SAMON
safe monitoring

GLACIÄR RM

Next Generation Room Monitoring

ENG USER MANUAL

V1.0

DEFINITION OF ALERT SYMBOLS

Alert	Symbol	Description
Danger		Will result in death or serious injury if not avoided.
Warning		Could potentially result in death or serious injury if not avoided.
Caution		Could potentially result in damage to the product, injury or damage to the environment if not avoided.
Information		Information notes relating to the operation of the product.

IMPORTANT SAFETY INFORMATION

For your safety you should always follow instructions found on any labels or documentation related to the GLACIÄR RM.
Installation and servicing to be carried out by qualified technicians.
Always isolate the mains power supply cable before cleaning.

TECHNICAL SUPPORT

For technical support contact SAMON on +46 040 15 58 69, or email info@samon.com

CONTENTS

CONTENTS....3
1 OVERVIEW....4
1.1 Specification....4
1.2 Dimensions....4
2 INSTALLATION....5
2.1 Back box requirements....5
2.2 Locating the detector....5
2.3 Electrical connections....6
2.3.1 Power input....6
2.3.2 Relays 1 & 2....6
2.3.3 RS485....6
3 CONFIGURATION & TEST REPORT....7
3.1 Connecting to Wi-Fi....7
3.2 Login page....7
3.3 Overview page....8
3.4 Detector details page....8
3.5 Modbus / Unit settings page....10
3.6 Warning/Alarm/Fault settