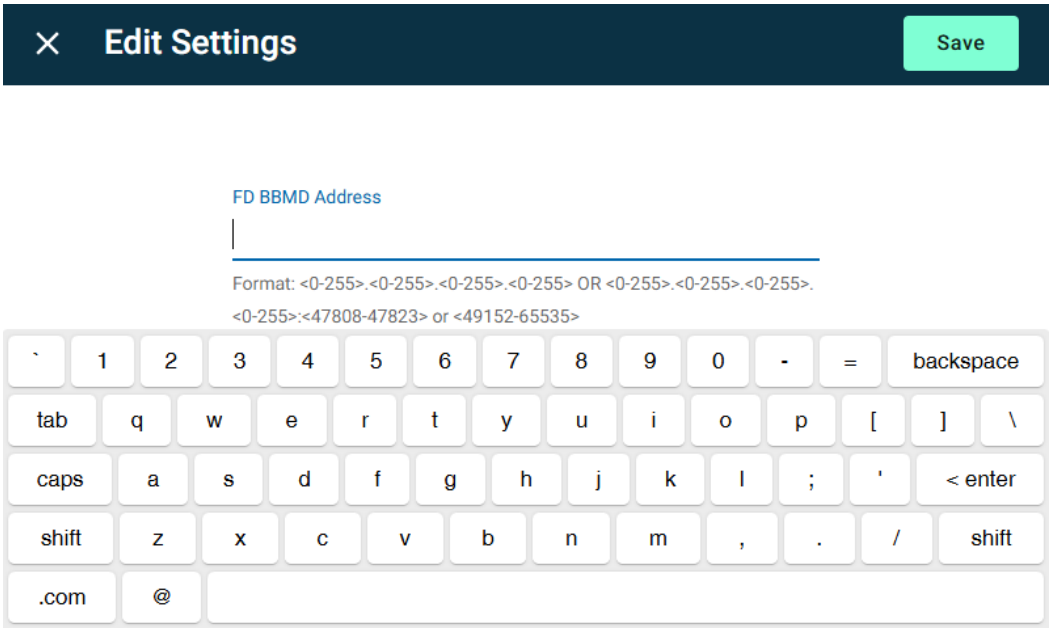


Figure 5-166: Editing the Foreign Device BBMD Address

5.13.3.5 Foreign Device Time To Live

The **Foreign Device Time To Live** (FD TTL) setting defines how long the AMC-1DCx-L monitor remains registered with a **BACnet Broadcast Management Device (BBMD)** when operating as a **foreign device**.

NOTE: Time to Live (TTL) is a mechanism that limits the lifespan of data in a network or computer system. Increasing it may prevent BBMD from removing this device from its FDT (Foreign Device Table).

A typical value is **30 seconds**, but this may vary depending on the BACnet network configuration.

Editing the Foreign Device TTL

To change the TTL value:

- **Press** the **Foreign Device Time To Live** field in the BACnet settings section.
- A numeric keypad will appear.
- **Enter** the desired duration in seconds.
- Press **Save** in the top-right corner to apply the change.

NOTE: This setting is only relevant when the **FD BBMD Address** is configured. If the monitor is not acting as a foreign device, this value has no effect.

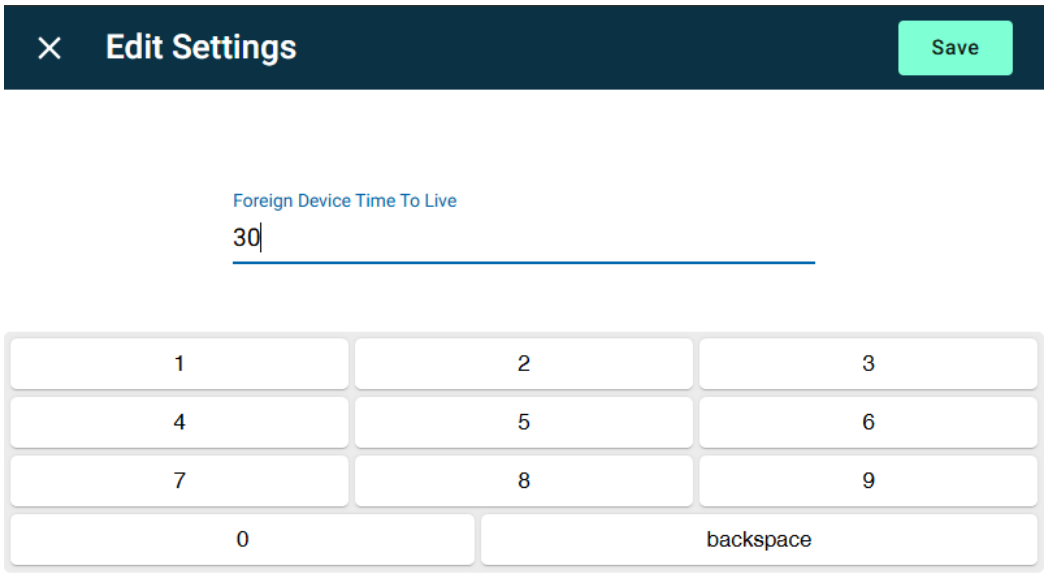


Figure 5-167: Editing the Foreign Device Time To Live

5.13.4 MODBUS Lanes

The AMC-1DCx-L monitor supports communication with external devices over a single **MODBUS RTU** lane. This lane is used to connect sensors, relays, and analog output modules via RS-485.

NOTE: The DCx-L model does not support additional MODBUS lanes. Lanes 2–4 are only available on the standard DCx model.

5.13.4.1 Lane Overview

The **MODBUS Lanes** screen displays configuration details for the available communication lane. In the DCx-L model, only **Lane 1** is available.

Displayed parameters include:

- **ID**: Identifies the lane (always 1 for DCx-L).
- **Baud Rate**: Communication speed in bits per second.
- **Parity**: Error-checking method (E for Even, O for Odd, N for None).
- **Byte Size**: Number of data bits per transmission.
- **Stop Bits**: Number of stop bits used.
- **Tx / Rx**: Counters showing the number of transmitted and received messages.
- **Conflicts:** Counter showing the number of transactions with CRC (Cyclic Redundancy Check) errors.

5.13.4.2 Baud Rate

The **Baud Rate** setting defines the communication speed for the MODBUS RTU lane. It must match the baud rate of all connected MODBUS devices to ensure reliable communication.

Available options include:

- **9600** (default)
- **19200**
- **38400**

NOTE: Higher baud rates allow faster data transmission but may be more sensitive to cable quality and length.

Editing the Baud Rate

To change the baud rate:

- **Press** the **Baud Rate** field in the MODBUS Lanes table.
- A pop-up window titled **Set the baud rate** will appear.
- **Select** the desired baud rate from the list.
- Press **Save** or **Cancel** to exit without making changes.

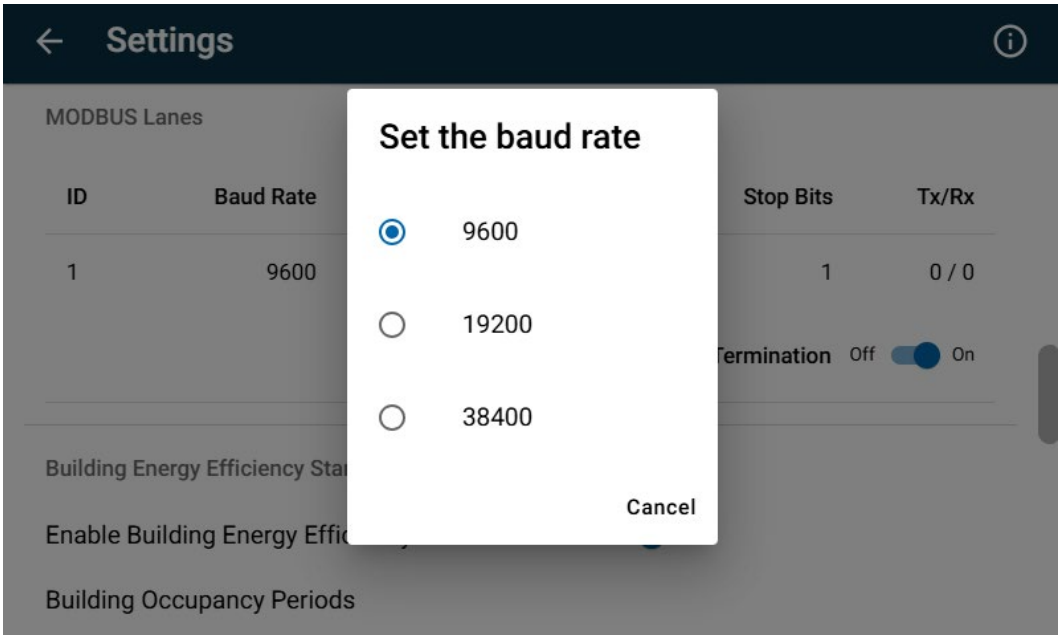


Figure 5-168: Setting a Modbus Lane's Baud Rate

5.13.4.3 Parity

The **Parity** setting defines the error-checking method used for MODBUS communication. It helps detect transmission errors by adding a parity bit to each data byte.

Available options include:

- **Even** (default): Adds a parity bit to ensure the total number of 1s is even.
- **Odd**: Adds a parity bit to ensure the total number of 1s is odd.
- **None**: No parity bit is added. This may be used in systems where parity checking is not required.

NOTE: All connected MODBUS devices must use the same parity setting to communicate correctly.

Editing the Parity

To change the parity setting:

- **Press** the **Parity** field in the MODBUS Lanes table.
- A pop-up window will appear with the available options.
- **Select** the desired parity mode.
- Press **Save** to apply the change.

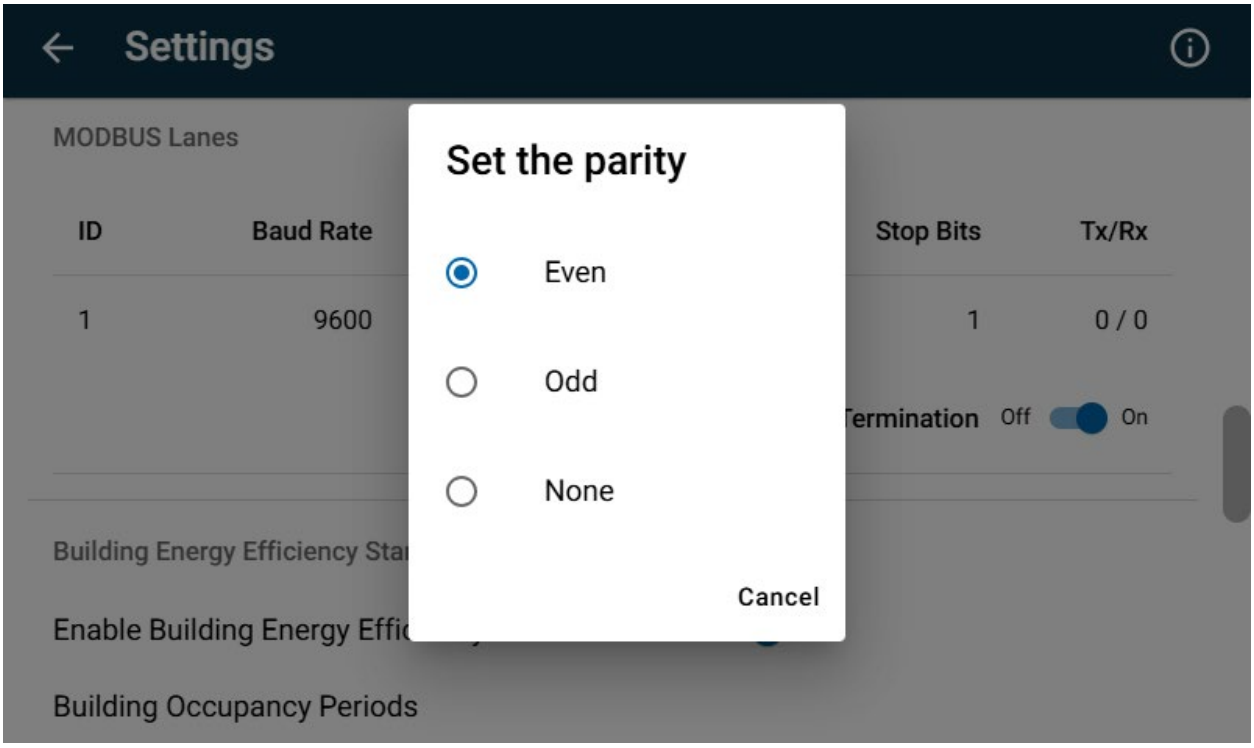


Figure 5-169: Setting a Modbus Lane's Parity

5.13.4.4 Byte Size

The **Byte Size** setting defines the number of data bits transmitted in each MODBUS message frame. This setting must match across all devices on the MODBUS network to ensure proper communication.

Available options include:

- **8 (default):** Standard setting for most MODBUS RTU devices. Each byte contains 8 data bits.
- **7:** Used in specialized systems or legacy equipment that require 7-bit data frames.

NOTE: All connected MODBUS devices must use the same byte size setting to communicate correctly.

Editing the Byte Size

To change the byte size setting:

1. **Press** the **Byte Size** field in the MODBUS Lanes table.
2. A **pop-up window** will appear with the available options.
3. **Select** the desired byte size.
4. Press **Save** to apply the change.

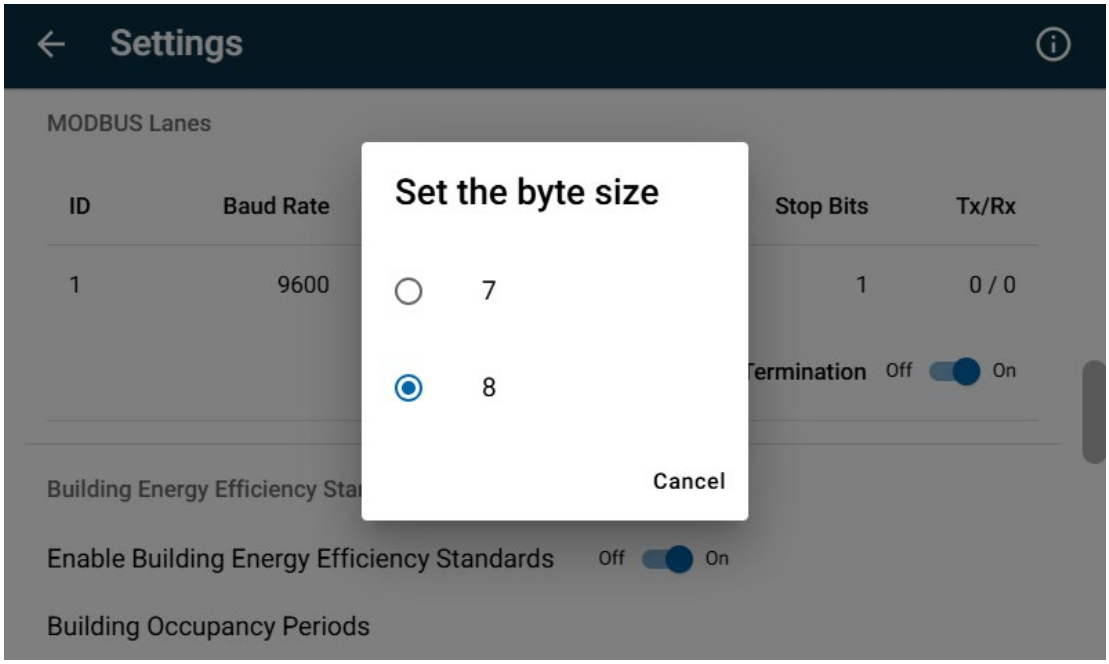


Figure 5-170: Setting a Modbus Lane's Byte Size

5.13.4.5 Stop Bits

The **Stop Bits** setting defines how the end of each MODBUS data byte is marked during transmission. It helps ensure that devices correctly interpret the end of each byte and prepare for the next one.

Available options include:

- **1 (default):** Standard setting for most MODBUS RTU devices. One stop bit is used to signal the end of a byte.
- **2:** Adds an extra stop bit for increased timing tolerance. Useful in systems with longer cable runs or slower response times.

NOTE: All connected MODBUS devices must use the same stop bit setting to communicate correctly.

Editing the Stop Bits

To change the stop bits setting:

1. **Press** the **Stop Bits** field in the MODBUS Lanes table.
2. A **pop-up window** titled **Set the stop bits** will appear with the available options.
3. **Select** the desired stop bit value.
4. Press **Save** to apply the change.

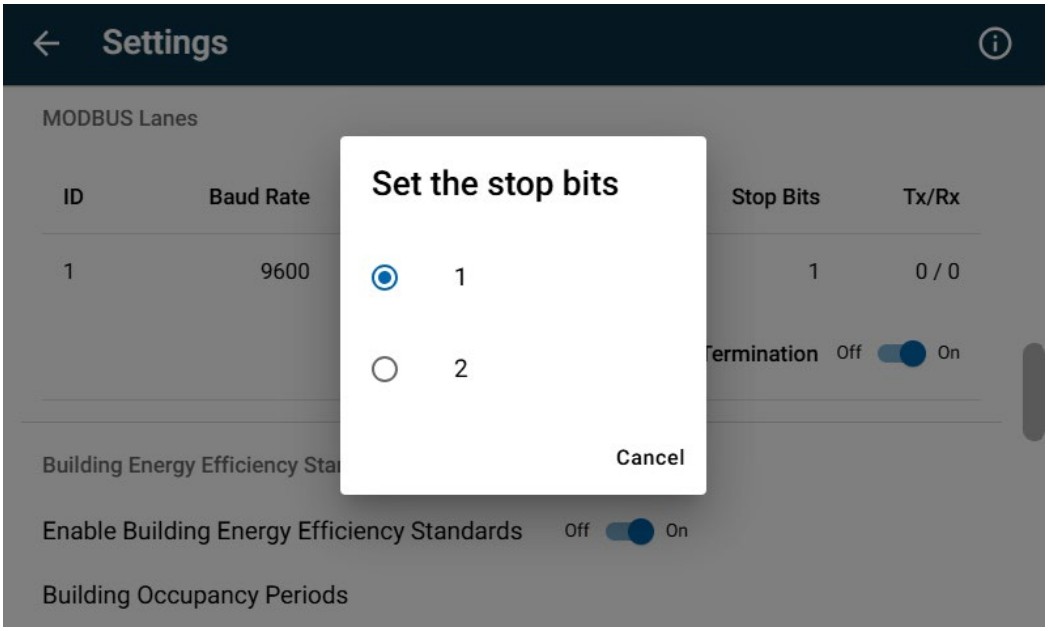


Figure 5-171: Setting a Modbus Lane's Stop Bits

5.13.4.6 Tx/Rx

The **Tx/Rx** column indicates the number of sent and received frames.

Note: The **Tx/Rx** counts are accumulative and will remain until the MODBUS stats are cleared using the "Reset Modbus Stats" button in on Settings Information screen.

5.13.4.7 Conflicts

The **Conflicts** column in the MODBUS Lanes settings indicates the number of MODBUS transactions which have a CRC (Cyclic Redundancy Check) error. Address conflicts can prevent proper communication and must be resolved before normal operation.

When Conflicts Occur:

- Two or more devices on the same lane have identical Modbus addresses.
- Auto-Configuration or manual addressing was interrupted, leaving duplicate assignments.

How to Resolve Conflicts:

1. Select the lane showing conflicts.
2. Review the device list to identify duplicates or invalid addresses.
3. Use one of the following methods:
    - **Clear Addresses** (see section 5.13.4.7) to reset all devices on the lane.
    - **Auto-Configuration** (see section 5.13.4.8) to reassign addresses automatically.
    - Manually edit device addresses to ensure uniqueness.
4. Verify that the **Conflicts** count returns to **0**.

Important Notes:

- Conflicts do not prevent the monitor from operating, but affected devices may not communicate correctly.
- Always back up your configuration before making changes.
- If no conflicts are reported on a lane for 3 minutes, the list of conflicted addresses is cleared.

  Note: The conflict count is accumulative and will remain until the MODBUS stats are cleared using the "Reset Modbus Stats" button in on Settings Information screen.

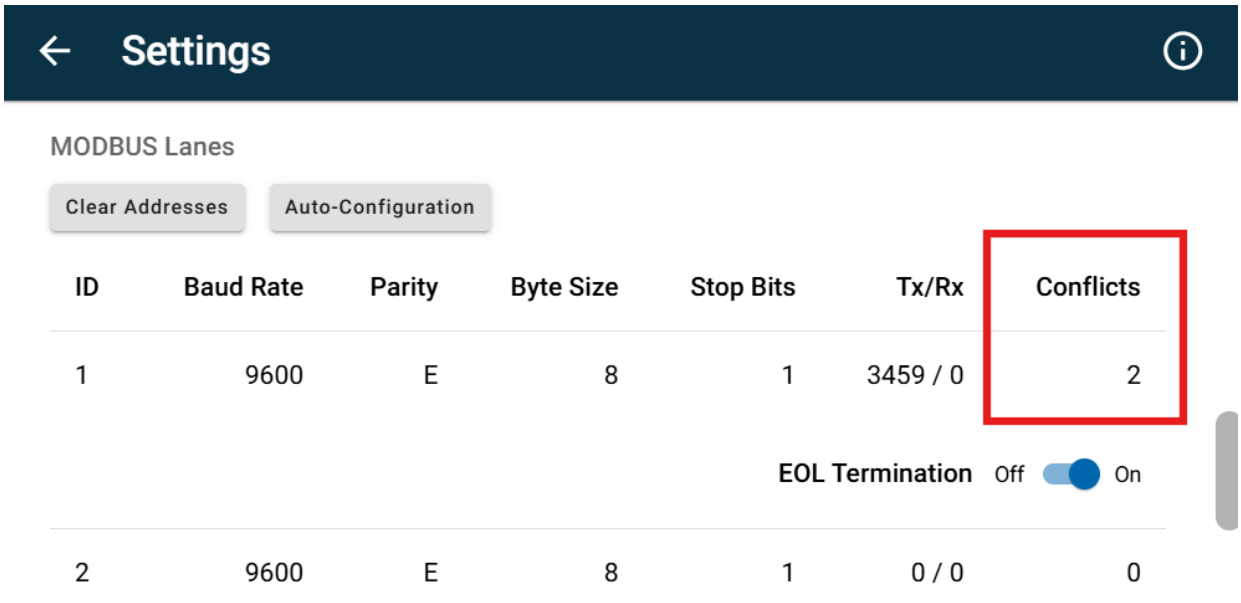


Figure 5-172: Modbus Lane Conflicts Column

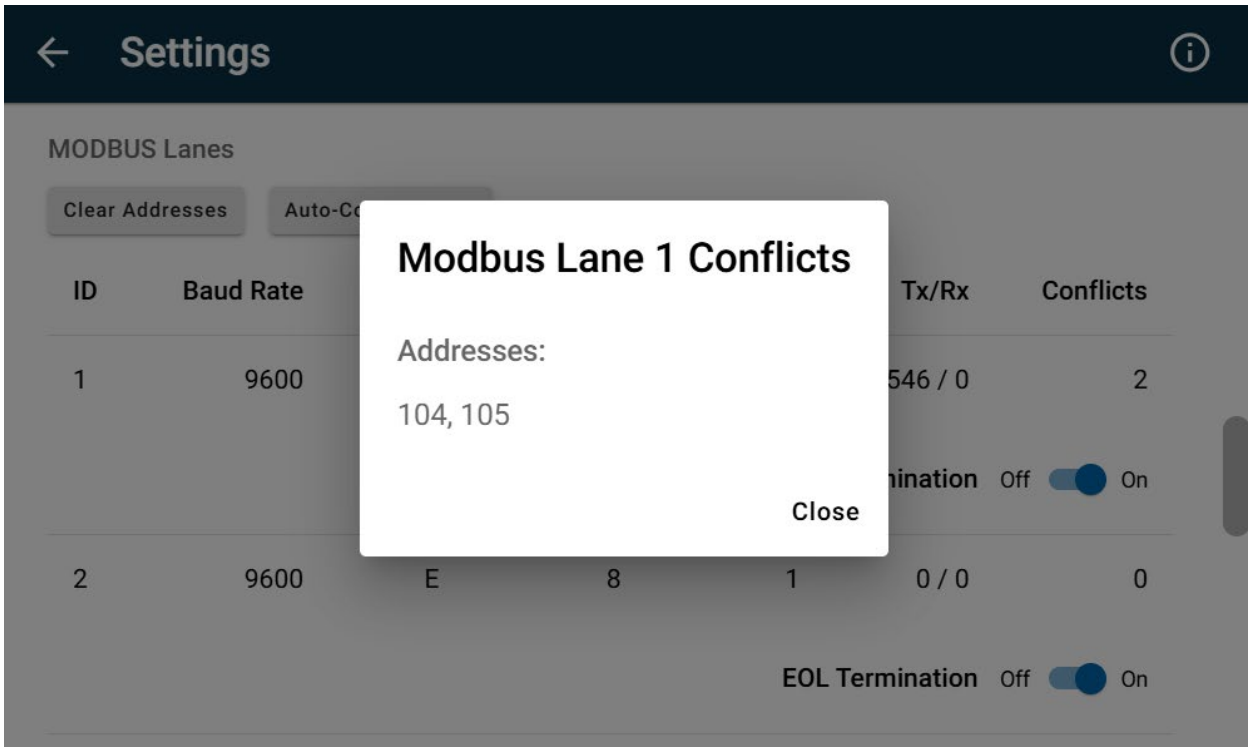


Figure 5-173: Modbus Lane Conflicts List

5.13.4.8 Clearing Addresses

The **Clear Addresses** feature resets the Modbus addresses of **UTx-M** devices on the selected lanes to **0**, preparing them for automatic reassignment during **Auto-Configuration**.

When to Use:

- Before running Auto-Configuration to avoid address conflicts.
- When reinitializing lanes after major configuration changes.
- To resolve duplicate or invalid Modbus addresses.

Steps:

1. Navigate to **Settings → MODBUS Lanes**.
2. Press the **Clear Addresses** button.
3. In the dialog, select one or more lanes.
4. Press **Confirm** to apply changes or **Cancel** to exit.

Important Notes:

- Clearing addresses does **not** remove devices from the system; it only resets their Modbus address to 0.
- After clearing, devices must be readdressed manually or via Auto-Configuration
- Ensure the monitor is **unlocked** before performing this action.

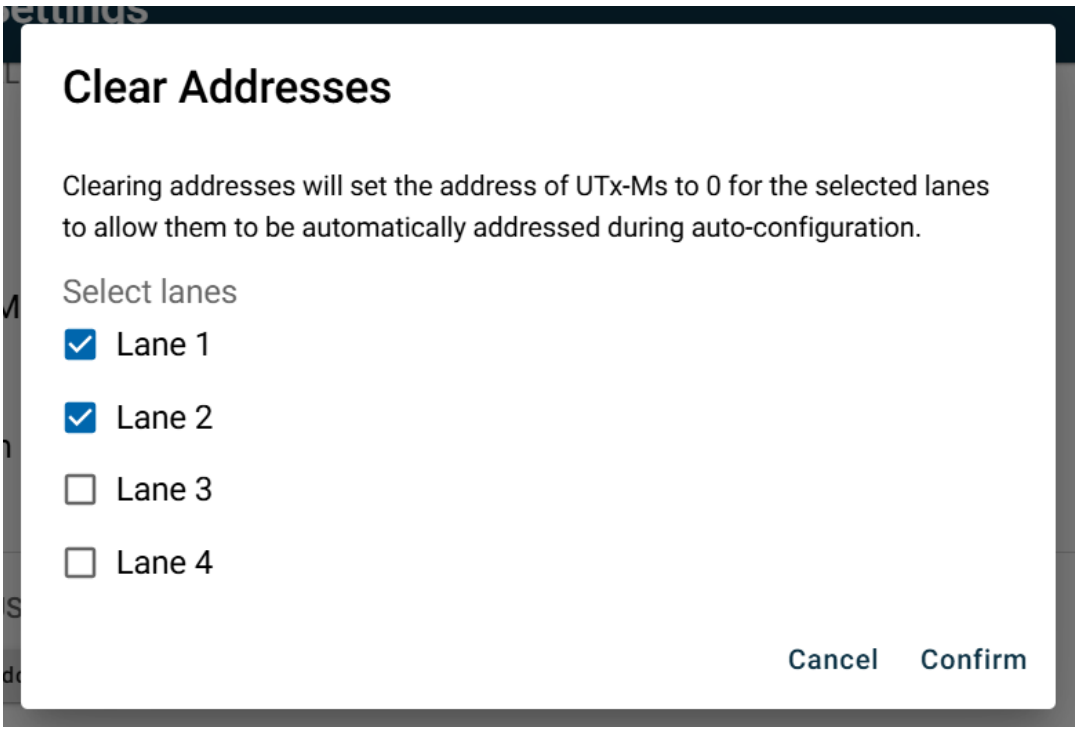


Figure 5-174: Clear Addresses Dialog

5.13.4.9 Auto-Configuration

The **Auto-Configuration** feature scans selected MODBUS lanes, discovers connected **AMC** devices, and automatically assigns valid Modbus addresses to discovered **UTx-M** transmitters within the ranges you specify. This accelerates setup and prevents address conflicts when many devices are added at once.

⚠️ **Recommended:** Back up your configuration before starting Auto-Configuration. If you cancel or revert, the monitor restores from the backup taken at the start of the process.

Prerequisites

- Monitor must be **unlocked**.
- All devices must be **powered** and wired to the selected lane(s).
- If you intend to re-address existing devices, first use **Clear Addresses** to set their address to **0**.

5.13.4.9.1 Starting Auto-Configuration

1. Press **Auto-Configuration**.
2. In the dialog:
    a. Select the desired lanes (Lane 1–Lane 4).
    b. For each selected lane, add one or more **address ranges**. Valid values are **1–247** and **From ≤ To**.
    c. Use **Add Range** to create multiple ranges, or the **trash** icon to remove a range.
3. Press **Start** to begin the process or **Cancel** to exit.
4. Wait for the system to complete address assignment. A confirmation message will appear when finished.

Note: Auto-Configuration scans the addresses sequentially between the address specified in "From" and the address specified in "To" inclusively.

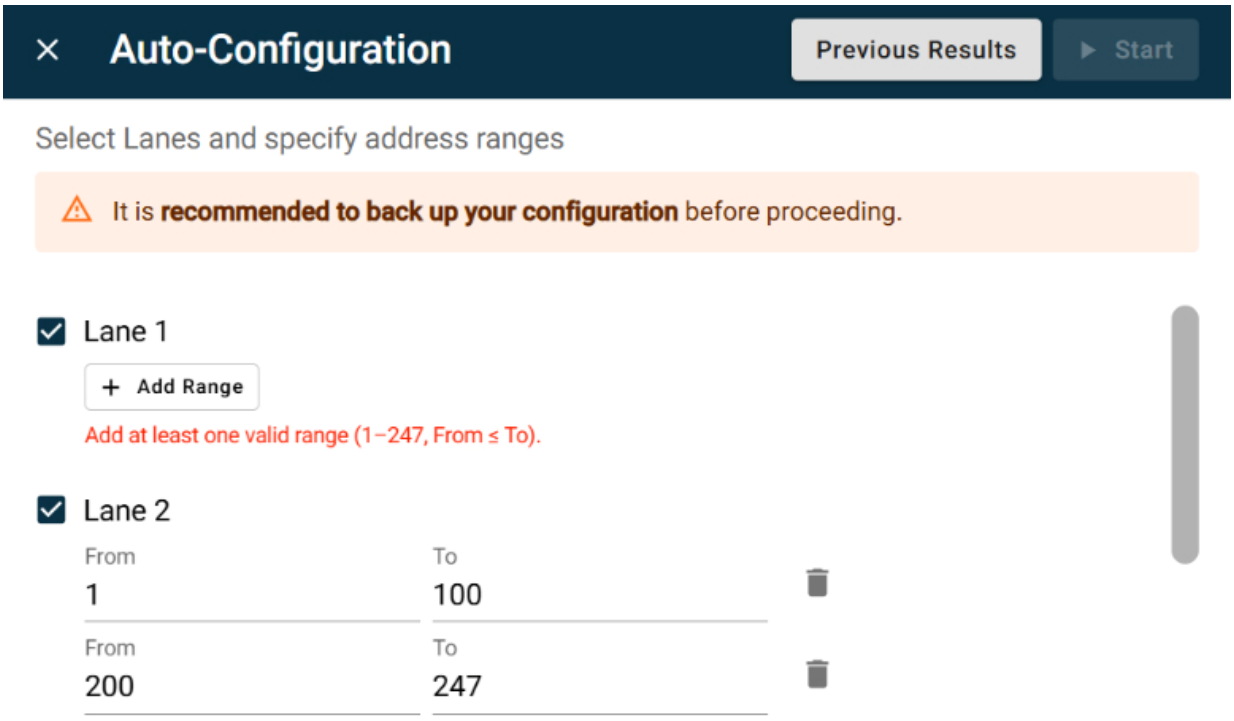


Figure 5-175: Auto-Configuration Lane and Address Range Selection

5.13.4.9.2 Discovery Phase

The monitor scans the specified ranges and lists any devices found. A **progress bar** shows percent complete, and the **Total** count updates as devices are discovered. The table lists **ID**, **Ln (Addr:Ch)**, **Transmitter**, **Type**, and **Status**.

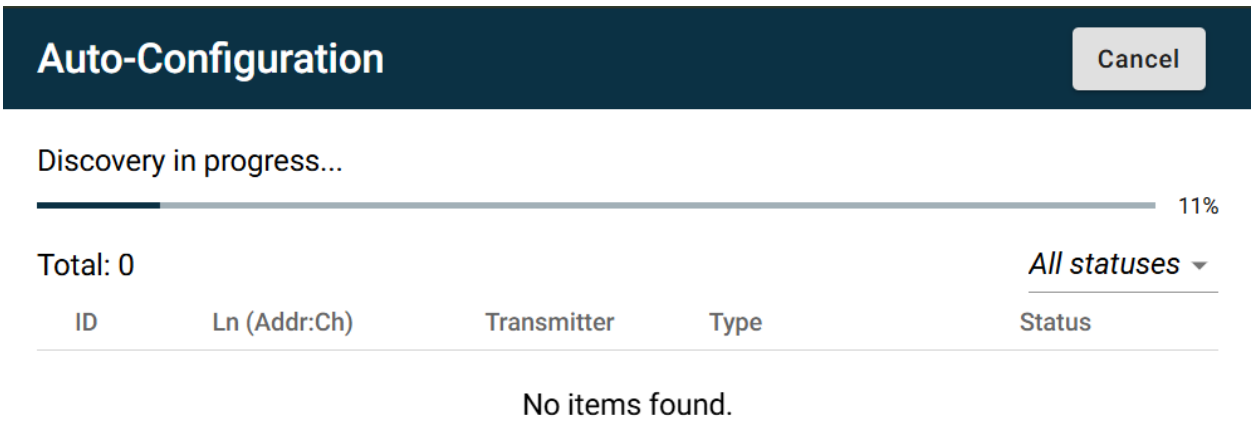


Figure 5-176: Auto-Configuration Discovery Phase

5.13.4.9.3 Status Indicators

Each device is assigned a status to indicate its current state. You can filter the list using the **status dropdown**.

- **Addressed** – A new Modbus address was successfully assigned to the device.
- **Configured** – The device has been configured.
- **Duplicate** – Address conflict detected.
- **Conflict** – A configuration issue requires manual resolution.

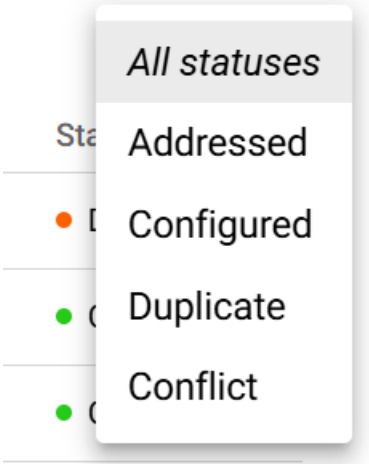


Figure 5-177: Auto-Configuration Statuses

5.13.4.9.4 Addressing Phase

After discovery, Auto-Configuration assigns addresses **sequentially within the ranges provided**. Devices update to **Addressed** once an address is set. Any **duplicates** or **conflicts** are flagged for correction.

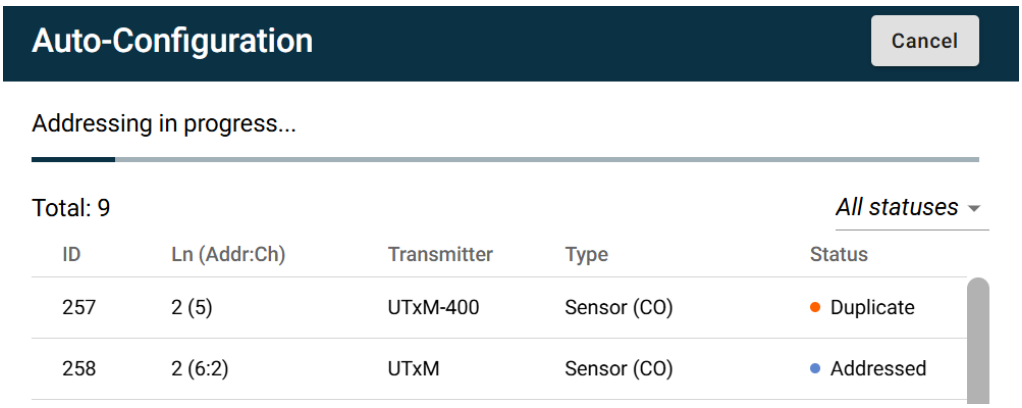


Figure 5-178: Auto-Configuration Addressing Phase

5.13.4.9.5 Completion Screen

When Auto-Configuration finishes, the monitor displays a summary screen:

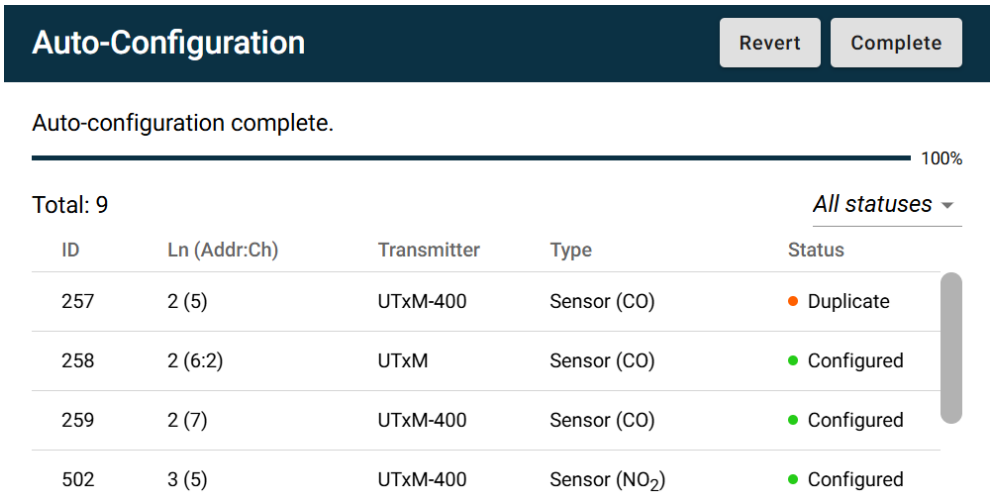


Figure 5-179: Auto-Configuration Completion Screen

Actions:

- **Complete:** Confirms the new configuration and applies changes permanently.
- **Revert:** Restores the monitor to its original state (from backup) before Auto-Configuration began.

Important Notes:

- Review the table for **Duplicate** or **Conflict** statuses before pressing **Complete**.
- If issues exist, you can **Revert** and rerun Auto-Configuration or manually correct addresses.

5.13.4.9.6 Cancel or Revert

During the discovery process, you can cancel Auto-Configuration at any time by pressing **Cancel** in the top-right corner of the screen. When you do, a confirmation dialog appears:

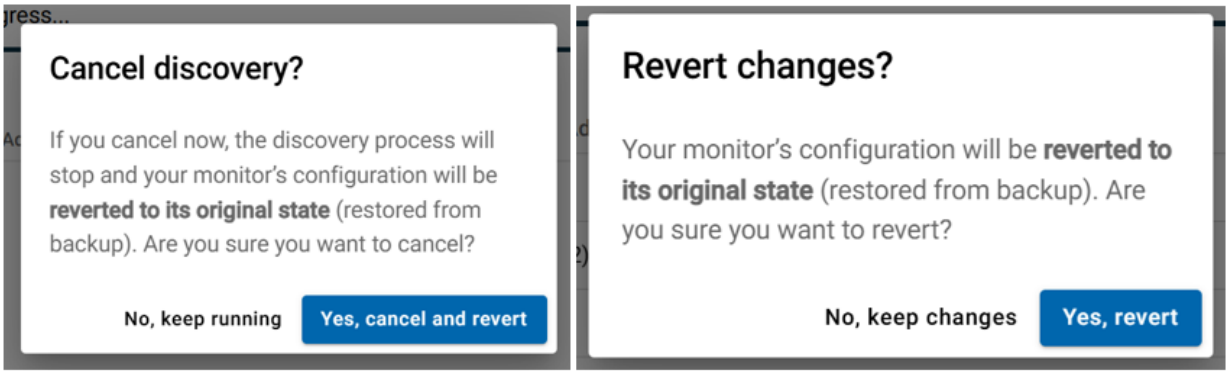


Figure 5-180: Cancel and Revert Auto-Configuration

Options:

- **No, keep running:** Continue the discovery process.
- **Yes, cancel and revert:** Stop discovery and restore the previous configuration.
- **Yes, revert:** Restore the previous configuration.

5.13.4.9.7 Previous Results

To review the last Auto-Configuration run, open **Previous Results**. The table displays **ID**, **Ln (Addr:Ch)**, **Transmitter**, **Type**, and **Status** and supports filtering by status.

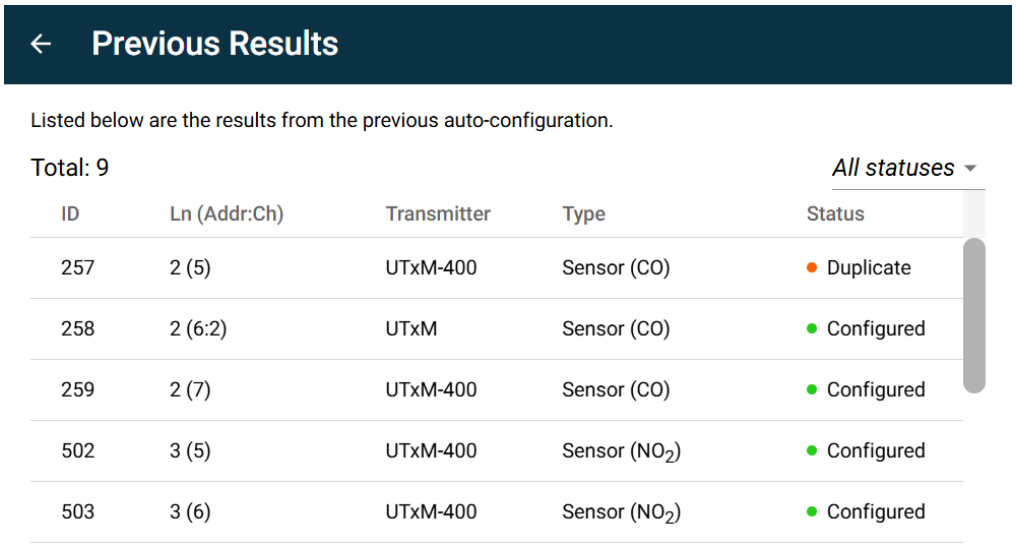


Figure 5-181: Auto-Configuration Previous Results

5.13.4.9.8 Best Practices

- Use **non-overlapping ranges** per lane to avoid duplicates.
- If **duplicates** appear, adjust the ranges and rerun or manually edit the conflicting devices.
- Always keep a recent **backup** before bulk operations.

5.13.4.10 EOL Termination

The **EOL Termination** (End-of-Line) setting enables or disables a termination resistor on the MODBUS line. This should be set to **On** if the monitor is at the end of the RS-485 bus to ensure proper signal integrity.

5.13.5 Building Energy Efficiency Standards (Title 24)

The **Building Energy Efficiency Standards** setting enables compliance with **Title 24** regulations. When enabled, the AMC-1DCx-L monitor adjusts its behavior to meet specific energy efficiency requirements for demand-controlled ventilation and indoor air quality monitoring.

Title 24 has three key operational features:

1) When Title 24 is enabled CO devices are checked if their CO sensor(s) have been calibrated. If a CO sensor is out of calibration it will enter fault and will clear when device is calibrated.
2) When Title 24 is enabled and a Zone with two or more CO sensors their gas values are compared with each other;
    a) During occupied period(s); CO Sensors with 20 ppm or more different for 30 minutes accumulated time will enter fault.
    b) During unoccupied period(s); CO Sensors with 20 ppm or more different for 4 hours accumulated time will enter fault.
3) Fault will clear if elevated accumulated CO gas event differences are not present. CO sensors with greater than 20 ppm differences will accumulate and clear at a faster interval.

Available options include:

- **Enabled:** The monitor operates in compliance with Title 24 standards. This may include adjustments to sensor polling rates, data logging, and relay behavior to support energy-efficient building operation.
- **Disabled:** Title 24-specific behavior is not applied. The monitor operates using standard configuration settings.

NOTE: This setting is only required in jurisdictions where Title 24 compliance is mandated. Consult local building codes or your system integrator to determine if this feature should be enabled.

5.13.5.1 Adding an Occupancy Period

The **Building Occupancy Periods** setting allows users to define specific time ranges during which the building is considered occupied. These periods can be used to optimize system behavior for energy efficiency, such as adjusting ventilation or alarm thresholds.

Each occupancy period includes:

- **Start Day:** The day of the week when the occupancy period begins.
- **Start Time:** The time of day when occupancy begins.
- **End Day:** The day of the week when the occupancy period ends.
- **End Time:** The time of day when occupancy ends.

NOTE: Multiple occupancy periods can be defined to accommodate different schedules (e.g., weekdays vs. weekends).

Adding an Occupancy Period

To add a new occupancy period:

1. **Press** the **Add (+)** button in the Building Occupancy Periods section.
2. A **pop-up window** titled **Add Occupancy Period** will appear.
3. **Select** the **Start Day** and **Start Time**.
4. **Select** the **End Day** and **End Time**.
5. **Press Add** to save the new occupancy period, or **Cancel** to exit without saving.

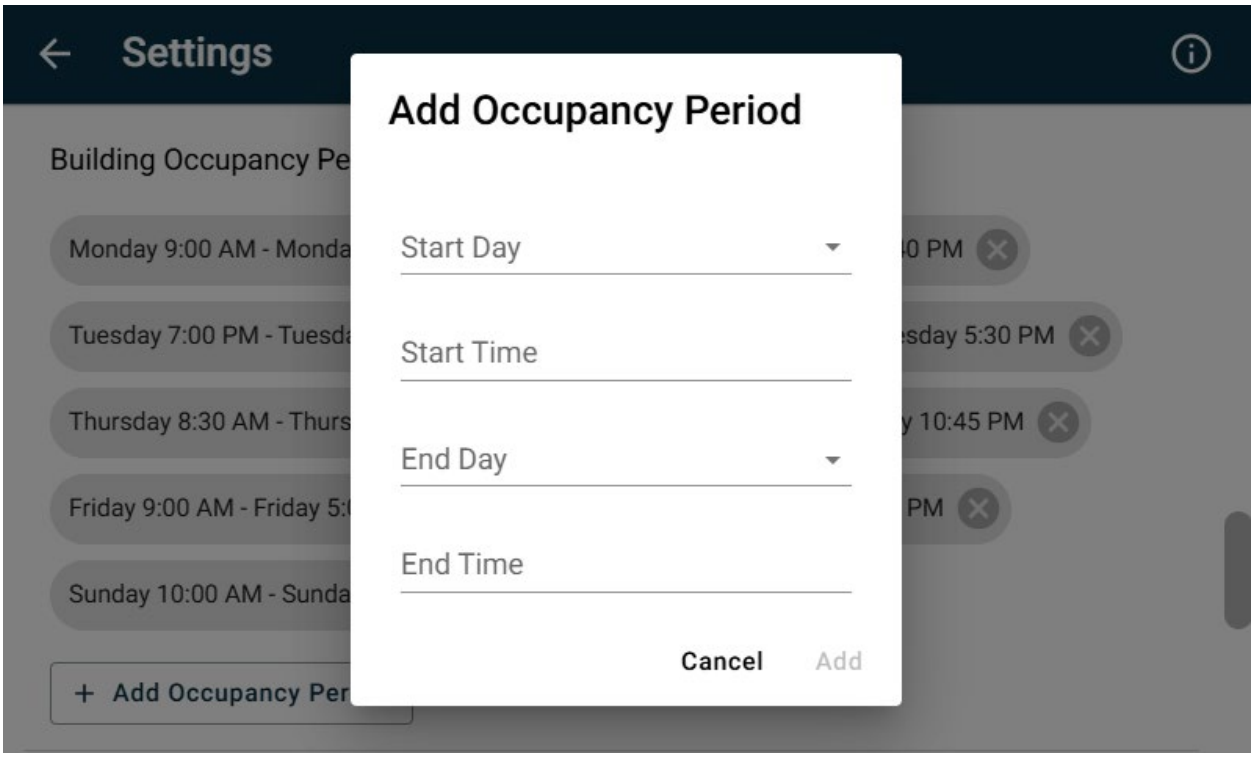


Figure 5-182: Adding an Occupancy Period

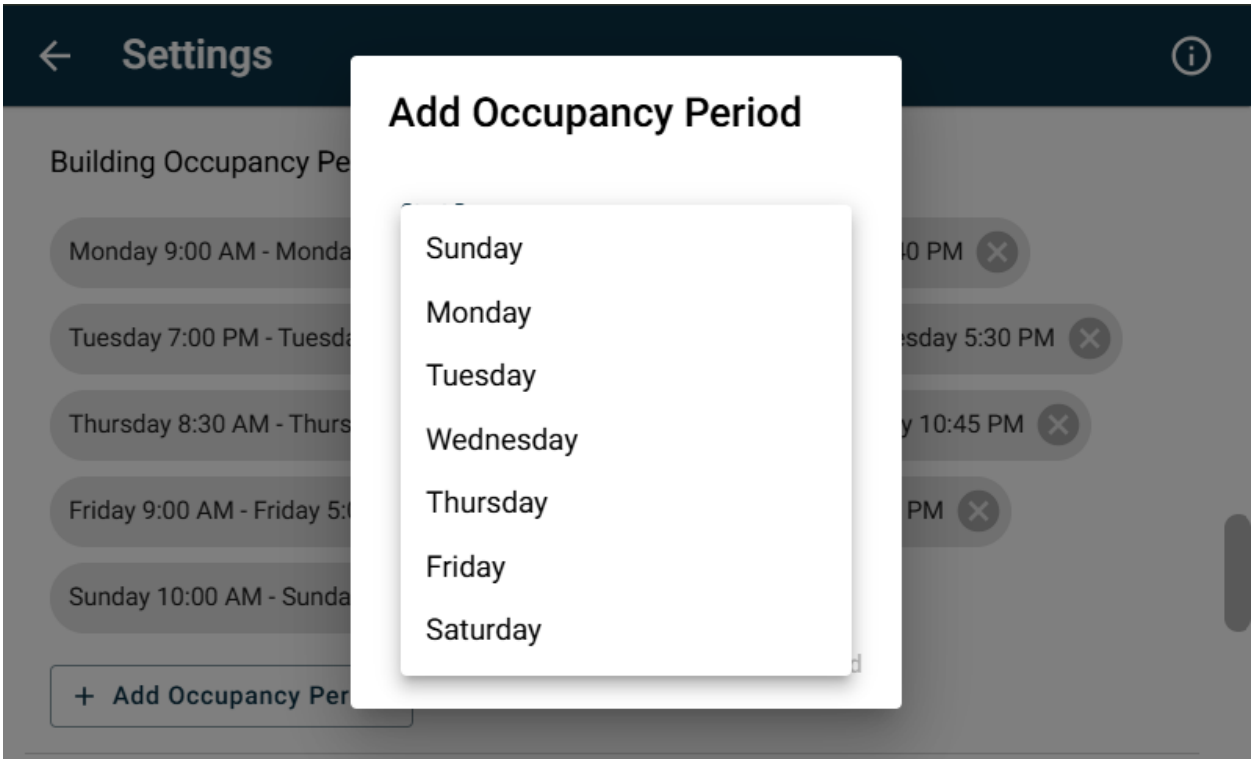


Figure 5-183: Occupancy Period Day Picker

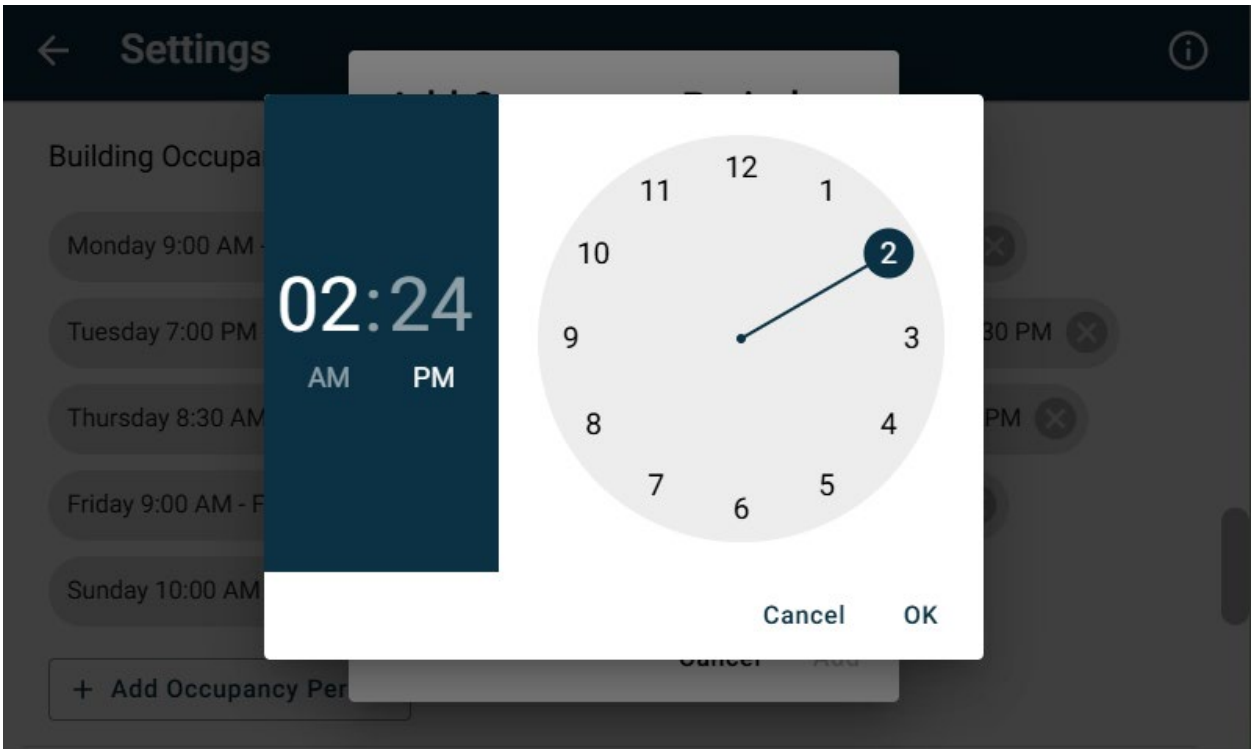


Figure 5-184: Occupancy Period Time Picker

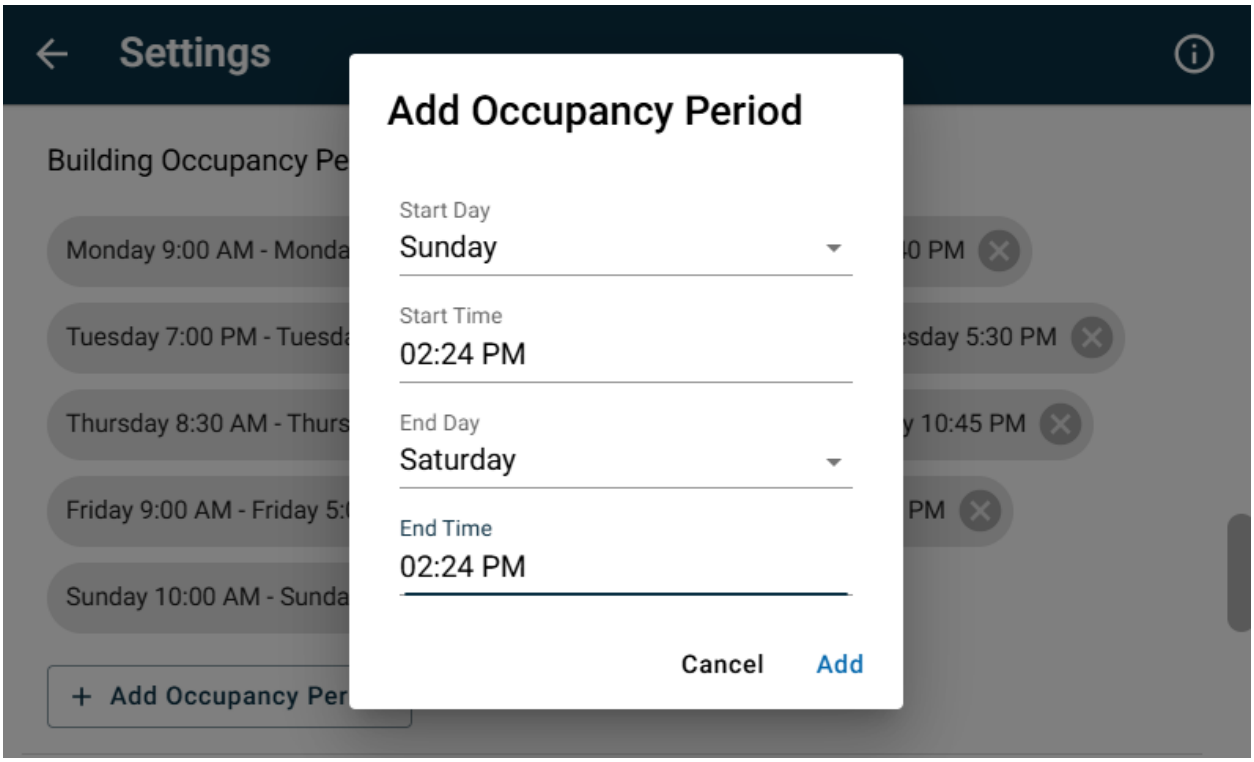


Figure 5-185: Example Occupancy Period

5.13.5.2 Editing an Occupancy Period

Existing occupancy periods can be modified to reflect changes in building schedules or operational needs. This allows users to fine-tune when the system considers the building occupied.

Editable fields include:

- **Start Day:** The day of the week when the occupancy period begins.
- **Start Time:** The time of day when occupancy begins.
- **End Day:** The day of the week when the occupancy period ends.
- **End Time:** The time of day when occupancy ends.

Editing an Occupancy Period
To edit an existing occupancy period:

1. **Select** the occupancy period you wish to modify from the list.
2. A **pop-up window** titled **Edit Occupancy Period** will appear.
3. **Adjust** the **Start Day**, **Start Time**, **End Day**, or **End Time** as needed.
4. **Press Update** to save the changes, or **Cancel** to exit without saving.

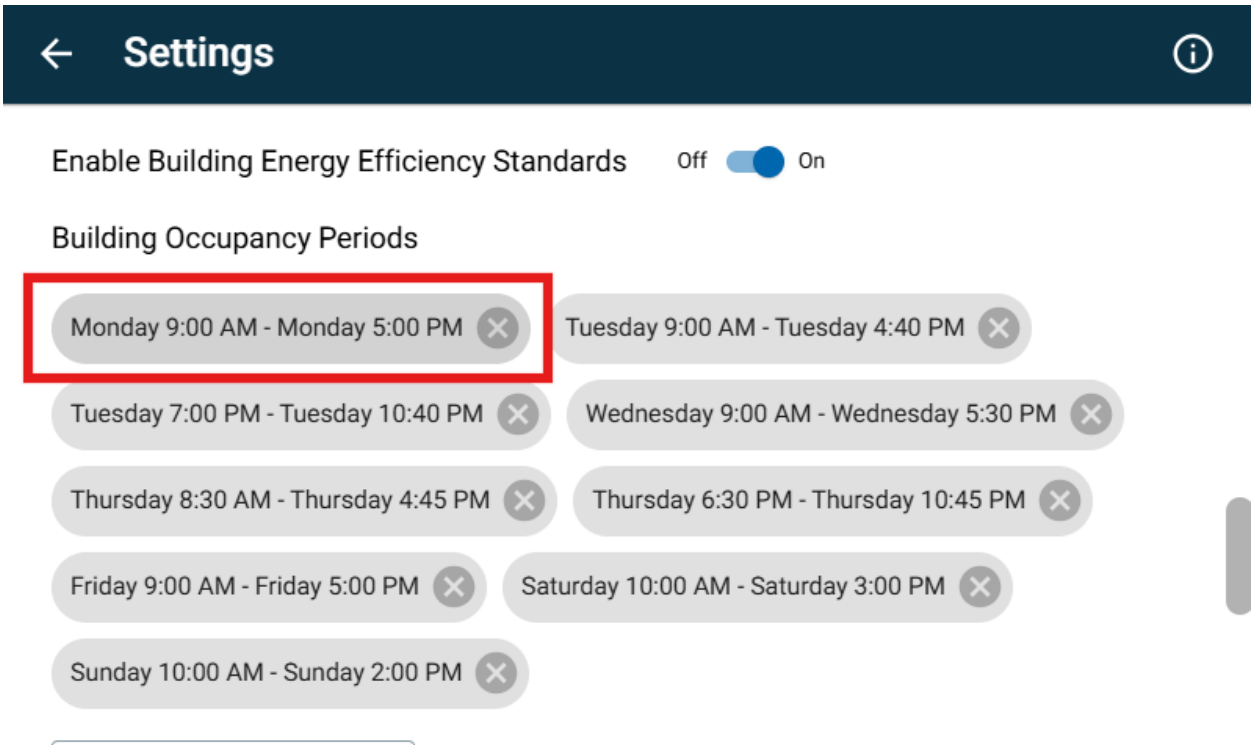


Figure 5-186: Selecting an Occupancy Period

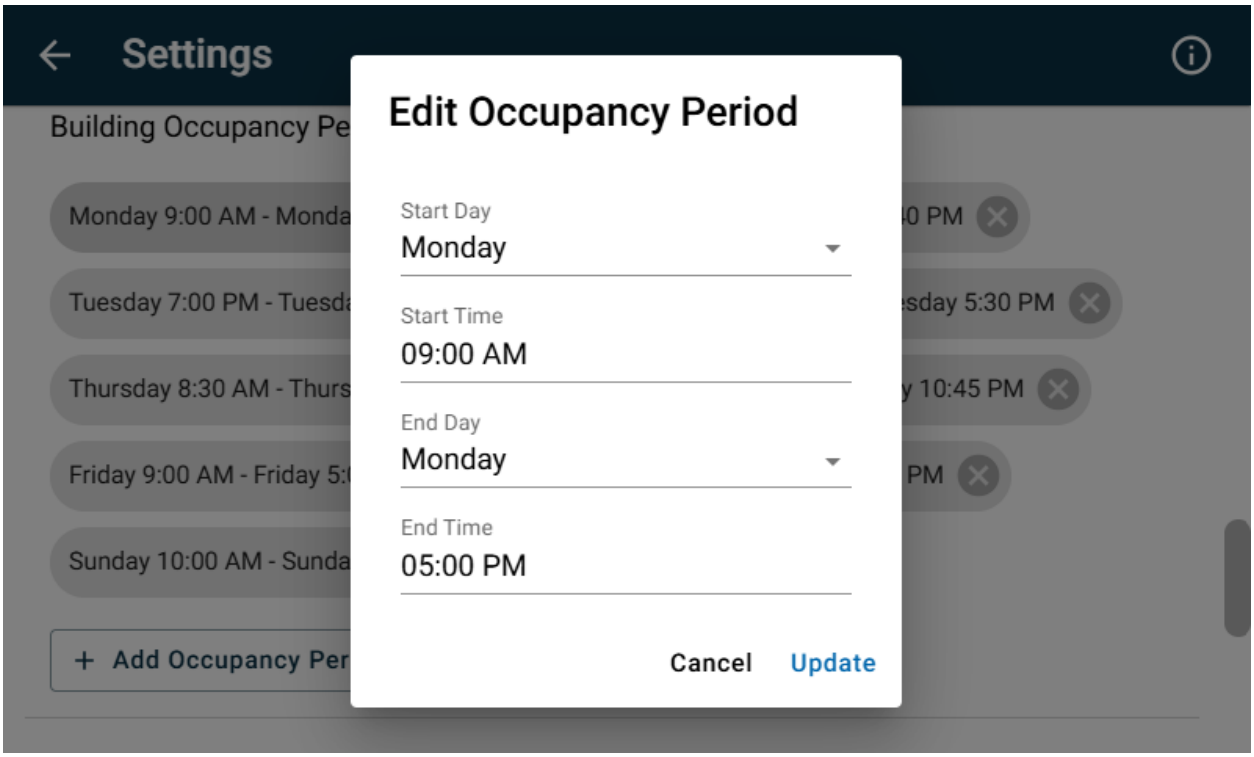


Figure 5-187: Editing an Occupancy Period

5.13.5.3 Deleting an Occupancy Period

Occupancy periods can be removed when they are no longer needed or if the building schedule changes. Deleting a period ensures that the system no longer considers that time range as occupied.

Deleting an Occupancy Period
To delete an existing occupancy period:

1. **Select** the (x) icon on the occupancy period you wish to remove it from the list.
2. A **confirmation dialog** titled **Delete Occupancy Period** will appear.
3. Review the displayed time range to confirm the correct period is selected.
4. **Press Delete** to permanently remove the occupancy period, or **Cancel** to exit without making changes.

NOTE: Deleted occupancy periods cannot be recovered. Be sure to confirm the selection before proceeding.

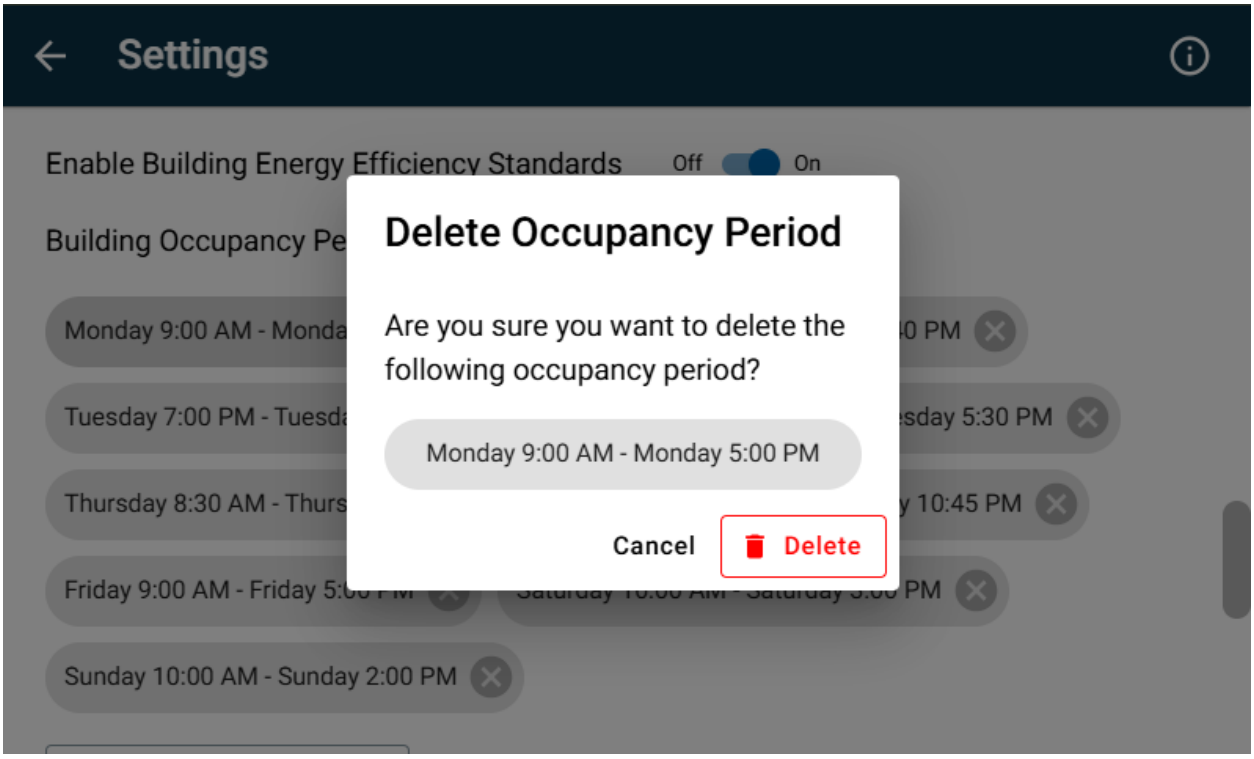


Figure 5-188: Editing an Occupancy Period

5.13.6 Sensor Types

The **Sensor Types** screen allows users to select the type of gas or environmental parameter that a sensor will monitor. This setting determines how the sensor is labeled in the system and how its readings are interpreted.

Displayed Information:

- A list of commonly used sensor types is shown by default.
- Each entry includes the chemical symbol and full name (e.g., **CO – Carbon monoxide**).
- A **Show all sensor types** button is available to expand the list and view the full range of supported sensor types.

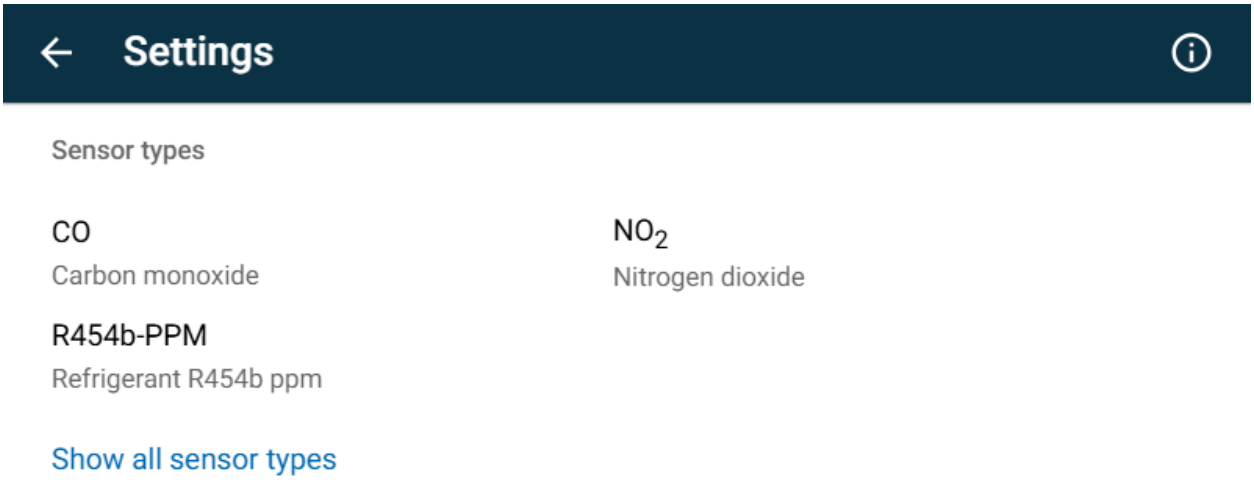


Figure 5-189: Sensor Types Settings

5.13.6.1 Viewing All Sensor Types

The AMC-1DCx-L monitor supports a wide range of sensor types for detecting gases and environmental parameters. Each sensor type is identified by a chemical symbol or abbreviation and a descriptive label. Selecting the correct sensor type ensures accurate labeling, measurement, and alarm configuration.

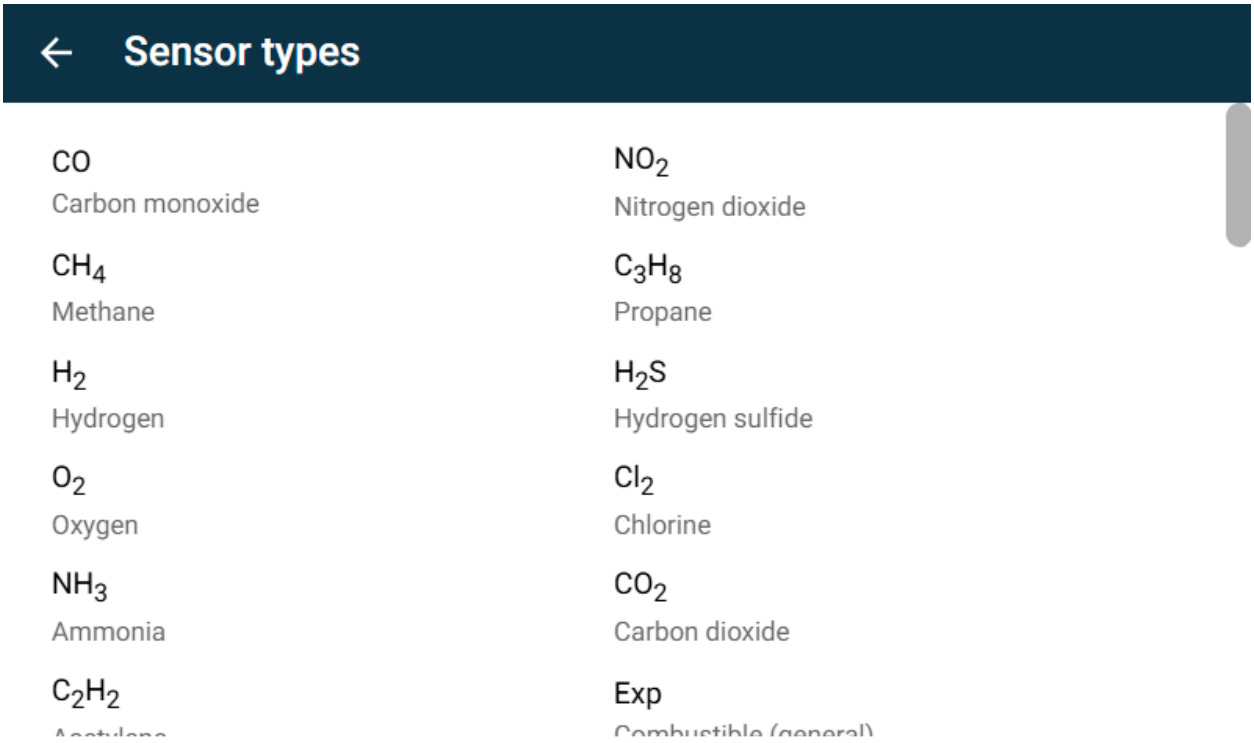


Figure 5-190: Viewing Sensor Types

The full list of sensor types can be found in the following tables:

Table 5-4: Gas Sensor Types

Sensor Type	Displayed As	Sensor Type	Displayed As
Acetylene	C_2H_2	Hydrogen Sulfide	H_2S
Ammonia	NH_3	Mercaptan	MERCA
Carbon Dioxide	CO_2	Methane	CH_4
Carbon Monoxide	CO	Nitrogen Dioxide	NO_2
Chlorine	Cl_2	Nitrogen Oxide	NO
Chlorine Dioxide	ClO_2	Nitrous Oxide	N_2O
Combustible (General)	Exp	Oxygen	O_2
Ethylene Oxide	C_2H_4O	Ozone	O_3
Fluorine	F_2	Phosgene	$COCl_2$
Germane	GeH_4	Phosphine	PH_3
Hydrogen	H_2	Propane	C_3H_8
Hydrogen Chloride	HCl	Silane	SiH_4
Hydrogen Cyanide	HCN	Sulfur Dioxide	SO_2
Hydrogen Fluoride	HF	Volatile Organic Compound	VOC

Table 5-5: Refrigerant Sensor Types

Sensor Type	Displayed As	Sensor Type	Displayed As
Broad Range Hydrocarbon	Broad Range HC	Refrigerant R407f ppm	R407f-PPM
Refrigerant R123 ppm	R123-PPM	Refrigerant R407c ppm	R407c-PPM
Refrigerant R1233zd ppm	R1233zd-PPM	Refrigerant R407f ppm	R407f-PPM
Refrigerant R1234yf ppm	R1234yf-PPM	Refrigerant R410a ppm	R410a-PPM
Refrigerant R1234ze ppm	R1234ze-PPM	Refrigerant R449a ppm	R449a-PPM
Refrigerant R125	R125	Refrigerant R452a ppm	R452a-PPM
Refrigerant R134a ppm	R134a-PPM	Refrigerant R454b ppm	R454b-PPM
Refrigerant R22 ppm	R22-PPM	Refrigerant R454b % LFL	R454b-LFL
Refrigerant R23 ppm	R23-PPM	Refrigerant R455a ppm	R455a-PPM
Refrigerant R32 ppm	R32-PPM	Refrigerant R507a	R507a
Refrigerant R32 % LFL	R32-LFL	Refrigerant R513a ppm	R513a-PPM
Refrigerant R404a	R404a	Refrigerant R515b ppm	R515b-PPM
Refrigerant R407a	R407a	Refrigerant SF_6	SF6

Table 5-6: Other Sensor Types

Sensor Type	Displayed As	Sensor Type	Displayed As
Ambient Temperature (°C)	AmbTdegC	Pressure	Press
Ambient Temperature (°F)	AmbT-F	Relative Humidity	RelHu
Analog	Analog	Surface Temperature	SurfT
Differential Pressure	DiffP	Toxic Gas	Toxic
Fuel Vapour	Fuel	Vacuum	Vac

Missing Sensor Types

If the sensor type you are looking for is not listed, you can request assistance directly from Armstrong Monitoring.

To do so:

1. Scroll to the bottom of the **Sensor Types** screen.
2. Press the **Contact Us** button.
3. A pop-up window will appear with the following contact information:

Phone: 1-800-465-5777
Email: salesteam@armstrongmonitoring.com

Use this information to inquire about additional sensor types or request support for custom configurations.

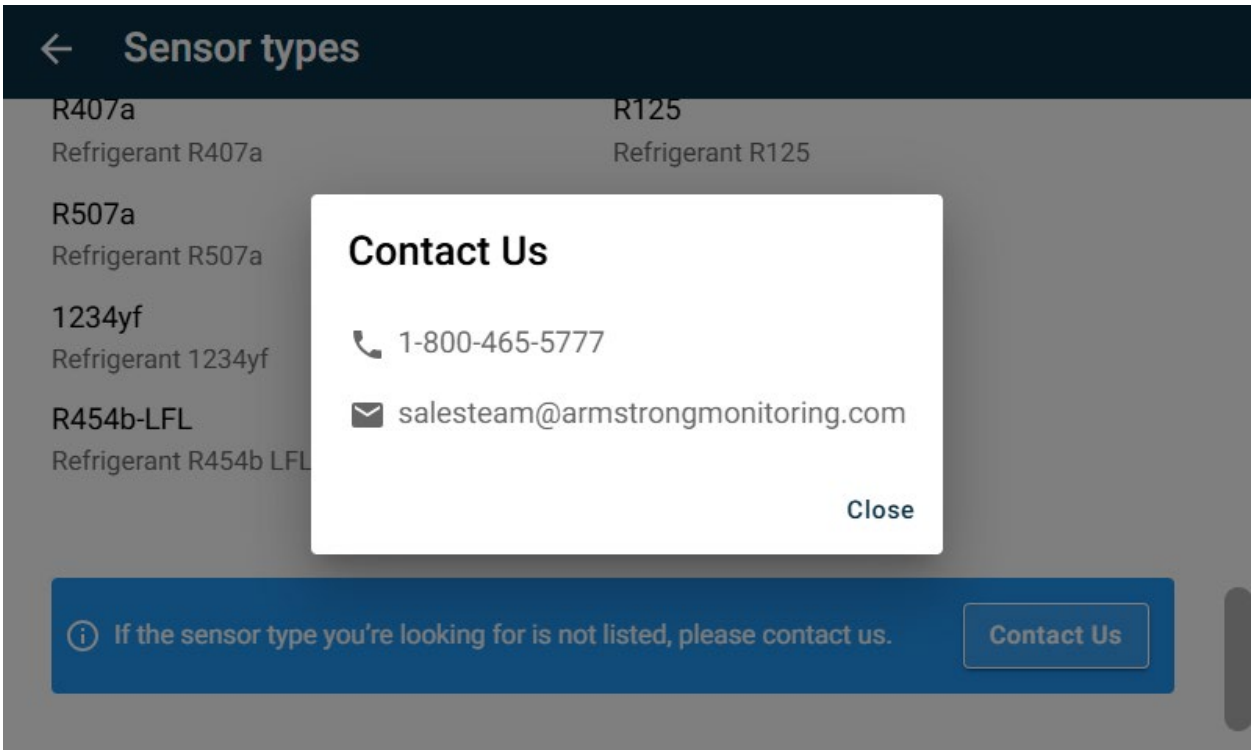


Figure 5-191: Contact Armstrong Monitoring for Custom Sensor Types

5.13.6.2 Viewing a Sensor Type

Each sensor type in the AMC-1DCx-L system includes detailed configuration parameters that define how the sensor behaves and how its readings are interpreted. These settings are viewable from the **Sensor Type Details** screen.

General Settings:

- **Name:** The abbreviated label used throughout the interface.
- **Description:** The full name of the gas or parameter.
- **Units:** The unit of measurement used for sensor readings.
- **Full Scale:** The maximum expected reading for the sensor.
- **Fault Limit:** The threshold below which a reading is considered a fault.
- **Zero Scale:** The minimum expected reading.
- **Zero Buffer:** A tolerance range around zero to prevent false alarms.
- **Device Type:** The compatible hardware module for this sensor type.

Alarm Settings:

- **Alarm Type:** Indicates whether the alarm is triggered by increasing or decreasing values.
- **Alarm Hysteresis:** A buffer zone below the alarm set point that prevents rapid toggling of alarm states.
- **Alarm Levels (1-3):**
  - **Set Point:** The concentration that triggers the corresponding alarm level.
  - **Delay:** The time the reading must exceed the set point before the alarm activates.

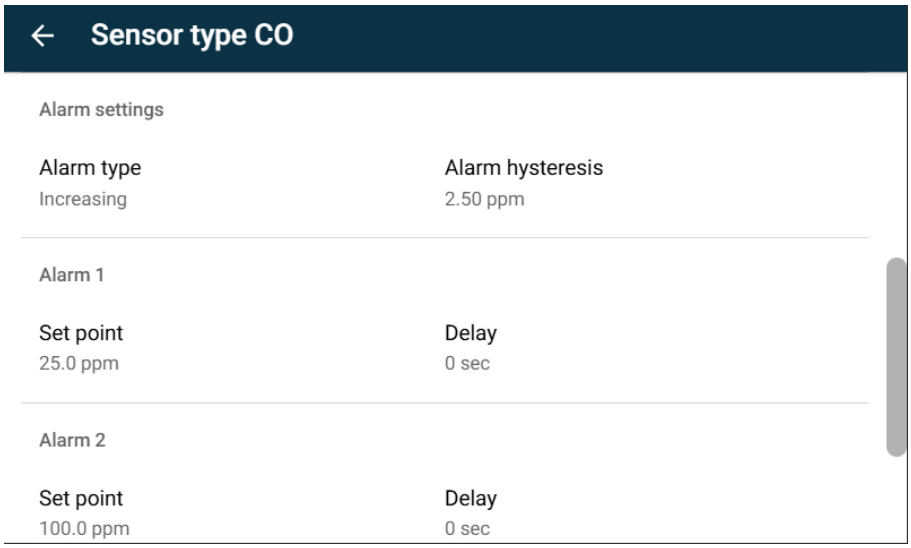


Figure 5-192: Viewing a Sensor Type's Details

5.13.6.3 Editing a Sensor Type

Sensor types in the AMC-1DCx-L system define how sensor readings are interpreted, displayed, and evaluated for alarms. While most sensor type parameters are preconfigured, certain fields can be edited to fine-tune system behavior or accommodate custom sensor specifications.

NOTE: Editing sensor types requires the monitor to be **unlocked**. Changes to sensor types affect all sensors using that type, so modifications should be made with caution.

> **CAUTION:** Editing sensor types is not recommended. The default values have been validated by Armstrong Monitoring. Changes to values are applied system wide and cannot be undone. Use the sensor alarm override for individual sensors to allow for recovery from incorrect alarm set point and delay value changes. For assistance, please contact Armstrong Monitoring.

5.13.6.3.1 Zero Scale

The **Zero Scale** defines the minimum expected reading for the sensor type. It is typically set to **0.0** for sensors that measure from zero (e.g., gas concentrations in ppm).

To edit the Zero Scale:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Zero Scale** field to enter edit mode.
3. A virtual keyboard will appear.
4. Enter the desired value.
5. Press **Save** in the top-right corner to apply the change.

NOTE: The unit of measurement (e.g., ppm) is displayed next to the input field and is not editable.

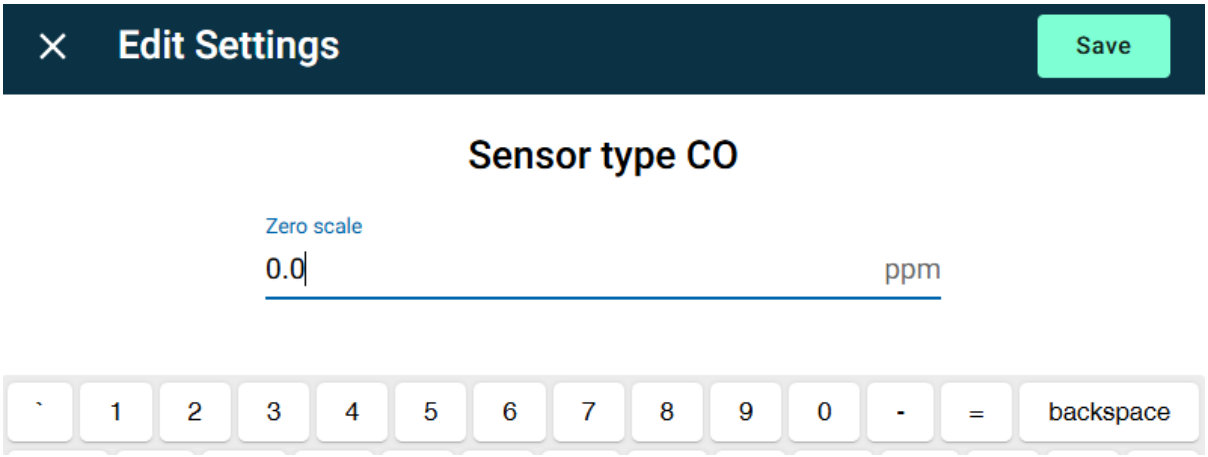


Figure 5-193: Editing a Sensor Type's Zero Scale

5.13.6.3.2 Full Scale

The **Full Scale** defines the maximum expected reading for the sensor type. This value determines the upper limit of the sensor's measurement range and is used for scaling outputs and evaluating alarm thresholds.

To edit the Full Scale:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Full Scale** field to enter edit mode.
3. A virtual keyboard will appear.
4. Enter the desired maximum value.
5. Press **Save** in the top-right corner to apply the change.

NOTE: The unit of measurement (e.g., ppm) is displayed next to the input field and is not editable.

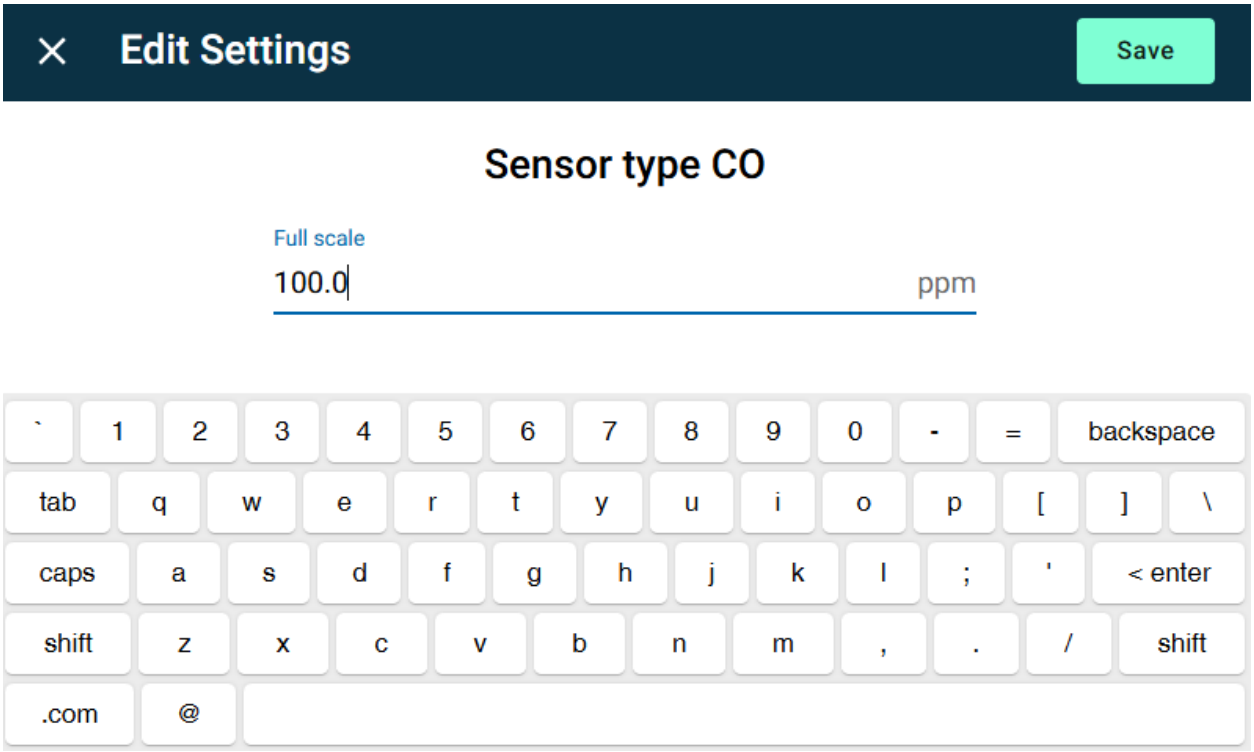


Figure 5-194: Editing a Sensor Type's Full Scale

5.13.6.3.3 Zero Buffer

The **Zero Buffer** defines a tolerance range around the zero scale value. This buffer masks misunderstandings caused by (expected) minor fluctuations near zero, especially in sensitive gas detection applications.

To edit the Zero Buffer:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Zero Buffer** field to enter edit mode.
3. A virtual keyboard will appear.
4. Enter the desired buffer value.
5. Press **Save** in the top-right corner to apply the change.

NOTE: The buffer is applied symmetrically around the zero scale value (e.g., ±5.0 ppm).

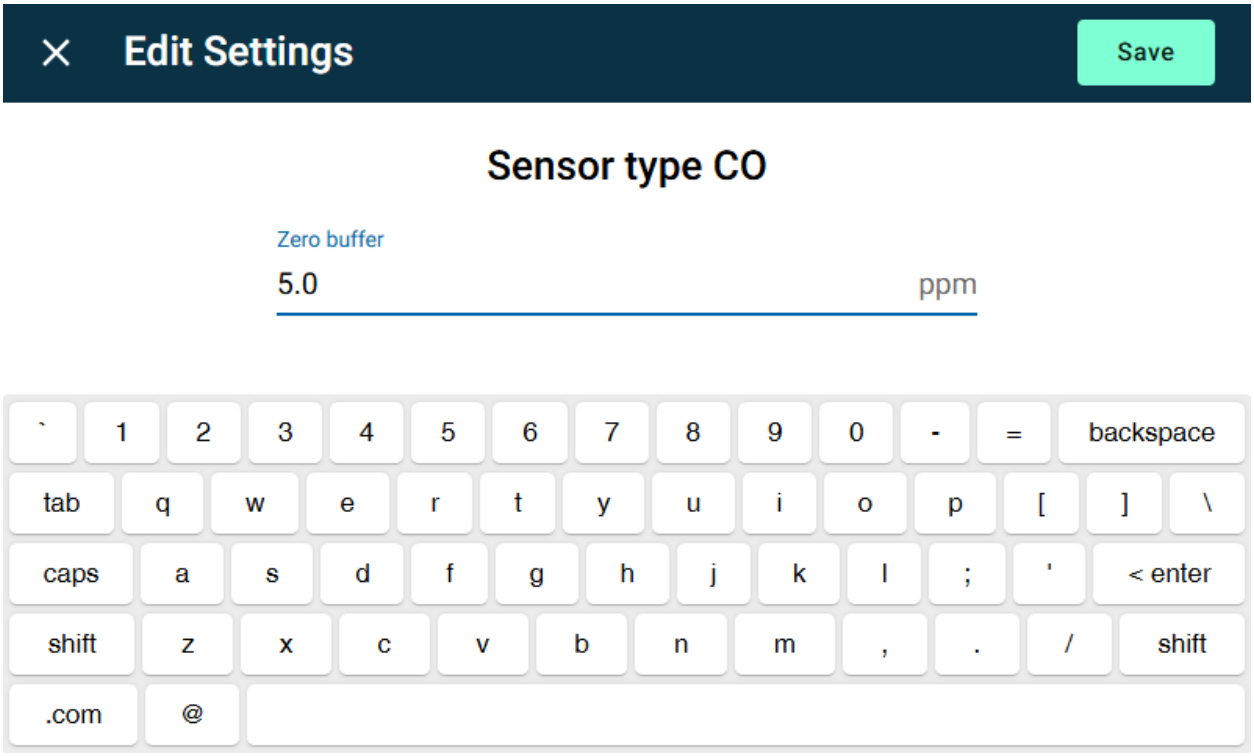


Figure 5-195: Editing a Sensor Type's Zero Buffer

5.13.6.3.4 Fault Limit

The **Fault Limit** defines the threshold below which a sensor reading is considered invalid or indicative of a fault condition. This helps detect sensor failures or communication issues when values fall outside the expected operating range.

To edit the Fault Limit:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Fault Limit** field to enter edit mode.
3. A virtual keyboard will appear.
4. Enter the desired fault threshold.
5. Press **Save** in the top-right corner to apply the change.

NOTE: The fault limit should be set below the zero scale to avoid false fault conditions during normal operation.

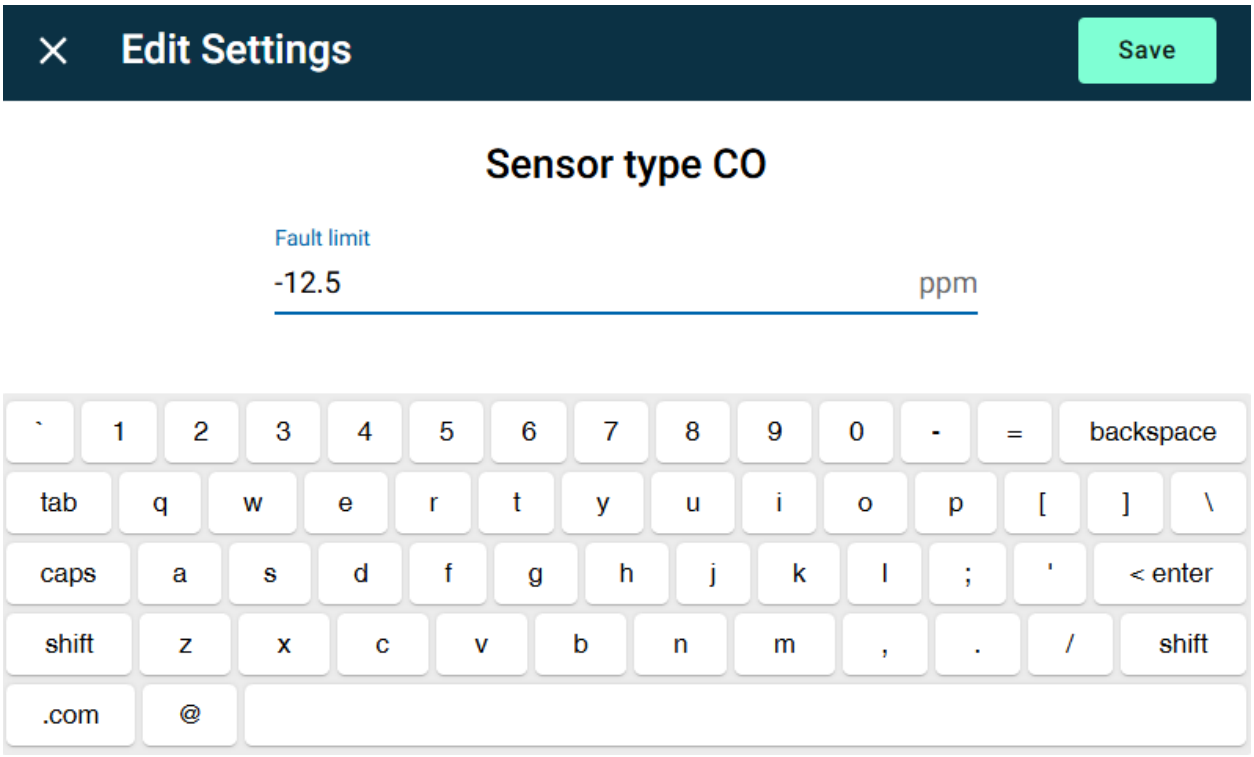


Figure 5-196: Editing a Sensor Type's Fault Limit

5.13.6.3.5 Alarm Type

The **Alarm Type** defines how the system evaluates sensor readings against alarm thresholds. This setting determines whether alarms are triggered by increasing values, decreasing values, or values outside a defined range.

Options:

- **Increasing:** Alarms are triggered when the sensor value rises above the set point.
- **Decreasing:** Alarms are triggered when the sensor value falls below the set point.
- **Window:** Alarms are triggered when the sensor value falls outside a defined range (above or below).

To edit the Alarm Type:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Alarm Type** field under the Alarm Settings section.
3. A pop-up window titled **Set the alarm type** will appear.
4. Select one of the available options: **Increasing**, **Decreasing**, or **Window**.
5. Press **Save** to apply the change, or **Cancel** to exit without saving.

NOTE: The selected alarm type affects how all alarm levels (e.g., Alarm 1, Alarm 2) are evaluated for this sensor type.

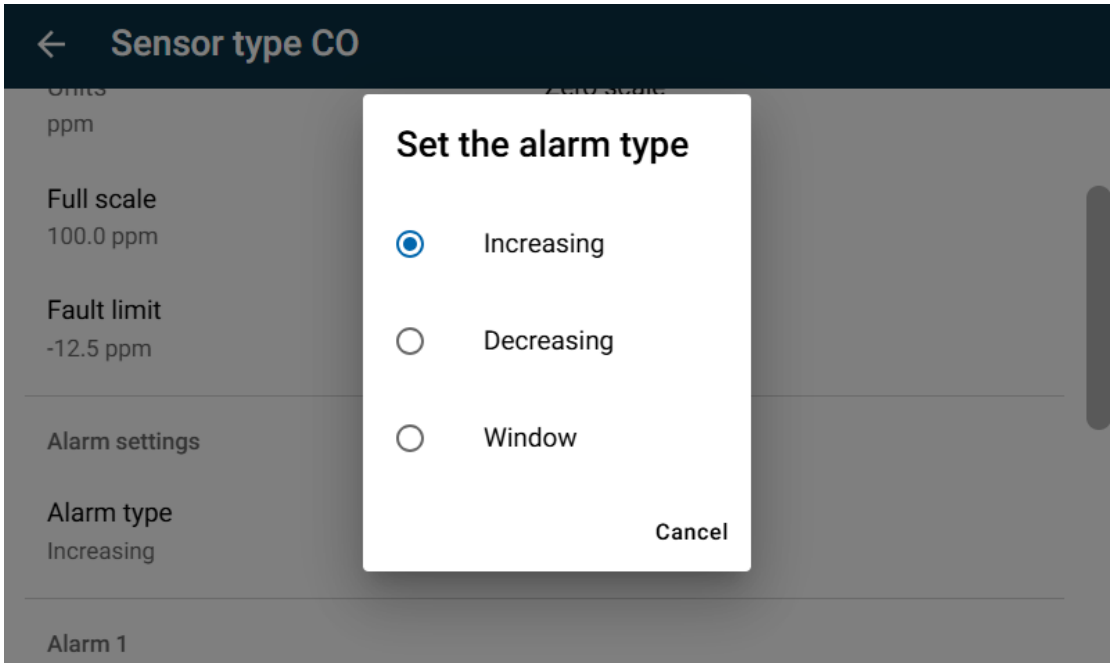


Figure 5-197: Editing a Sensor Type's Alarm Type

5.13.6.3.6 Alarm Hysteresis

The **Alarm Hysteresis** defines a buffer zone below the alarm set point that must be cleared before the alarm resets. This prevents rapid toggling of alarm states when sensor readings fluctuate near the threshold.

Example:
If Alarm 1 is set to 25.0 ppm and hysteresis is 2.5 ppm, the alarm will activate at 25.0 ppm but will not reset until the reading drops below 22.5 ppm.

To edit the Alarm Hysteresis:

1. Navigate to the **Sensor Type Details** screen.
2. Press the **Alarm Hysteresis** field under the Alarm Settings section.
3. A virtual keyboard will appear.
4. Enter the desired hysteresis value (e.g., **2.50**).
5. Press **Save** in the top-right corner to apply the change.

NOTE: Hysteresis applies to all alarm levels for the selected sensor type.

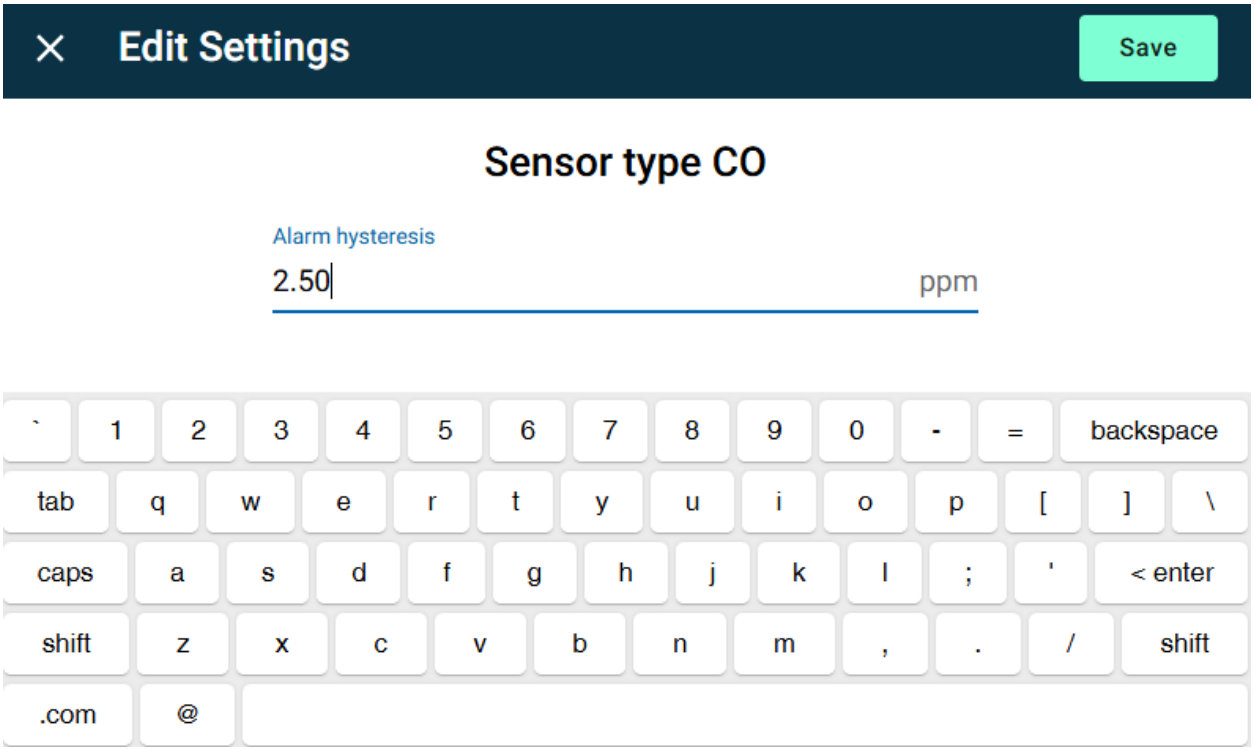


Figure 5-198: Editing a Sensor Type's Alarm Hysteresis

5.13.6.3.7 Alarm Set Point

Each alarm level (e.g., Alarm 1, Alarm 2, Alarm 3) includes a **Set Point**—the sensor reading at which the alarm is triggered. This value should be chosen based on safety thresholds, regulatory limits, or operational requirements.

To edit an Alarm Set Point:

1. Navigate to the **Sensor Type Details** screen.
2. Scroll to the **Alarm Settings** section and select the desired alarm level (e.g., **Alarm 1**).
3. Press the **Set Point** field to enter edit mode.
4. A virtual keyboard will appear.
5. Enter the desired threshold value.
6. Press **Save** in the top-right corner to apply the change.

NOTE: The unit of measurement (e.g., ppm) is displayed next to the input field and is not editable.

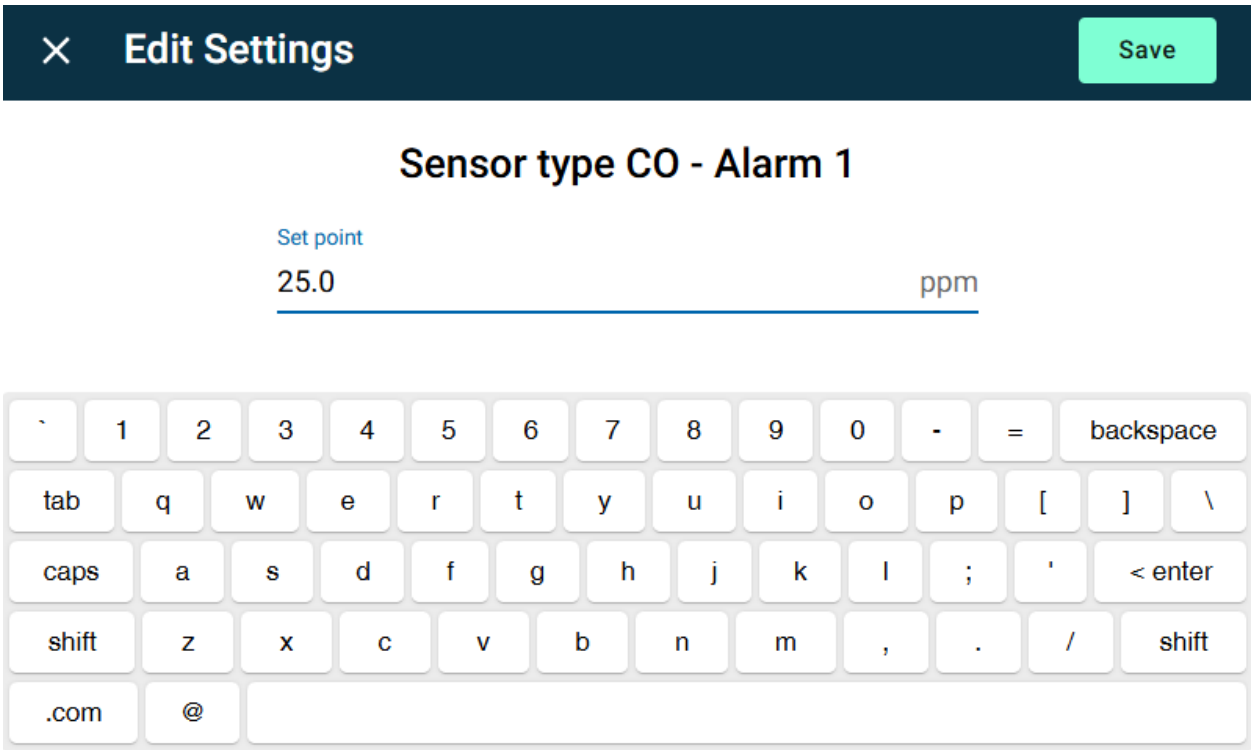


Figure 5-199: Setting an Alarm Set Point for a Sensor Type's Alarm

NOTE: Leaving the set point field blank disables the corresponding alarm level for this sensor type.

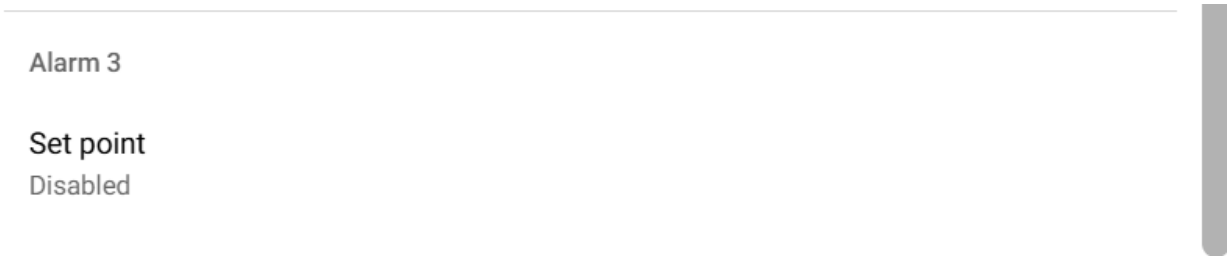


Figure 5-200: Disabling an Alarm Level for a Sensor Type

5.13.6.3.8 Alarm Delay

The **Alarm Delay** defines how long the sensor reading must exceed the alarm set point before the alarm is triggered. This helps prevent false alarms caused by brief or transient spikes in sensor values.

Available Options:

- **No delay:** Alarm triggers immediately when the set point is exceeded.
- **10 sec:** Alarm triggers after 10 seconds of continuous exceedance.
- **30 sec:** Alarm triggers after 30 seconds of continuous exceedance.
- **5 min:** Alarm triggers after 5 minutes of continuous exceedance.
- **10 min:** Alarm triggers after 10 minutes of continuous exceedance.

To edit the Alarm Delay:

1. Navigate to the **Sensor Type Details** screen.
2. Scroll to the **Alarm Settings** section and select the desired alarm level (e.g., **Alarm 1**).
3. Press the **Delay** field to open the delay options.
4. Select the desired delay duration.
5. Press **Save** to apply the change.

NOTE: The delay applies only when the sensor value continuously exceeds the set point for the selected duration.

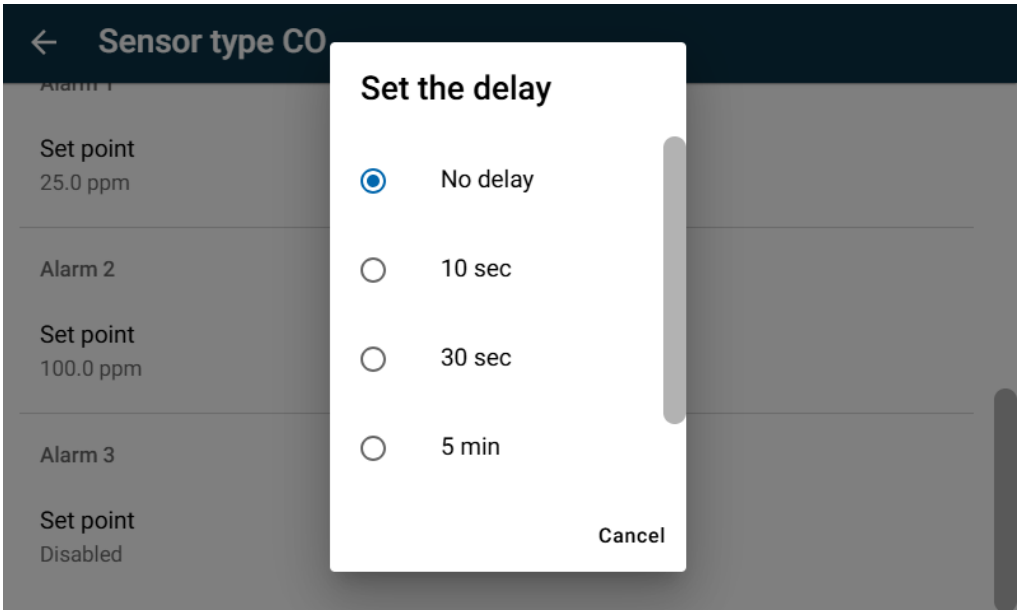


Figure 5-201: Setting an Alarm Delay for a Sensor Type's Alarm

5.13.7 Data Logging

The AMC-1DCx-L monitor supports external data logging via USB. This feature allows users to record sensor readings, alarms, and system events for diagnostics, compliance, and historical analysis. When data logging is in progress, data is logged in 30 second intervals.

IMPORTANT: The USB drive should be formatted to exFAT format. USB 2.0 and above is supported.

5.13.7.1 USB Data Logging Interface

The **Data Logging** section is accessible from the main dashboard or sensor type settings screen. It provides controls for managing USB-based data recording.

Displayed Information:

- A message prompting the user to insert a USB drive:
  "Please insert a USB drive to begin data logging."
- Two buttons:
  - **Start Data Logging** – Begins recording data to the connected USB drive.
  - **Safely Eject USB** – Prepares the USB drive for safe removal.

NOTE: Both buttons are disabled until a compatible USB drive is detected.

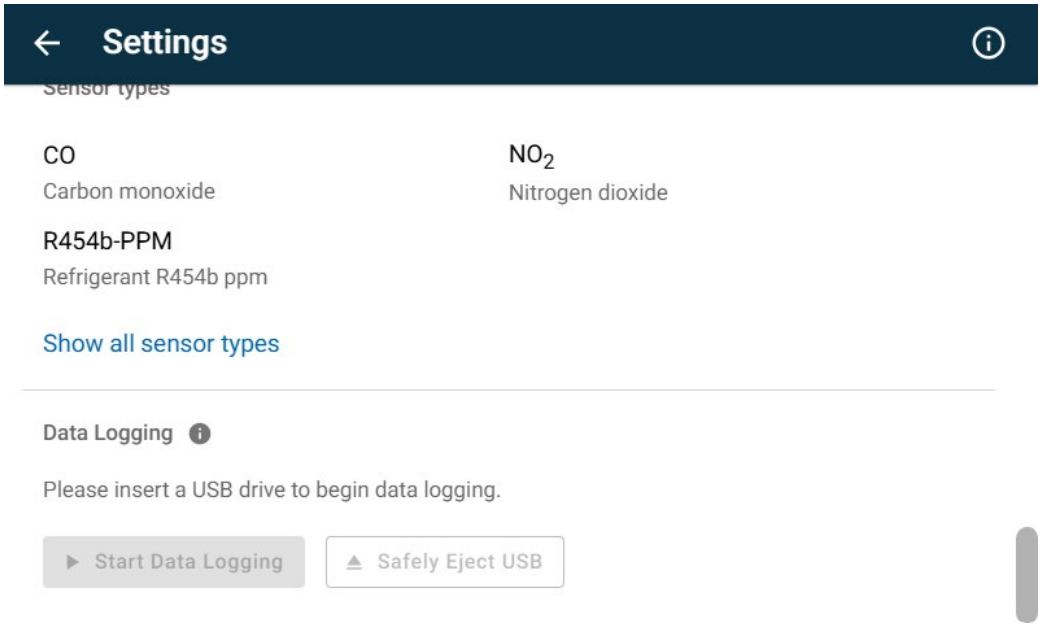


Figure 5-202: Data Logging Settings

5.13.7.2 Automatic Logging Behavior

The monitor supports automatic data logging to a USB drive, but logging will only begin under specific conditions to ensure proper operation and avoid conflicts with other system functions.

Data logging begins automatically when:

- A **compatible USB** drive is inserted
- The monitor is **not in the warmup period**
- The USB drive is **not specially formatted for a software upgrade**

No manual activation is required. Once these conditions are met, the system begins logging immediately. A blinking USB icon appears in the top-right corner of the dashboard to indicate that logging is active.

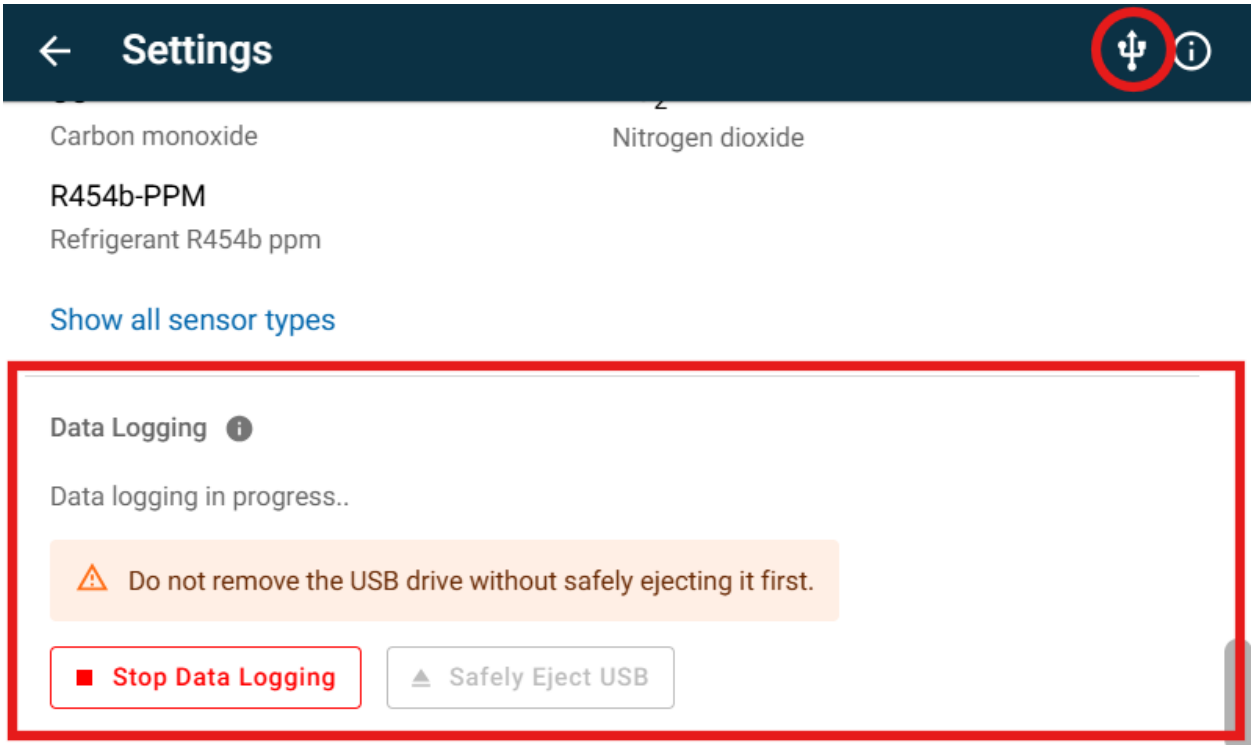


Figure 5-203: Data Logging in Progress with USB Ejection Warning

5.13.7.3 Manually Starting Data Logging

If data logging has been stopped and needs to be manually started:

1. Ensure a USB drive is inserted into the monitor's USB port.
2. Once detected, the **Start Data Logging** button becomes active.
3. Press **Start Data Logging** to begin recording.
4. A blinking USB icon will appear in the top-right corner of the dashboard to indicate active logging.

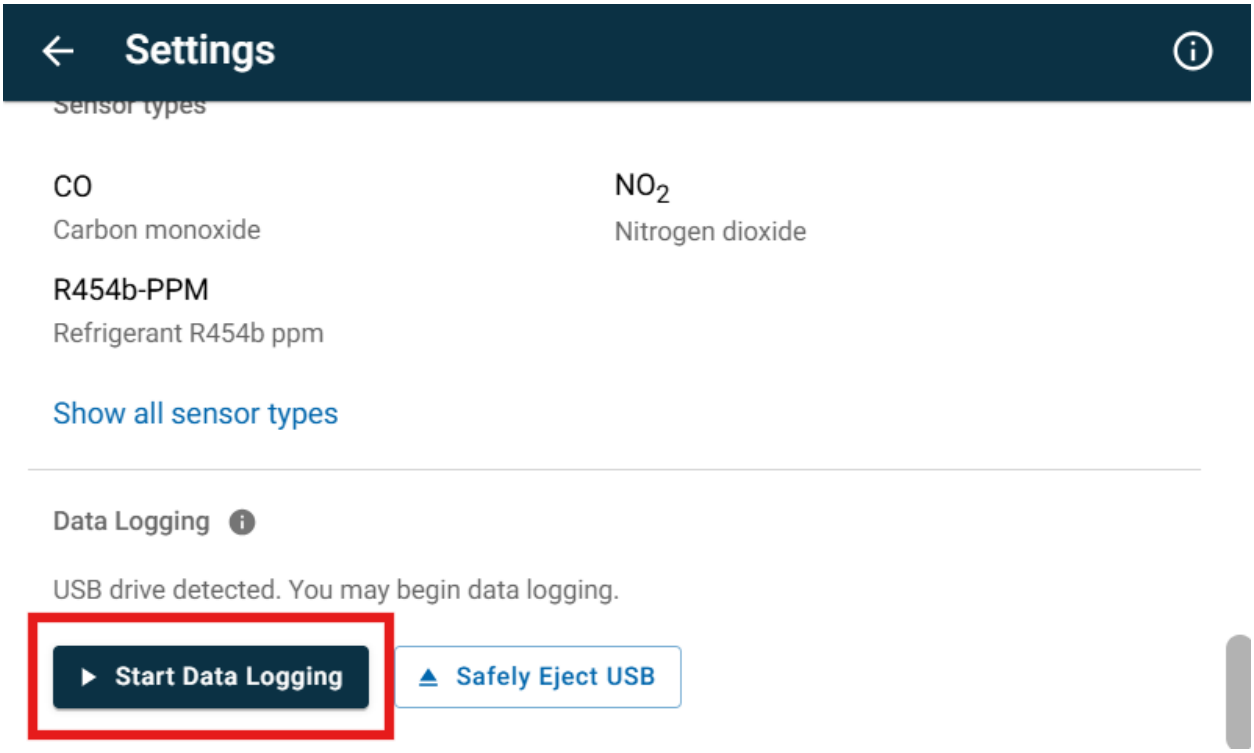


Figure 5-204: Start Data Logging Button

5.13.7.4 Stopping and Ejecting the USB Drive

To safely stop logging and remove the USB drive:

1. Press the **Stop Data Logging** button.
2. Wait for the system to complete all write operations.
3. Once logging has stopped, the **Safely Eject USB** button becomes active.
4. Press **Safely Eject USB** to prepare the drive for removal.
5. Remove the USB drive only after receiving confirmation.

IMPORTANT: Removing the USB drive without stopping data logging and using the eject function may result in data loss or corruption.

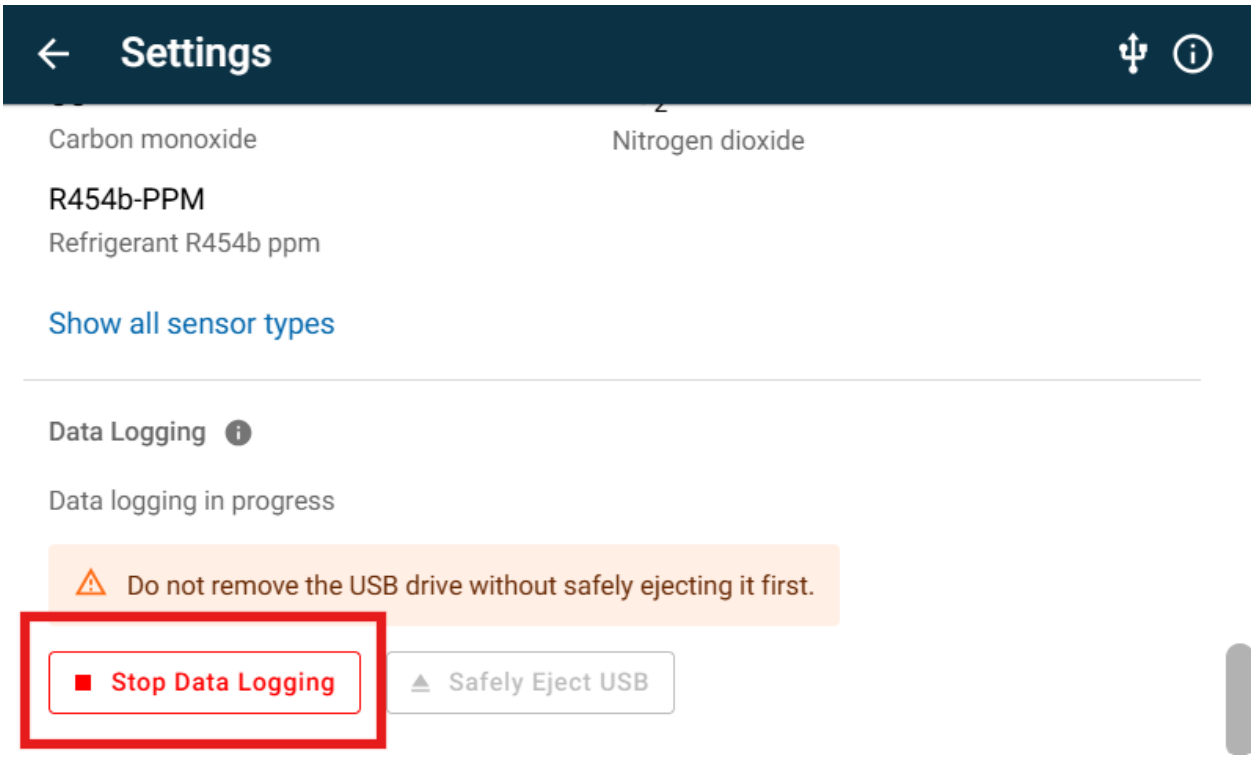


Figure 5-205: Stop Data Logging Button

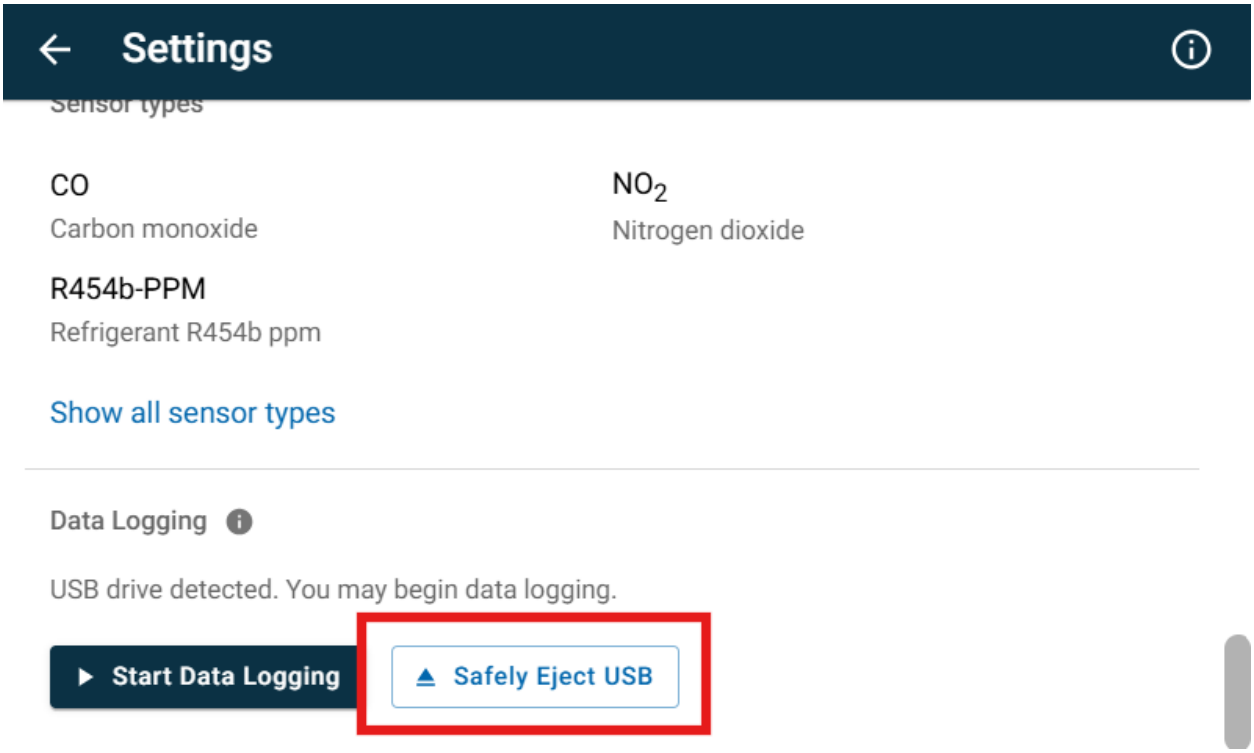


Figure 5-206: Safely Eject USB Drive Button

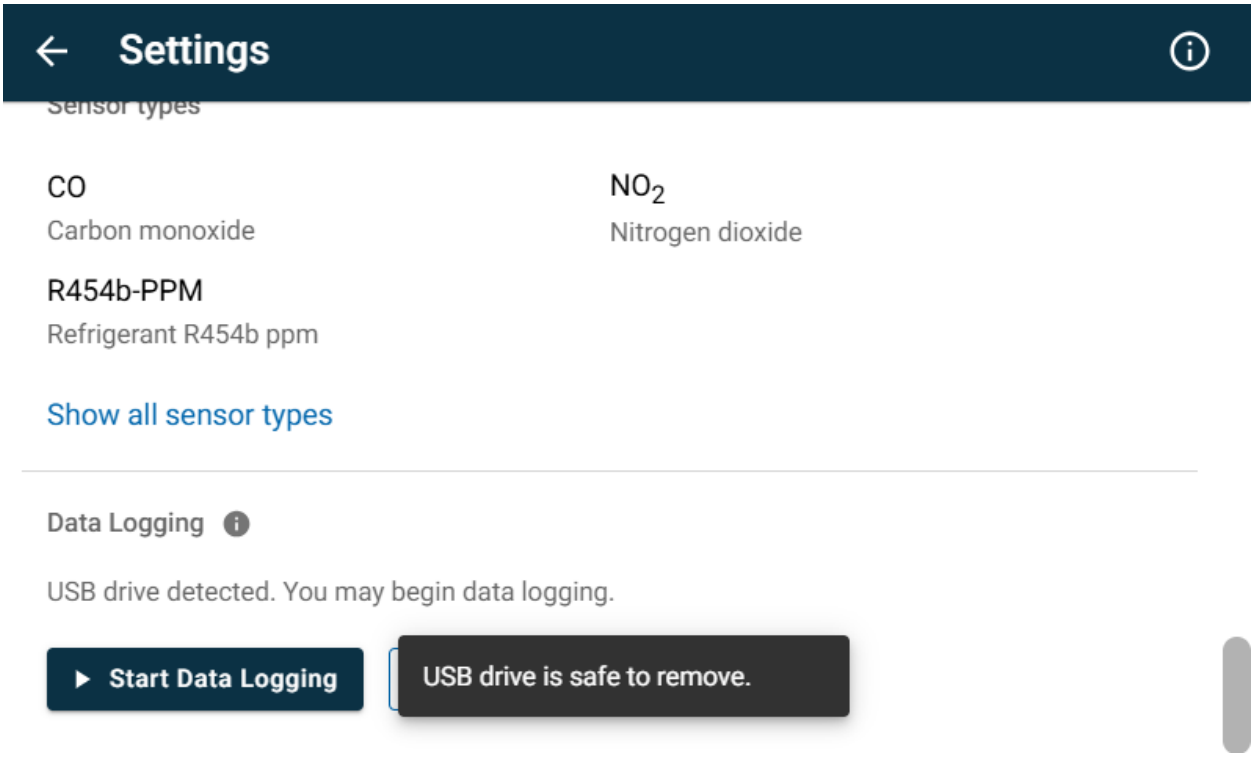


Figure 5-207: Confirmation that USB Drive is Safe to Remove

5.13.8 System Information Settings

The **System Information** screen provides a real-time overview of the AMC-1DCx-L monitor's operational status. This section is essential for diagnostics, performance monitoring, and maintenance.

5.13.8.1 Viewing System Information

The screen includes the following key system metrics:

- **System Mode**: Displays the current hardware configuration.
- **Version**: Shows the installed firmware version.
- **CPU Usage**: Indicates the current processor load as a percentage.
- **CPU Temperature**: Displays the internal processor temperature.
- **Uptime**: Shows how long the monitor has been running since the last restart.
- **Fan Status**: Indicates whether the internal cooling fan is currently active.

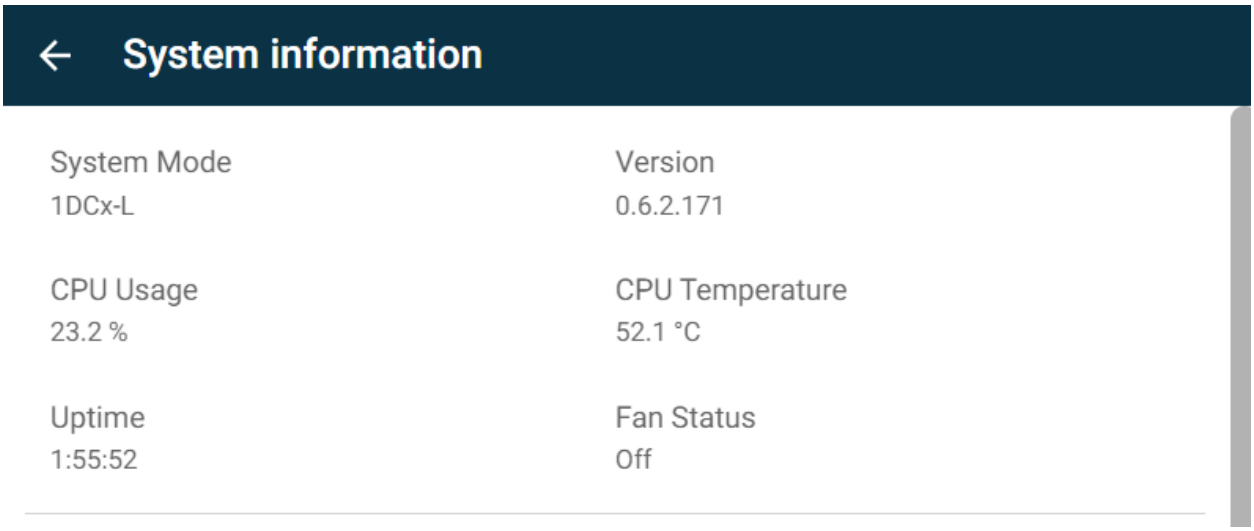


Figure 5-208: System Information

Available Actions

Standard system-level actions are available when the monitor is **unlocked**:

- **Restart Monitor**: Reboots the AMC-1DCx-L system. This is useful after applying configuration changes or during troubleshooting.
- **Reset Modbus Stats**: Clears all Modbus communication counters (successes, failures, packets, and timeouts) for all lanes. This is helpful for establishing a clean diagnostic baseline during system testing or after resolving communication issues.

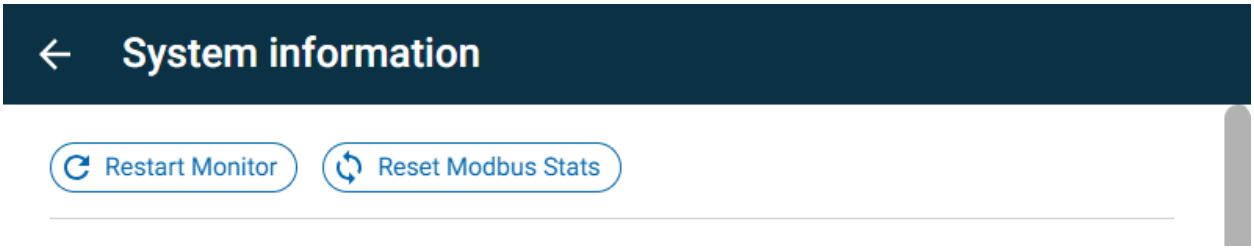


Figure 5-209: System Information Settings

5.13.8.2 Modbus Lane Statistics

Each Modbus lane includes detailed communication metrics to help assess network performance and troubleshoot issues:

- **Transactions Success**: Total number of successful Modbus transactions. A successful transaction could include up to two MODBUS packet retries.
- **Transactions Failed**: Total number of failed Modbus transactions. A transaction failure is counted after three failed MODBUS packet retries.
- **Packets Sent**: Number of Modbus packets transmitted by the monitor.
- **Packets Received**: Number of Modbus packets successfully received.
- **Packet Timeouts**: Number of packets that did not receive a response within the expected time window.
- **Conflicts**: Counter showing the number of transactions with CRC (Cyclic Redundancy Check) errors. This item is context sensitive and provides detailed information about the conflict. Please refer to section **5.13.4.7 Conflicts** for more information.

These statistics provide insight into communication reliability and can help identify wiring issues, device misconfigurations, or timing mismatches on the Modbus network.

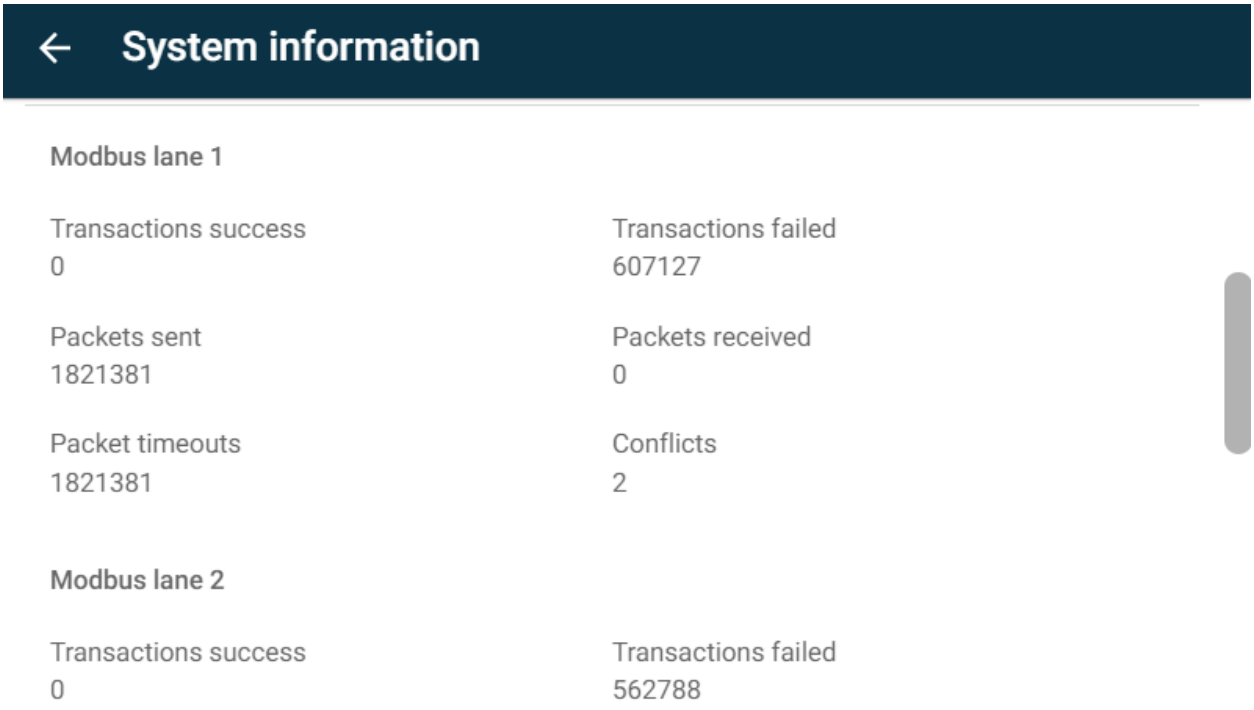


Figure 5-210: Modbus Lane Statistics

5.13.8.3 Exporting Logs and Configuration Files

When a USB drive is inserted, the following buttons appear at the top of the System Information screen:

- **Export Config**: Saves the current system configuration to the connected USB drive. This is useful for backup, duplication, or support purposes.
- **Export Logs**: Copies system logs—including alarms, faults, and operational events—to the USB drive for diagnostics or compliance reporting.
- **Eject USB**: Safely prepares the USB drive for removal by completing all pending write operations. Always use this button before physically removing the USB drive to prevent data corruption.

NOTE: The buttons for exporting files **will not appear** if the USB drive contains a configuration file or a software upgrade package.

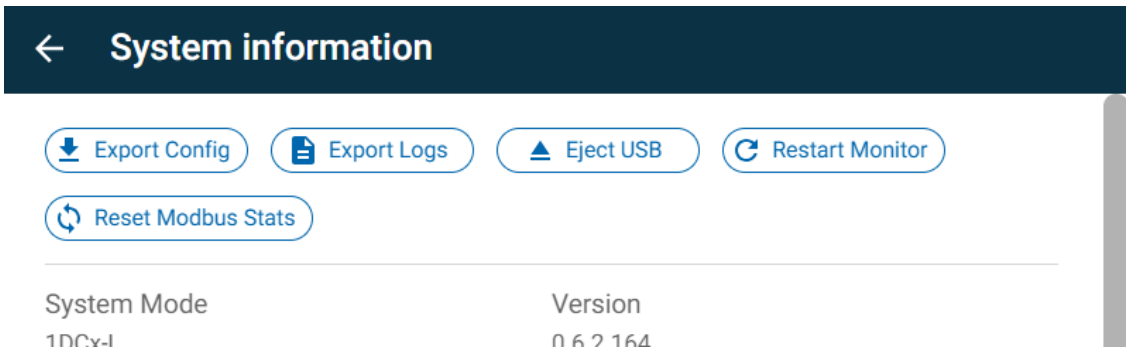


Figure 5-211: System Information Settings with USB Drive Inserted

5.13.8.4 Importing Configuration Files

When a USB drive containing a configuration file named **monitor.json** is inserted into the unit, the **Import Config** button will automatically appear on the System Information page.

Selecting this option allows you to import the configuration settings directly from the USB drive into the system. After completion, the system displays a message confirming success or failure of the import.

⚠️ **Important Note on USB Removal**

Due to a known issue (see Errata section of this manual), the **Eject USB** button is not available in the user interface after a configuration file import. To avoid potential USB drive corruption, **do not remove the USB drive while the system is running**. Instead, it is recommended to **power down the unit before physically removing the USB drive**.

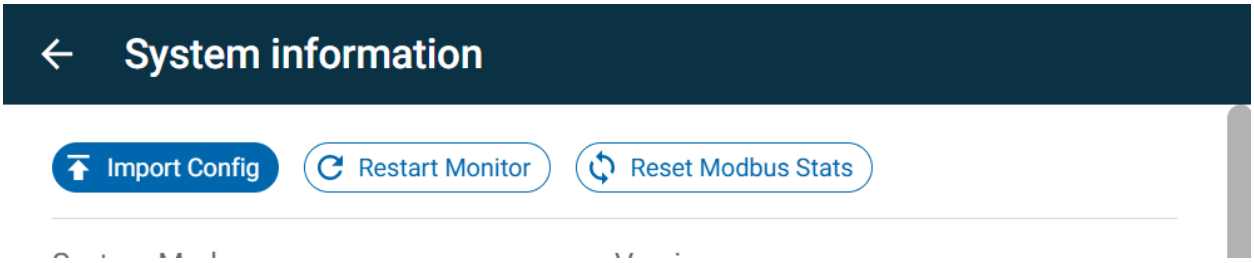


Figure 5-212: Import Config Button

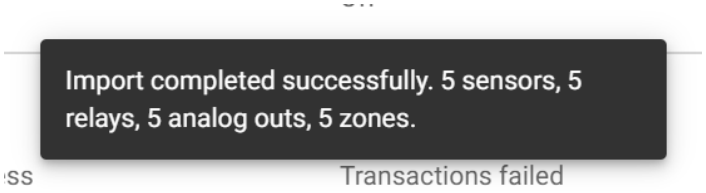


Figure 5-213: Successful Configuration File Import

5.13.8.4.1 Failed Import

On a failed import, the system will notify the user of the error and offer helpful debugging information.

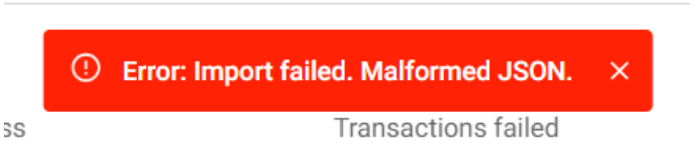


Figure 5-214: Failed Import - Malformed JSON

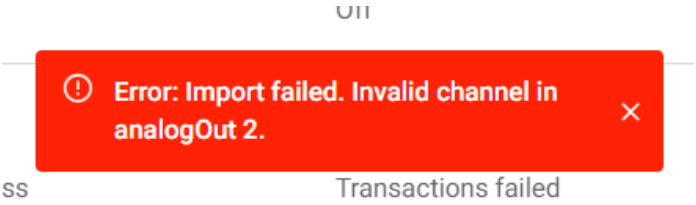


Figure 5-215: Failed Import - Invalid Value

5.13.8.5 Updating Software

Users can update the monitor's software using a USB drive. Before starting, please ensure the following requirements are met:

- The USB drive **must be formatted using the exFAT file system**. Other formats (such as FAT32 or NTFS) are not supported.
- Software upgrades are distributed as .zip files. Extract the .zip file to a folder named **dcx_light_project** on the USB drive.

Performing the Update

1. Insert the prepared USB drive into the one of the monitor's available USB ports.
2. Navigate to **System Information** from the **Settings** screen.
3. When a compatible USB drive is detected, a button labeled **Upgrade Software** will appear at the top of the screen.
4. Select **Upgrade Software** to begin the update process.
5. Follow the on-screen instructions to complete the installation.

IMPORTANT: Do not remove the USB drive or power off the monitor while the software update is in progress. Interrupting the update may cause the system to become unresponsive.

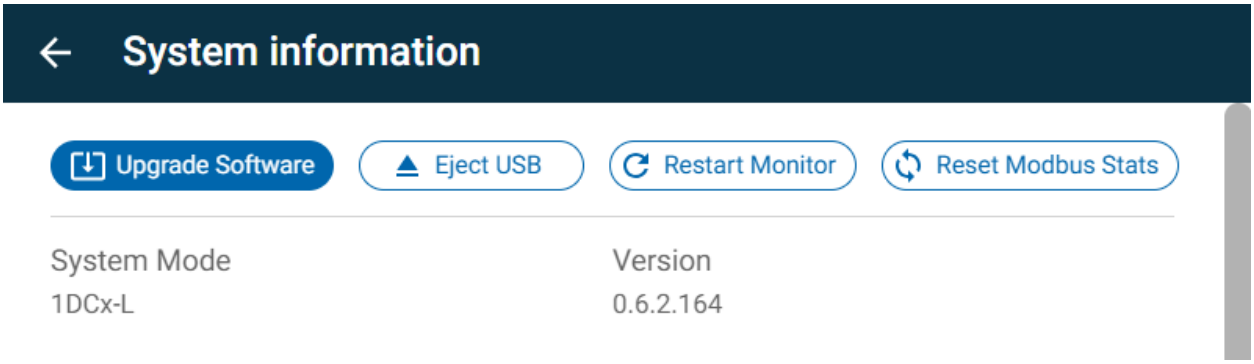


Figure 5-216: System Information Settings with Software Upgrade USB Inserted

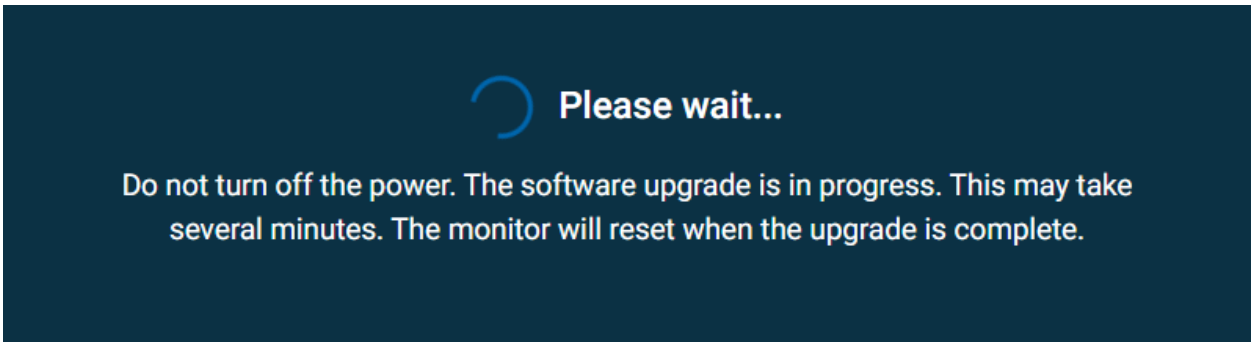


Figure 5-217: Software Upgrade in Progress

5.14 Bulk Configuration Options

The **Bulk Configuration** feature allows users to apply configuration changes to multiple devices at once. This is especially useful in large systems where many sensors, relays, analog outputs, or zones share similar settings.

5.14.1 Enabling Bulk Editing

To begin using bulk configuration:

1. Ensure the **monitor is unlocked**.
2. Enable **Bulk Configuration** from the **Table Settings Menu**.
3. A **checkbox column** will appear on the far-left side of the table, allowing selection of multiple rows.

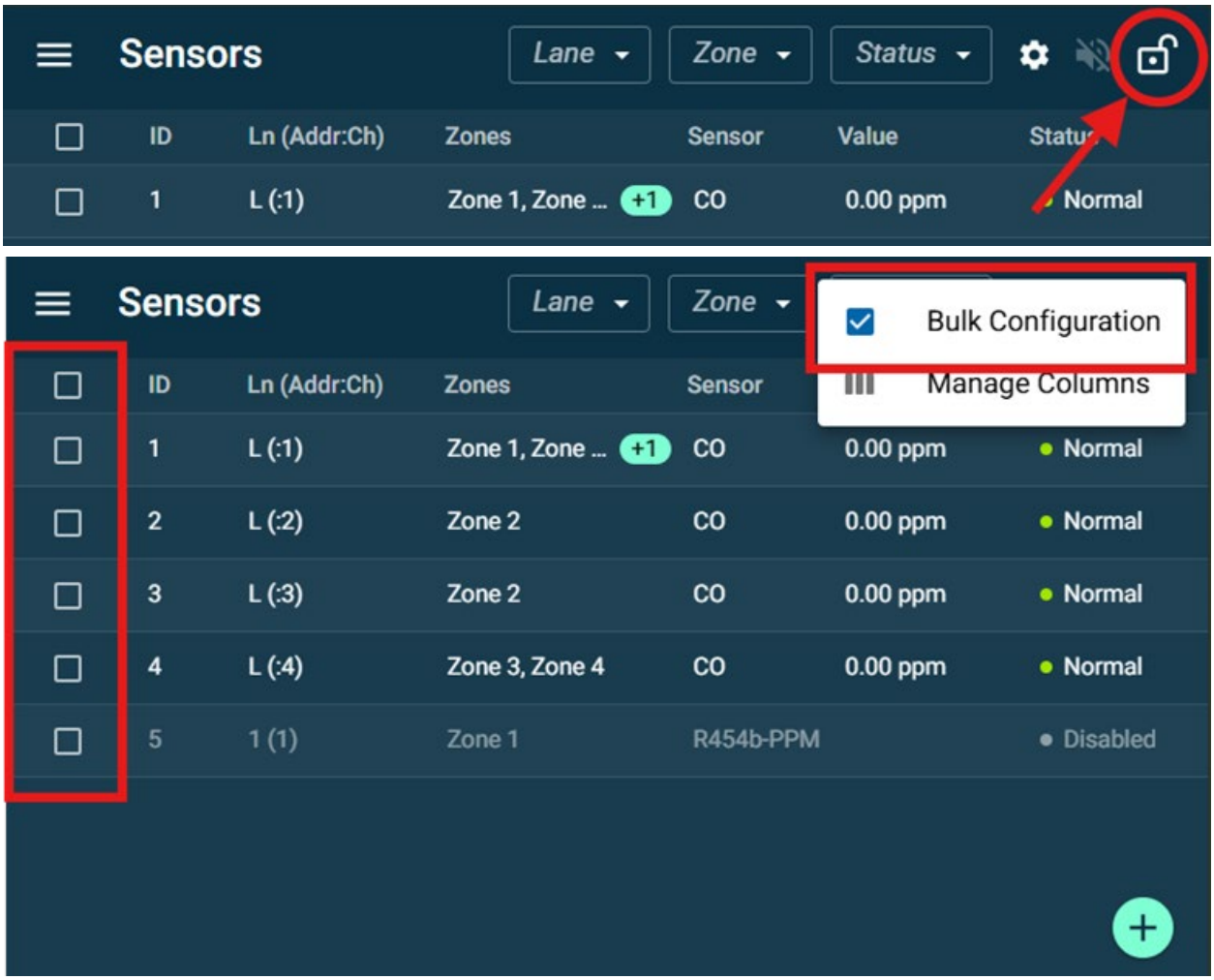


Figure 5-218: Bulk Configuration Enabled

Selecting Devices

- Check the checkboxes to select one or more devices.
- As selections are made, a **count of selected items** appears in the **bottom-right corner**.
- To **deselect all**, press the **X icon** next to the selection count.

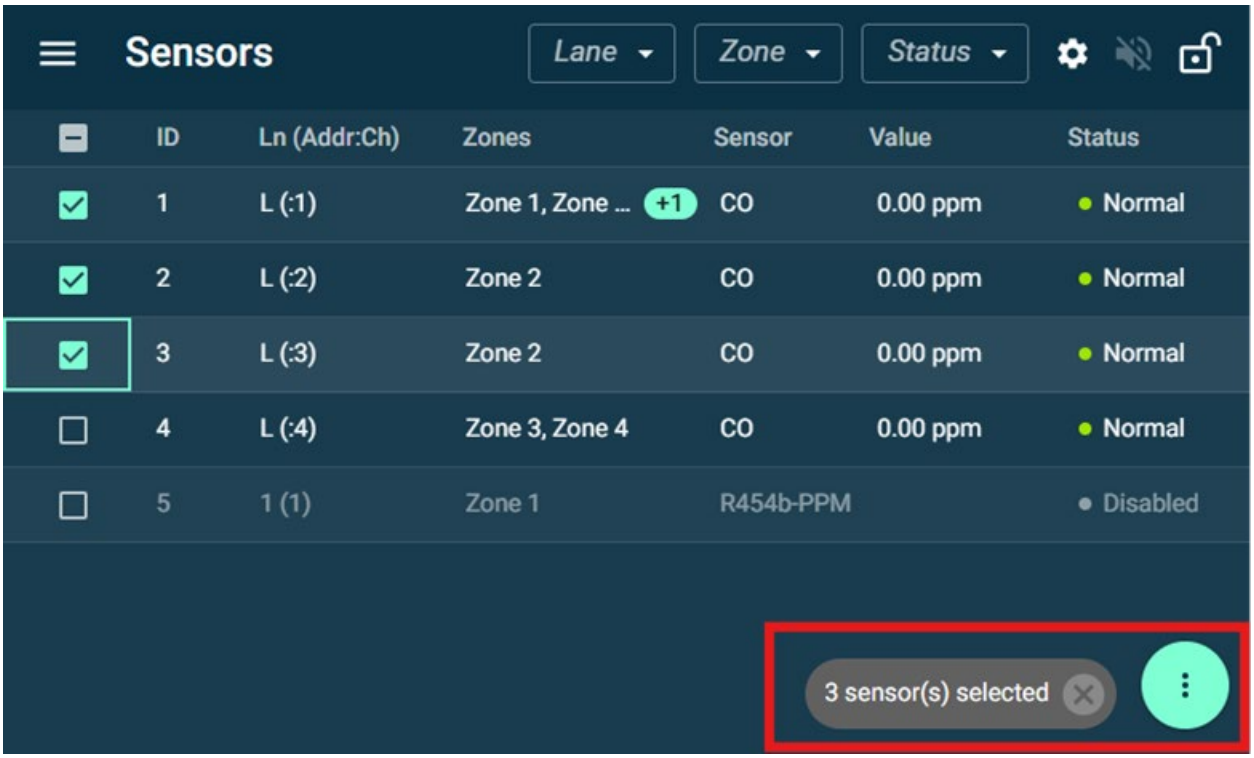


Figure 5-219: Selected Rows with Bulk Configuration Menu Button

Select All Checkbox Behavior

At the top of the checkbox column is a **Select All** checkbox. When clicked:

- If **no rows are selected**, it will **select all** rows.
- If **some rows are selected**, it enters an **intermediate state** (partially filled).
- Selecting it again in this intermediate state will **deselect all** rows.

This provides a quick way to manage large selections without manually checking or unchecking each row.

5.14.2 Bulk Configuration Menu

When one or more rows are selected, a **menu icon with three vertical dots** appears next to the selection count. Pressing this icon opens the **Bulk Configuration Menu**, which includes the following options:

- **Configure**: Opens a bulk edit screen where shared settings (e.g., zones, enabled/disabled) can be applied to all selected devices.
- **Delete**: Removes all selected devices from the system.
- **Copy**: Copies the configuration of the selected device(s) to the clipboard.
- **Paste**: Applies a previously copied configuration to the selected devices.
- **Duplicate**: Creates new devices using the configuration of the selected ones.
- **Select Range**: Allows users to quickly select a range of rows without manually checking each box.

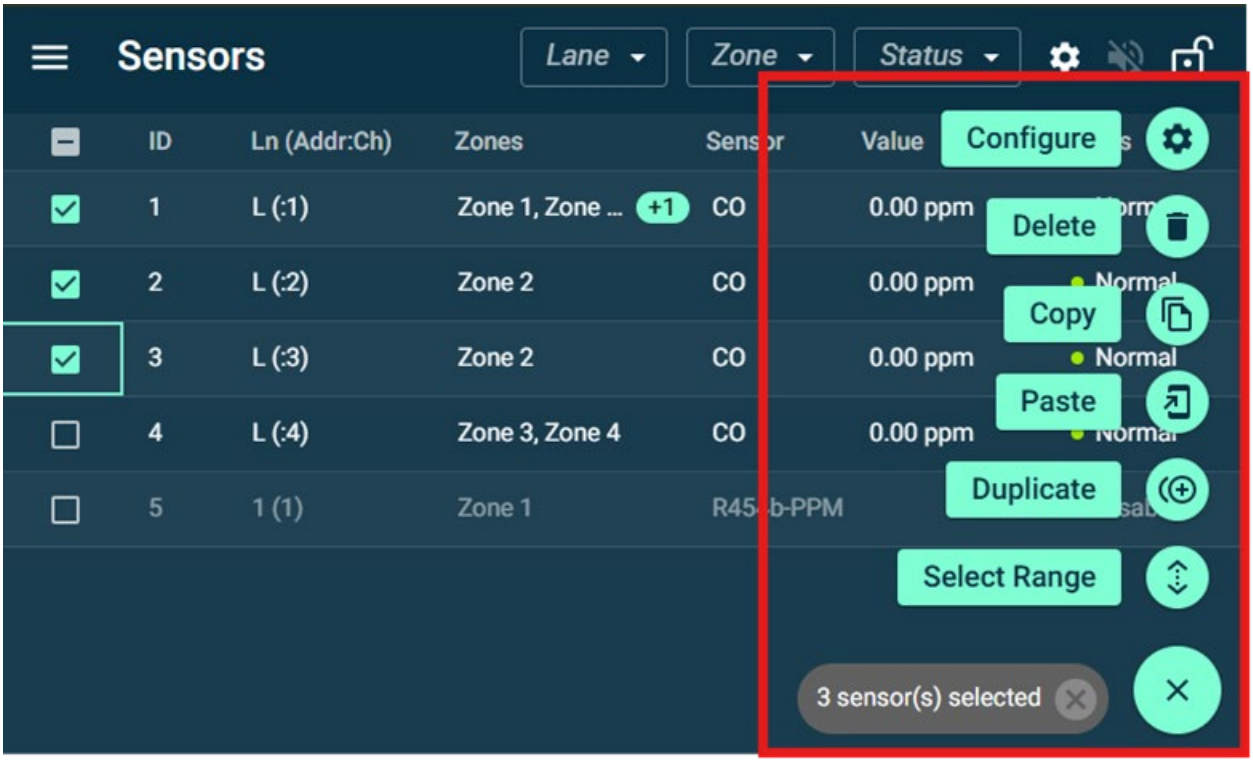


Figure 5-220: Bulk Configuration Menu

5.14.3 Bulk Configuration

When multiple devices are selected and the **Configure** option is chosen from the **Bulk Configuration Menu**, the system opens the **Bulk Configuration Edit Screen**. This interface allows users to apply shared settings across all selected devices.

At the top of the screen, the header displays:

- the number of devices currently being edited
- an option to bulk delete, represented by a trash icon
- and an option to bulk update, represented by a save icon

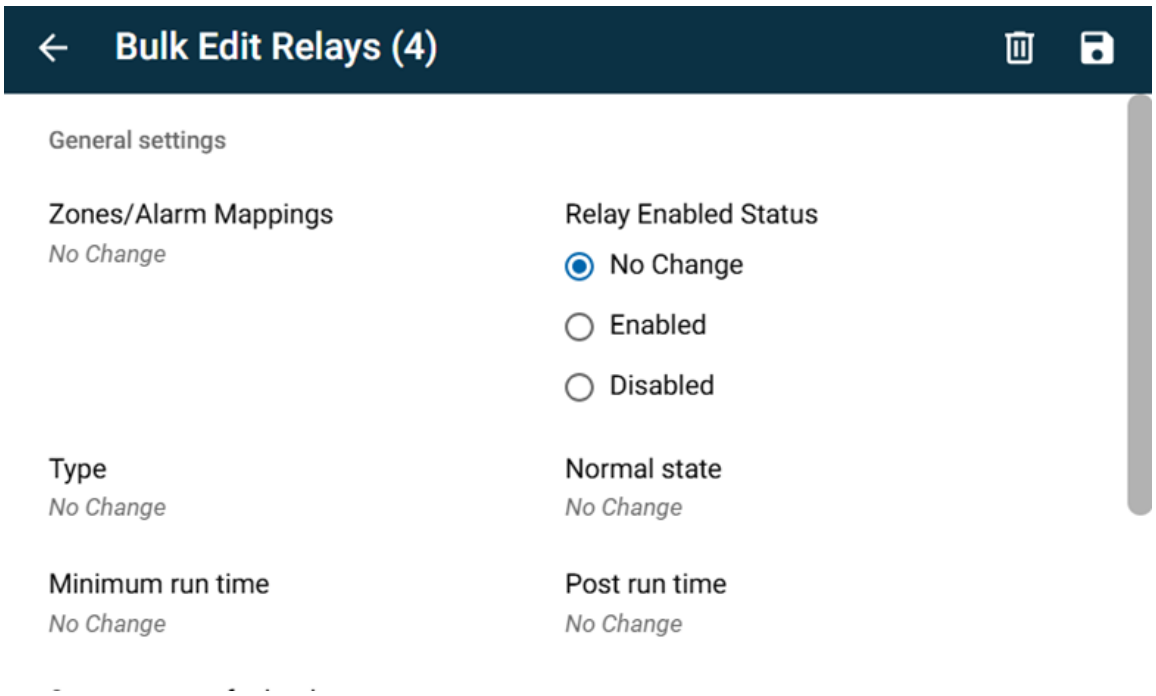


Figure 5-221: Bulk Configuration Form

Input Fields and "No Change" Defaults

Each configurable field in the bulk editor includes a **"No Change"** option by default. This means:

- If a field is left as **No Change**, the system will preserve the existing value for each individual device.
- If a new value is selected, that value will be applied **uniformly** to all selected devices.

This approach allows users to update only the fields they want to modify, without overwriting other settings unintentionally.

Reverting to "No Change"

After editing a field, a small **X icon** appears next to the selected value. Pressing this **X** will **revert the field back to "No Change"**, allowing users to undo changes before saving. This provides flexibility and prevents accidental overwrites.

NOTE: The clear icon is not available for radio button fields. Instead, the user can select the "No Change" option from the available options.

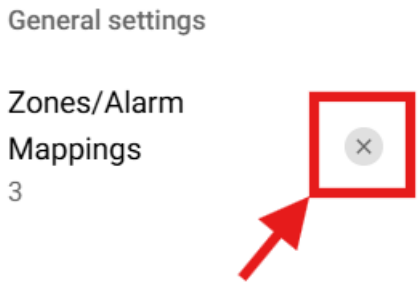


Figure 5-222: Clear Bulk Configuration Field

5.14.4 Bulk Delete

Devices can be deleted in bulk from two locations:

1. **From the Bulk Configuration Menu**
   After selecting multiple devices and opening the **Bulk Configuration Menu**, select **Delete** to initiate the bulk delete process.
2. **From the Bulk Configuration Edit Screen**
   When viewing the **Bulk Configuration Edit Screen**, press the **trash can icon** in the top-right corner of the header to delete all selected devices.

A confirmation dialog is displayed to ensure that deletions are intentional and to help prevent accidental removal of critical devices.

IMPORTANT: Deleted devices cannot be recovered and must be re-added manually if removed in error.

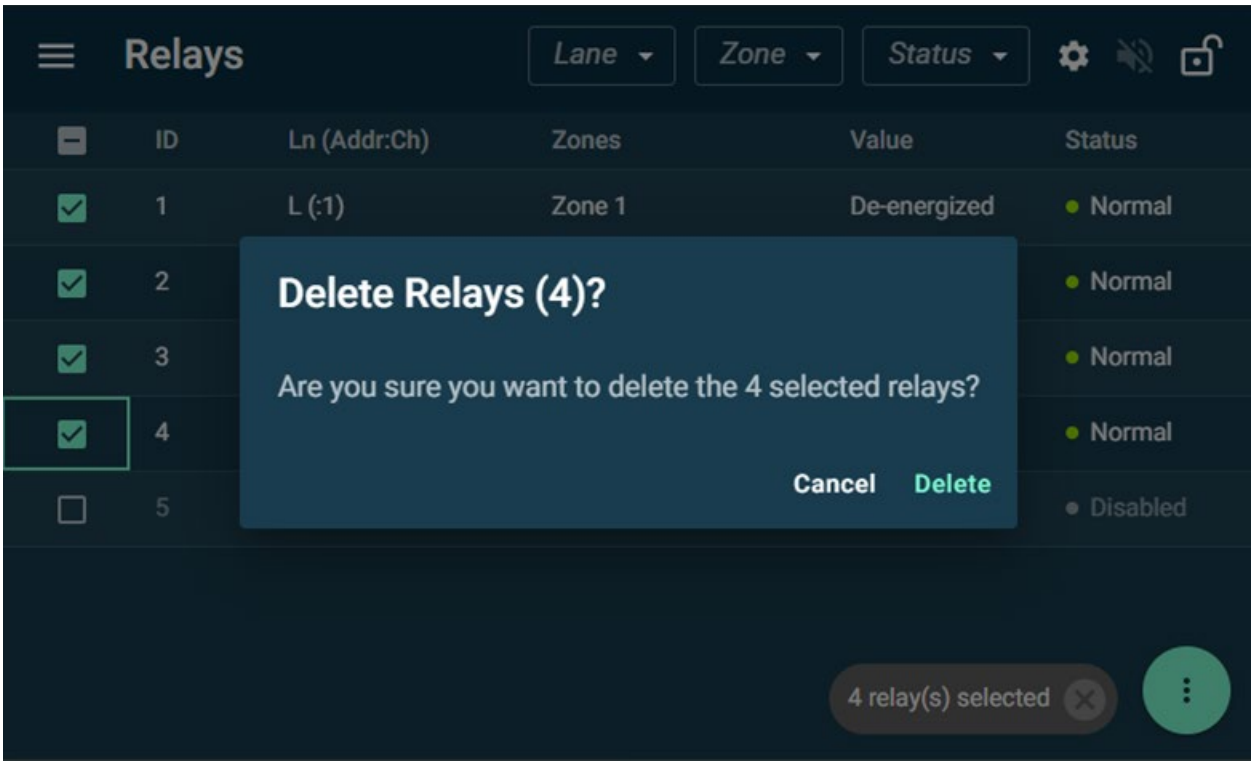


Figure 5-223: Bulk Deletion Confirmation From Table View

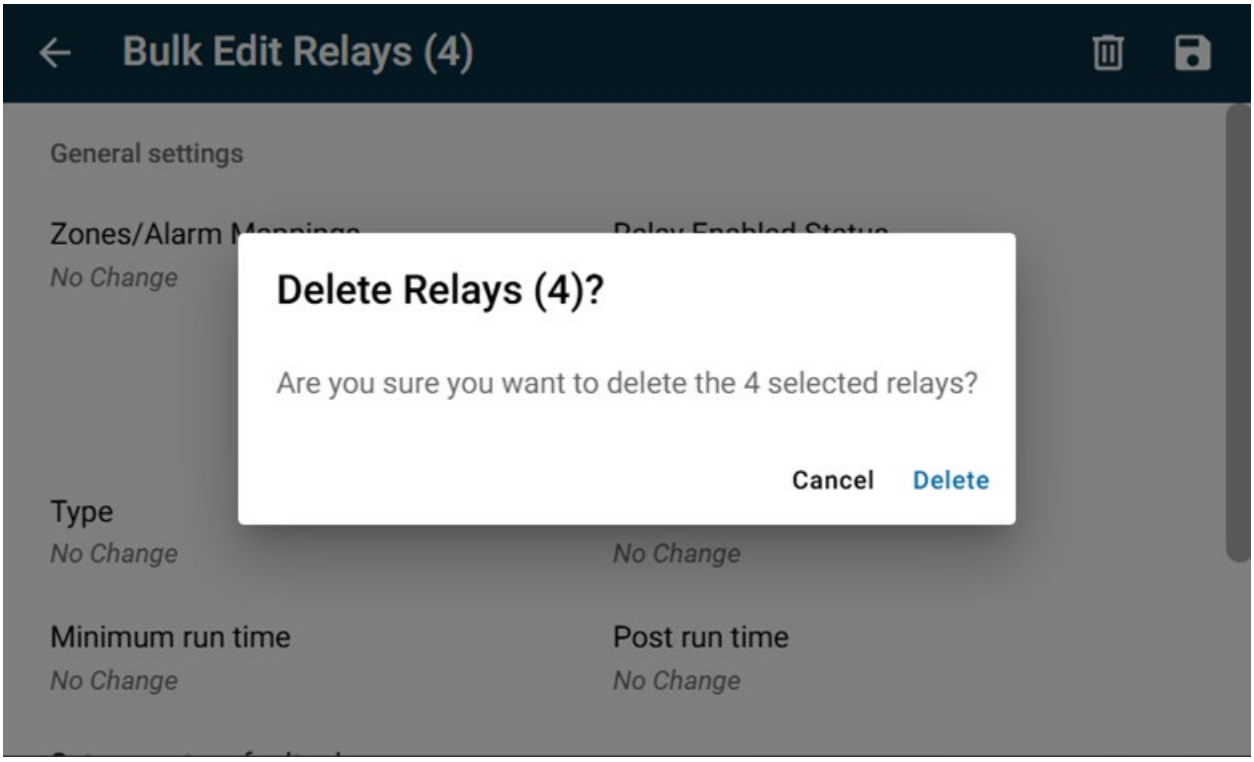


Figure 5-224: Bulk Deletion Confirmation From Form View

5.14.5 Copy & Paste

The **Copy and Paste** feature allows users to copy configuration settings from one or more devices and apply them to others.

Copying Configurations

To copy configurations:

1. Select one or more rows.
2. Opening the **Bulk Configuration Menu**.
3. Select **Copy**.

Once copied, a count of the copied device configurations appears in the bottom-right corner. These configurations are now stored in the clipboard and ready to be pasted.

NOTE: The clipboard is temporary and only persists during the current session. If the monitor is restarted, the copied data will be cleared.

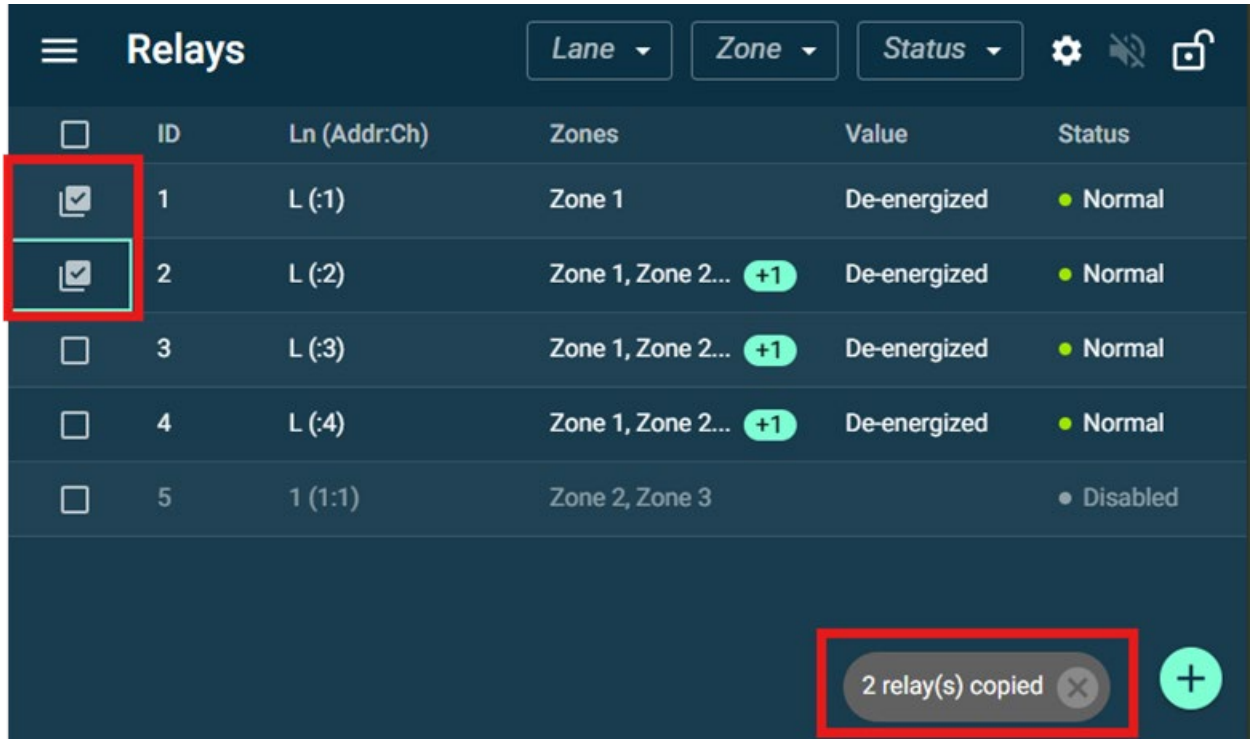


Figure 5-225: Copied Configurations

Pasting Configurations

To paste copied configurations:

1. Select the destination rows where the configurations should be applied.
2. Open the **Bulk Configuration Menu**.
3. Select **Paste**.

A confirmation message will appear once the paste is complete.

NOTE: Only fields that are part of the copied configuration will be updated. All other settings on the destination devices will remain unchanged.

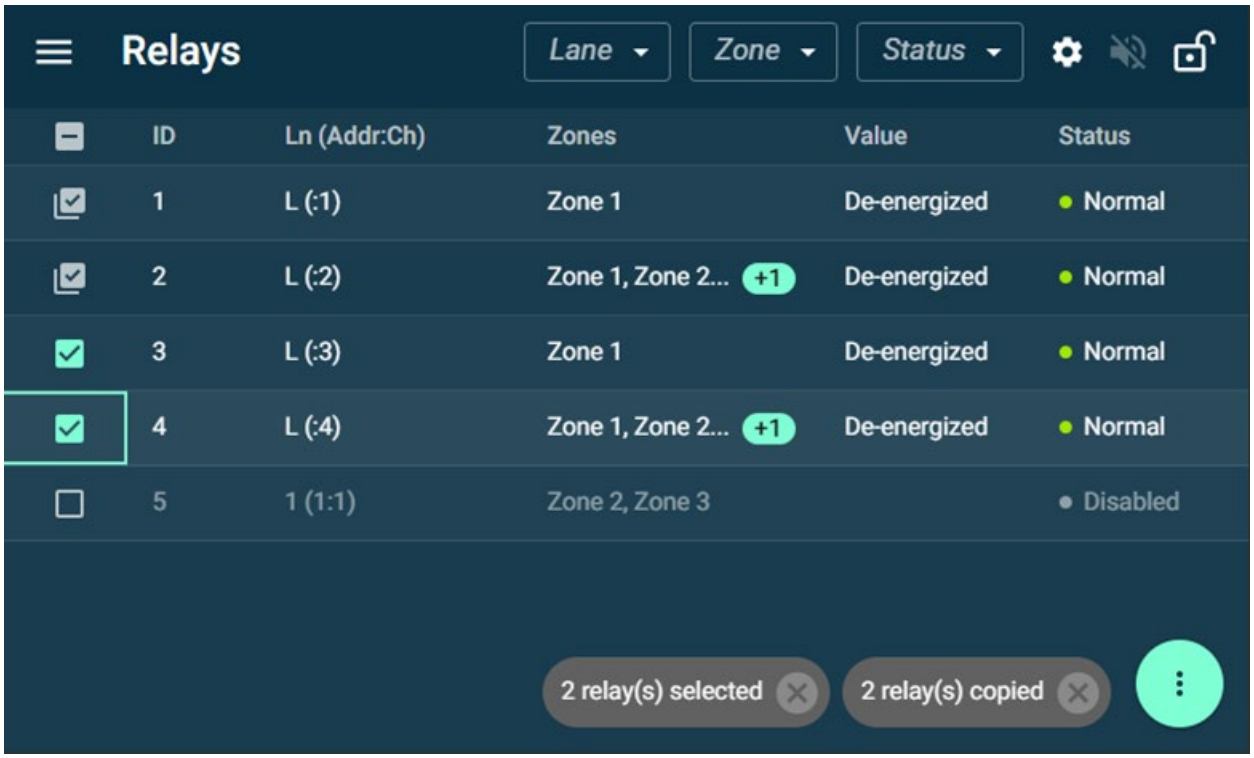


Figure 5-226: Preparing for Paste Operation

Figure 5-227: Pasted Configurations

5.14.6 Duplicate

The **Duplicate** feature allows users to quickly create new devices based on the configuration of existing ones. This is useful when multiple devices need to share identical settings, such as relays with the same alarm mappings or analog outputs with the same scaling.

Duplication Availability

The **Duplicate** option is **only available** when the selected devices meet **all** of the following conditions:

- All selected devices are on **the same lane**
- All selected devices use **the same interface type**
    - Modbus devices only
    - Local devices only
    - External devices only

Duplication is **not available** in the following cases:

- More than one **Modbus lane** is selected
- The selection includes a **mix of Modbus and Local devices**

When any of these conditions are present, the **Duplicate** option is disabled in the Bulk Configuration menu.

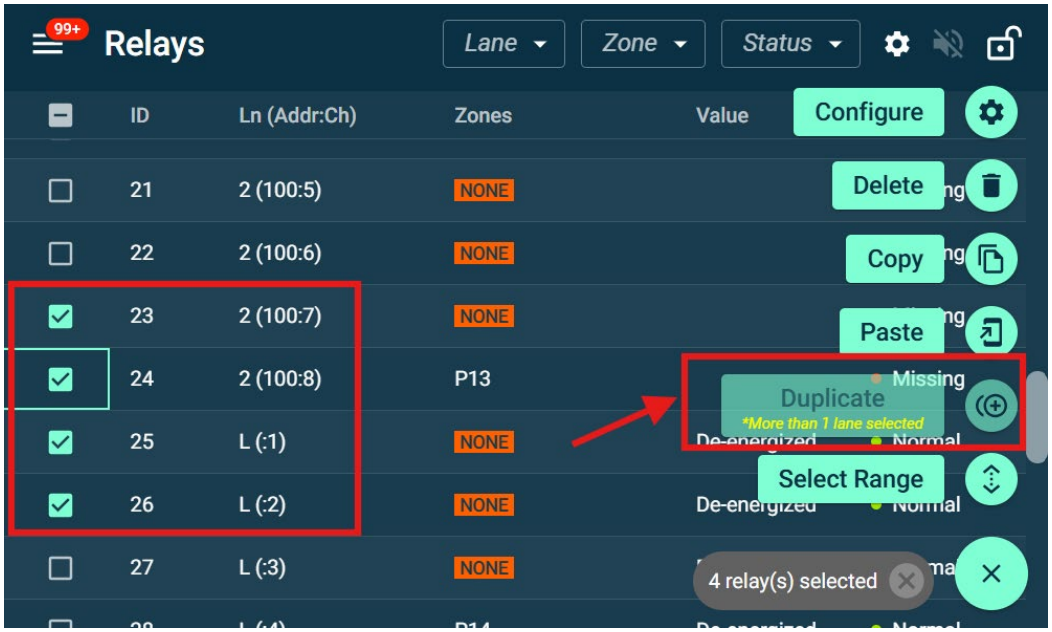


Figure 5-228: Duplication Unavailable

To duplicate devices:

1. Select one or more devices.
2. Open the **Bulk Configuration Menu**.
3. Select **Duplicate**.

A dialog titled **"Duplicate Relays (X)"** will appear, where **X** is the number of selected devices.

Duplication Options

The dialog allows users to specify how many times each selected device should be duplicated. The dialog will confirm the total number of new devices to be created.

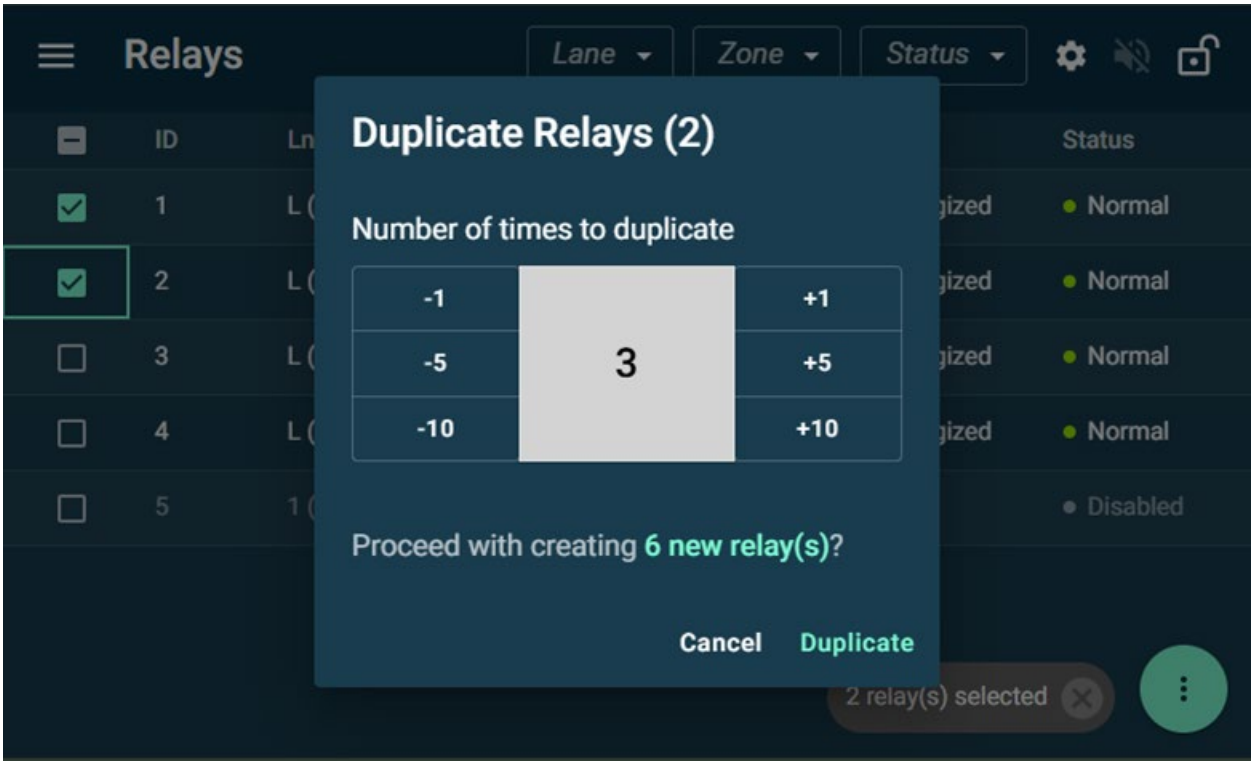


Figure 5-229: Duplication Dialog Window

After confirming the duplication, a confirmation message appears at the bottom of the screen. This message indicates that the new devices were successfully created and added to the list.

5.14.7 Auto Increment

The **Auto Increment** feature helps users avoid communication conflicts when duplicating or pasting devices, especially those connected via MODBUS. It automatically assigns new addresses and channels to each duplicated or pasted device.

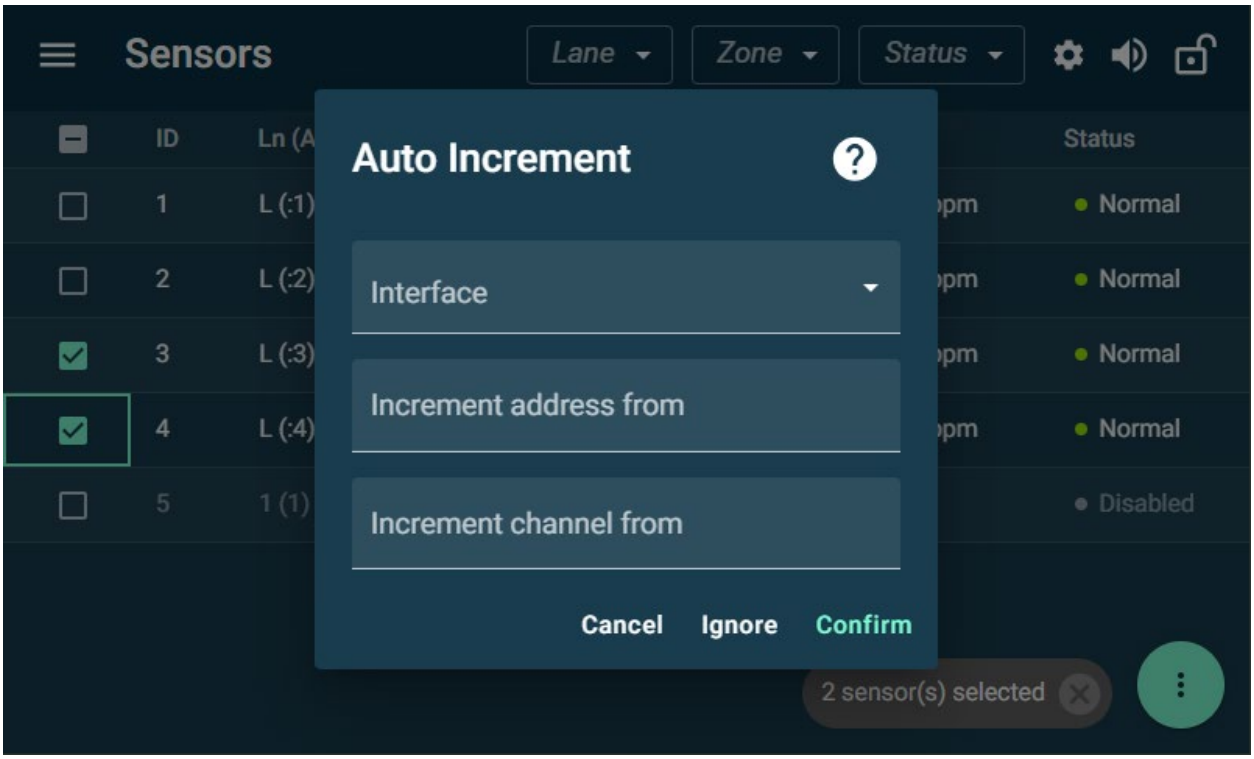


Figure 5-230: Auto Increment Dialog Window

When the Auto Increment dialog appears, users must first select the **Interface** type:

- **Local**: Used for devices directly connected to the monitor. Modbus address and lane settings are not applicable. Only local channel numbers are used.
- **MODBUS**: Used for devices connected via RS-485.

Configuration Fields

- **Increment address from**: Sets the starting Modbus address for the new devices. Each subsequent device will be assigned the next available address.
- **Increment channel from**: Sets the starting channel number. Each new device will be assigned the next channel in sequence.

Available Actions

- **Confirm**: Applies the auto-increment settings and proceeds with duplication or paste.
- **Ignore**: Skips auto-increment and uses the original configuration (not recommended if duplicates exist).
- **Cancel**: Exits the dialog without making changes.

Tip: Use auto increment when adding multiple MODBUS devices to ensure each has a unique address and channel, preventing communication errors.

Modbus Selection Ordering Requirements

When using Auto Increment with **Modbus devices**, the following rules apply:

- Selected devices must have **Modbus addresses in ascending order**
- Selected devices must have **channels in ascending order**

Auto Increment relies on this ordering to correctly calculate the next available address and channel values. If the selection does not follow ascending order, auto incrementing cannot be performed.

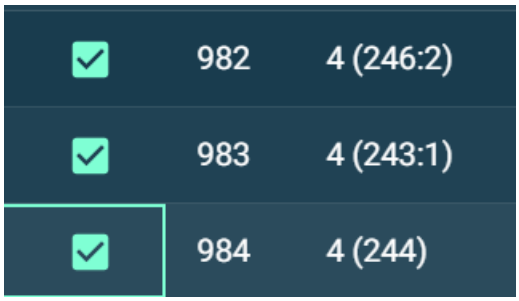


Figure 5-231: Selected address not in ascending order

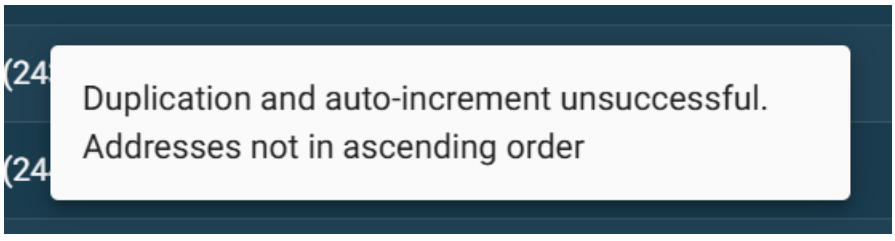


Figure 5-232: Duplication and auto-increment unsuccessful

5.14.8 Select Range

The **Select Range** feature allows users to quickly select a contiguous group of rows without manually checking each box. This is especially useful when configuring large blocks of devices.

To use Select Range:

1. Select the **first row** in the desired range.
2. Open the **Bulk Configuration Menu**.
3. Choose **Select Range**.
4. Select the **last row** in the desired range.
5. All rows between the first and last selection will be automatically checked.

To exit **Select Range Mode** without making a selection, press the **"X" icon** next to the **"Cancel range selection"** label.

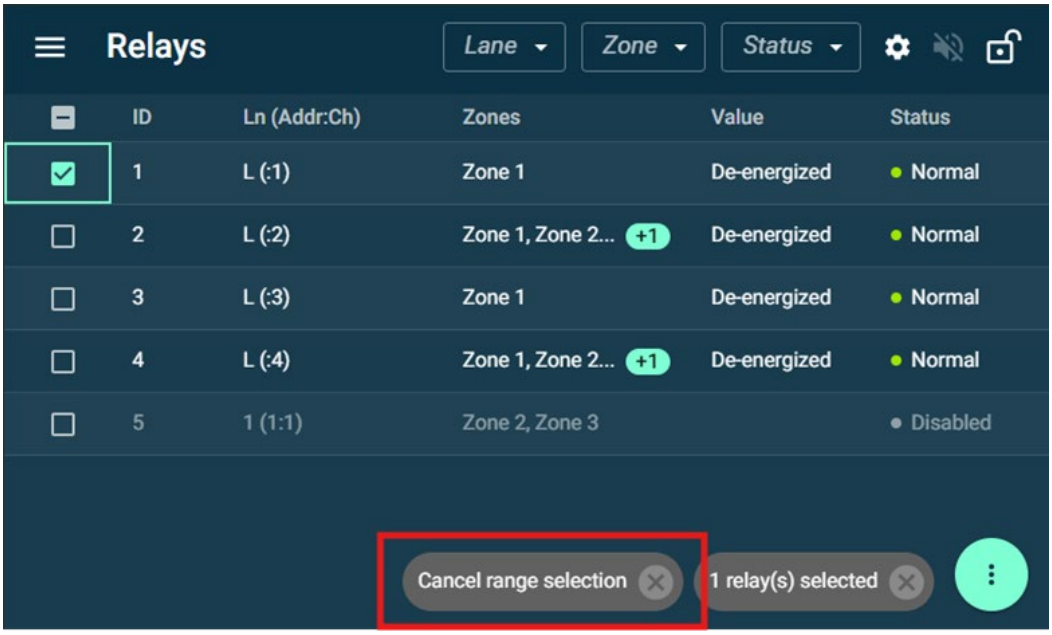


Figure 5-233: Range Selection Mode Enabled

5.15 Remote Access

5.15.1 Remote Access Overview

The monitor's user interface can be accessed remotely from another device on the **same network** by entering the monitor's IP address (which can be found in **Settings → Network**) followed by port **:3000** in a web browser.

Example: http://192.168.1.100:3000

NOTE: The monitor's IP address can be found on the Settings page under the network settings.

Once connected, users can perform most of the same actions available on the physical monitor, including:

- Viewing dashboards and device tables
- Performing bulk edits and diagnostics (when the monitor is unlocked)

5.15.2 Upload & Download Configuration

The **Upload** and **Download** options are available exclusively when accessing the monitor's UI remotely via a web browser. These features allow users to manage configuration files for backup, restoration, and deployment purposes.

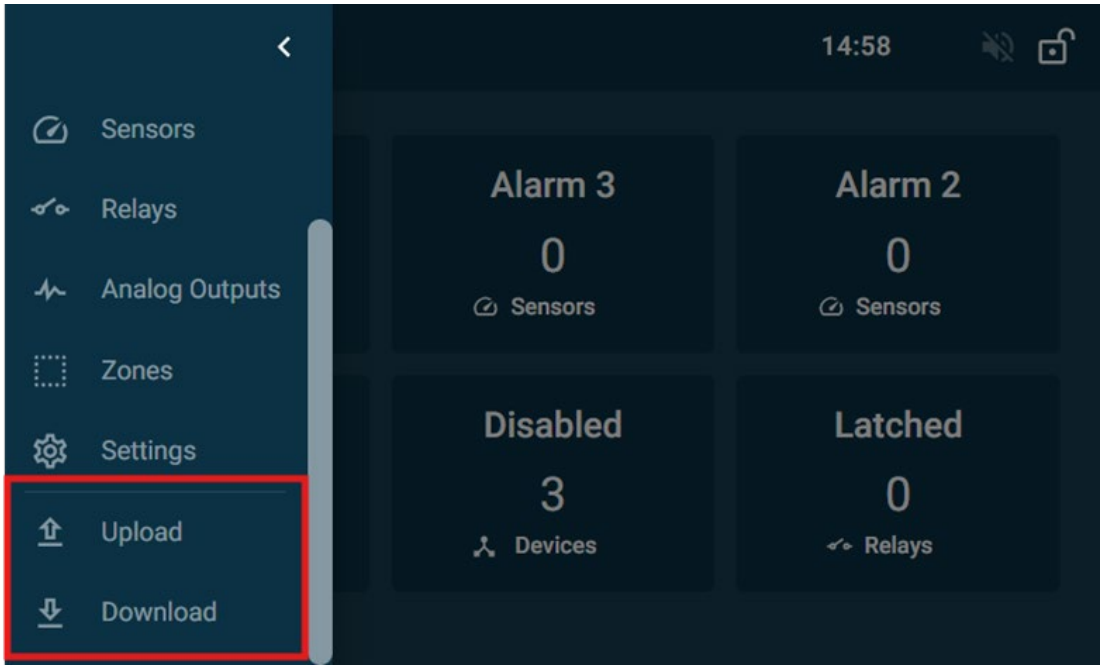


Figure 5-234: Upload and Download Options in Remote Access Navigation Pane

5.15.2.1 Download Configuration

The **Download** option allows users to export the current system configuration to a file. This includes:

- Device settings (Sensors, Relays, Analog Outputs, Zones)
- System parameters
- Network and communication settings

Benefits:

- Create backups before making changes
- Archive configurations for documentation
- Share setups across multiple monitors or sites

NOTE: Download Configuration will always be exported to users **Downloads** folder.

5.15.2.2 Upload Configuration

The **Upload** option allows users to navigate to a specific folder for importing a saved configuration file. This will overwrite the current settings with those from the uploaded file.

Important Notes:

- A confirmation dialog appears before applying the uploaded configuration.
- Uploading replaces existing settings—verify the file before proceeding.
- The monitor will enter warm-up mode after the upload is completed.
- Only compatible configuration files are accepted; invalid files will be rejected.
- User can navigate to user specific folder for import file.

Use Cases:

- Restore a backup
- Apply a pre-configured template
- Rapid deployment across multiple systems

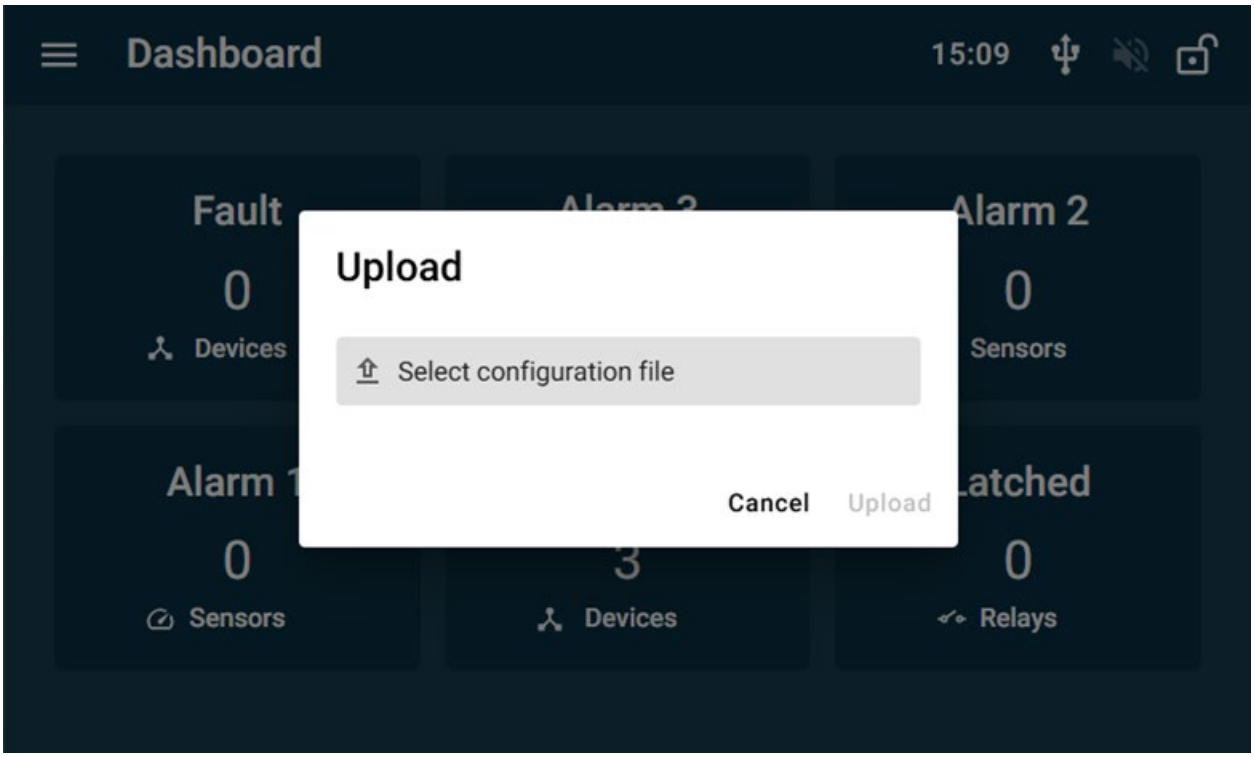


Figure 5-235: File Selection for Uploading Configuration File

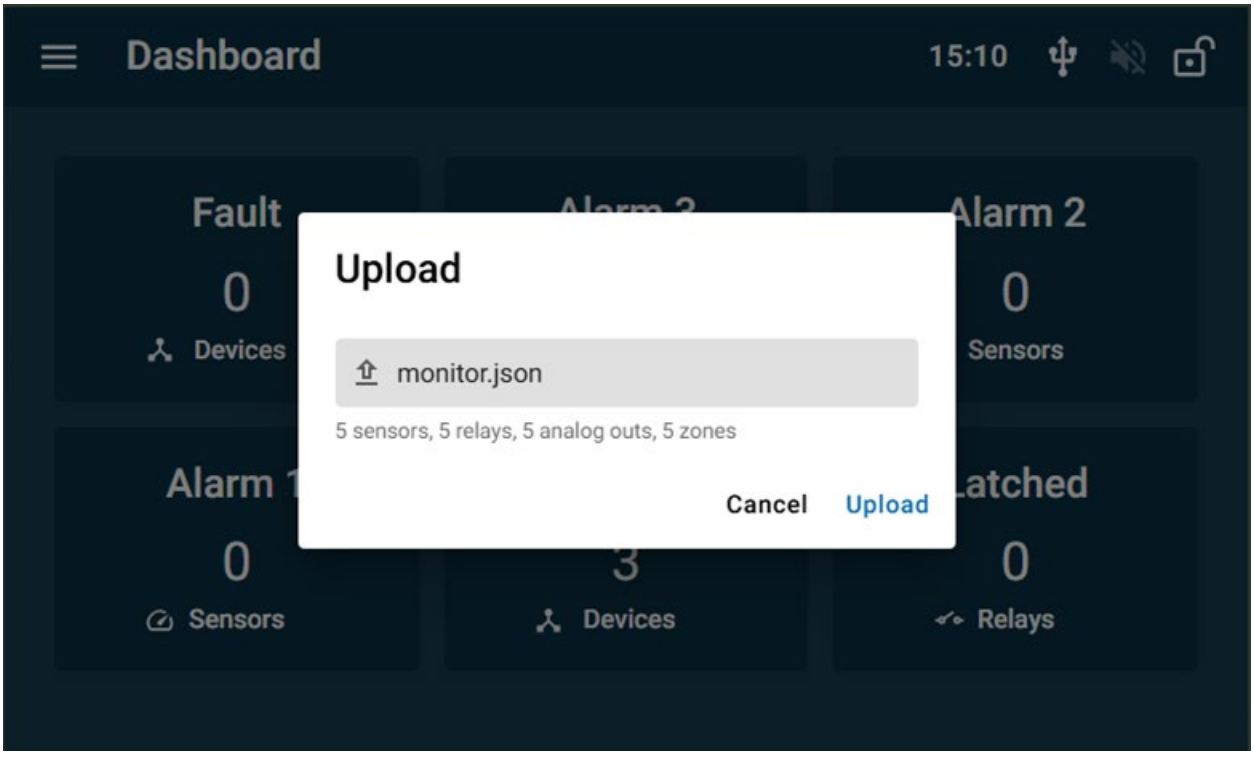


Figure 5-236: Configuration File Selected for Upload

5.15.2.2.1 Failed Upload

On a failed upload, the system will notify the user of the error and offer helpful debugging information.

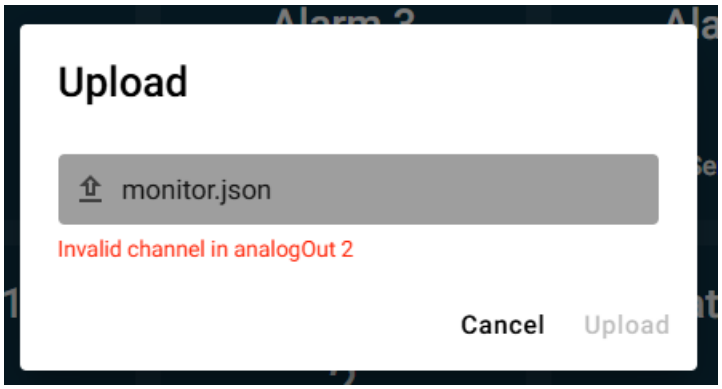


Figure 5-237: Failed Configuration File Import

5.15.3 Keyboard Shortcuts for Bulk Editing

When accessing the UI via a keyboard (e.g., on a desktop or laptop), the following shortcuts are available on device screens (Sensors, Relays, Analog Outputs, Zones):

- **Ctrl + C** → Copy selected configuration(s)
- **Ctrl + P** → Paste copied configuration(s)
- **Ctrl + D** → Duplicate selected device(s)
- **Ctrl + Del** → Delete selected device(s)
- **Shift + Click** → Select a range of rows

These shortcuts streamline bulk operations and improve efficiency when managing large systems.

6. Troubleshooting

6.1 Common Issues and Solutions

Problem	Possible Cause	Solution
Monitor will not power up	Power and Modbus connectors may be confused.	Verify cabling — ensure the power connector is correctly used.
	Incorrect voltage level on power input.	Measure and confirm that the input voltage is within required levels.
	Blown fuse.	Fuse Replacement – Replace only with 5×20 mm, 3.15 A, 250 V fast-blow fuse (Littelfuse 02173.15MXP or equivalent). Fuse holder includes a spare.
	LCD Panel cables or loose or disconnected.	
	uSD boot media is dislodged or has become corrupted.	Return CPU Module for repair.
Unit not data logging	Wrong type of USB drive used.	Use a properly formatted USB drive for data logging.
	Software upgrade USB inserted.	Replace with a standard data logging USB.
	USB drive is corrupted or out of space.	Replace with larger USB drive.
Display not working or abnormal color	LCD Panel cables loose or disconnected.	Check and reconnect all LCD cables.
	LCD cables pinched or damaged.	Inspect cables, reposition, or replace if damaged.
	LCD Panel back light switch is incorrect.	Check LCD Panel Back Light switch is in the enable position.

Modbus device(s) missing.	Conflicting Modbus addresses or communication settings in Modbus device(s). Broken A or B RS485 wires or A or B reversed wiring. A or B RS485 signals connected to Ground or 24VDC. Incorrect Modbus EOL (End of Line) termination. Check for damaged Transmitter RS485 Transceiver. Check UTx-M Network LED; flashing Green LED indicates no Modbus communication detected. Check UTx-M Network LED; flashing Red LED indicates bad Modbus communication.	Inspect and correct conflicting Modbus addresses and communication settings. Inspect and correct Modbus wiring. Inspect and correct EOL terminator(s). Inspect Modbus device for damaged components and replace Modbus device if damaged. Inspect and use UTx-M Network LED to diagnose Modbus communication problems.
BC8AOI AO displaying a Range value with voltage (V) as the unit of measurement as opposed to current (mA).	Importing a configuration file with incorrect values.	Contact Armstrong Monitoring.
MIssing MODBUS device(s).	Poor Modbus signalling. A or B Modbus bus wire may be broken or Modbus bus device has conflicting Modbus addresses. A or B Modbus RS485 bus maybe overloaded with incorrect EOL termination or damaged RS485 transceivers.	Use UTXM device's network activity LEDs to isolate issues. Solid green Network LED indicates network activity and Blinking green Network LED indicated no MODBUS activity. Red Network LED indicates communication issues.

6.2 Errata

The following issues have been identified in this release of the system. These will be addressed in future updates.

6.2.1 Startup Network Error Message

Description

During bootup, the monitor may occasionally display a message reading *"This site can't be reached"* momentarily before displaying the dashboard. **Cause:** This is due to inconsistent IP settings between the system configuration and the operating environment.

Impact

The message clears automatically and does not affect overall system performance or connectivity once startup completes.

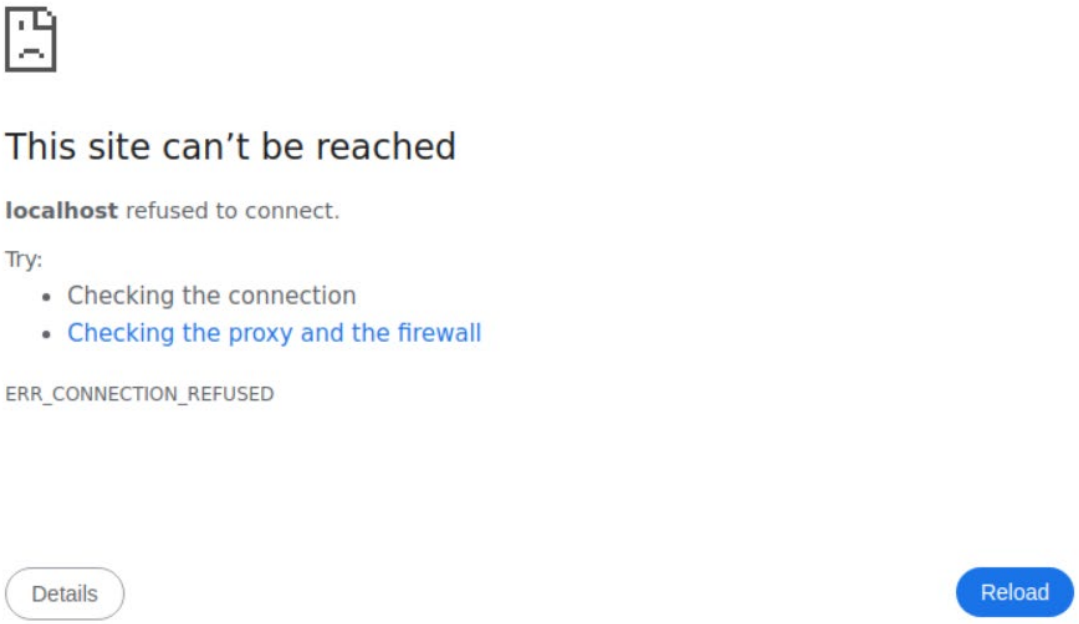


Figure 6-1: This site can't be reached

6.2.2 System Time Verification

Description
After installation or power-up, the system time may not be synchronized with real time.

Impact
Incorrect system time does not affect normal operation of the monitor or alarms, but it can cause datalogging timestamps to be inaccurate or misleading.

Recommendation
Update system time as needed.

6.2.3 Auto Increment Interface Conversion Limitation

Description

When using the **Duplicate** and **Auto Increment** feature, devices **cannot be converted between Local and Modbus** interfaces.

- Duplicating **Modbus** devices while selecting **Local** in the Auto Increment window will still produce **Modbus** sensors.
- Duplicating **Local** devices while selecting a **Modbus lane** in the Auto Increment window will still produce **Local** devices.
- The interface type of a device is **preserved**, regardless of the interface chosen in the Auto Increment dialog.
  The resulting duplicated devices inherit the original device's interface and appear with unexpected **Ln (Addr:Ch)** values when the user expects a different interface.

Impact

- Users may assume the interface specified in the Auto Increment window will be applied to the duplicated devices.
- This can result in duplicated devices appearing under an unintended Modbus lane or channel, or remaining Local when Modbus is expected (or vice versa).
- In mixed systems, this behavior may create address assignments that appear inconsistent or invalid for the intended configuration.

Workaround

Before duplicating devices, ensure the **Interface selection matches the actual interface of the sensors being duplicated**:

- For **Modbus devices**, ensure the Auto Increment window is set to **Modbus** and a valid lane is selected.
- For **Local devices**, ensure **Local** is selected as the interface.
  To change the interface type, the device must be **added manually** using the *Add Device* wizard; interface type **cannot** be changed through duplication or Auto Increment.

Figure 6-2 Selecting Modbus Devices for Duplication

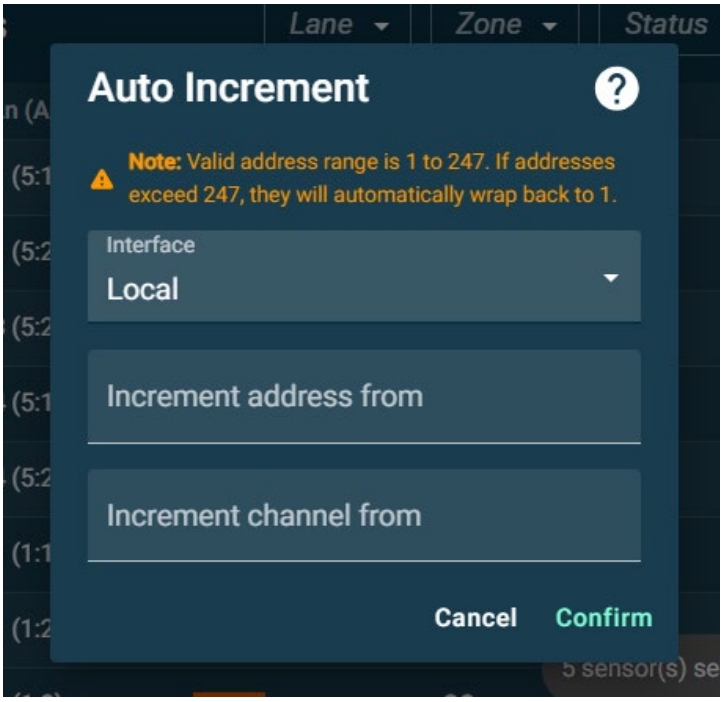


Figure 6-3 Selecting Local Interface in Auto Increment Window

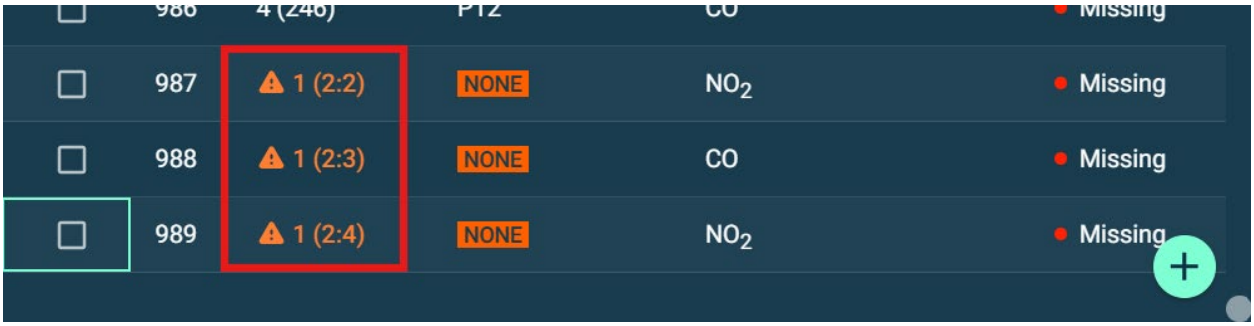


Figure 6-4 Resulting duplicated devices with incorrect interface

7. Maintenance and Service

WARNING

Service must be performed by qualified technicians only

This unit must be isolated or disconnected from the mains before accessing the interior of the external enclosure

The unit must remain locked to prevent unauthorized access to the interior live parts.

AVERTISSEMENT

L'entretien doit être effectué uniquement par des techniciens qualifiés

Cette unité doit être isolée ou déconnectée du secteur avant d'accéder à l'intérieur du boîtier externe

L'appareil doit rester verrouillé pour empêcher tout accès non autorisé aux pièces sous tension intérieures

7.1 Hot Surfaces

Surfaces within the monitor can exceed 60°C. Exercise caution when accessing the interior of the monitor.

7.2 RTC Battery Replacement

The CPU Module has an RTC Battery. If replacement is required, it must be performed by qualified service personnel and only with approved battery type per Section 2.1.

NOTE: The battery holder is located on the bottom surface of the CPU Module when it is installed in the Monitor. Replacement requires removing the CPU Module from the Monitor.

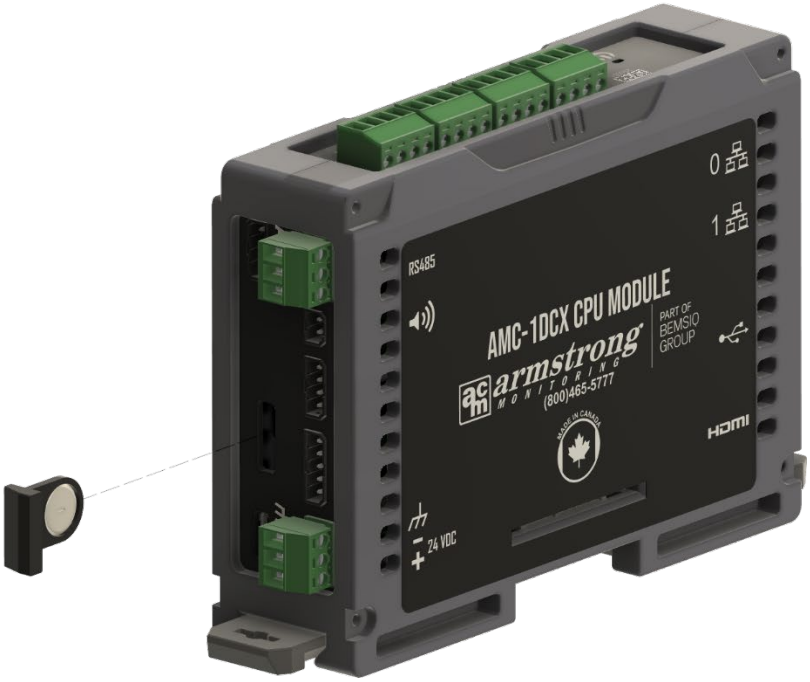


Figure 7-1: CPU Module with RTC Battery Holder

Figure 7-2: RTC Battery Access

Figure 7-3: RTC Battery Holder

7.3 Fuse Replacement

The Monitor has a DIN rail mounted fuse holder per diagram in Section 2.1. The fuse is located on the output of the AC/DC Power Supply Unit or at the input for DC voltage input systems.

The fuse holder has a compartment for storing a replacement fuse. Additional replacement fuses shall meet the following requirements

Size: 5x20mm cartridge fuse
Rating: 3.15A, 250V fast blow
Manufacturer: Littelfuse 02173.15MXP or equivalent

7.4 Cleaning

If there is dirt or contamination on the monitor enclosure wipe down the monitor with a rag to make as clean looking as possible (with lid on). Do not use cleaners.

8. Revision History

8.1 Document Revision History

Revision	Release Date	Change Description	Affected Section(s)
A	February 2025	Initial Release	
B	June 2025	Additional details and screenshots added.	Operations
C	March 2026	Added note about optional ethernet feature.	Ethernet
		Added note about default configuration. Added note about 2-wire loop powered sensors.	RS-485
		Added warning about meeting national building codes and regulatory compliance.	Operations -> Introduction
		Added note about ensuring Modbus addresses configured on the DCx monitor match with the external devices being configured.	Editing a Device's Modbus Address
		Added note about ERE, BC8AII, and BC8AOI describing their limited Modbus address range and factory configured addresses.	Editing a Device's Modbus Address
			Adding a New Sensor > Selecting a Device Type > Entering Modbus Address
			Adding a New Relay > Selecting a Device Type > Entering Modbus Address
			Adding a New Analog Output > Selecting a Device Type > Entering Modbus Address
			Selecting a Device Type

		Updated list of available device types.	Editing a Sensor's Device
		Added table that lists the number of channels available for each device	Selecting a Channel
		Added note that lists the default ranges for multidrop modes.	Additional Step: Selecting Analog Input Type
			Editing a Sensor's Range
			Adding a New Analog Output > Selecting Output Range
		Added new section.	Configuring Environmental Sensors
		Updated information about available ranges depending on device type.	Editing the Analog Output Range
		Added information about Modbus lane conflicts (CRC errors) and how to resolve them.	MODBUS Lanes
			Modbus Lane Statistics
		Added new section.	Clearing Addresses
		Added new section.	Auto-Configuration
		Added additional details about Title 24.	Building Energy Efficiency Standards (Title 24)
		Updated list of supported sensor types.	Viewing All Sensor Types
		Added details about duplication feature limitations and prerequisite.	Duplicate
		Added details about duplication feature limitations and prerequisites.	Auto Increment

		Updated troubleshooting common issues and solutions.	Troubleshooting
		Removed errata that have been resolved. Added information about Auto Increment interface conversion limitations.	Errata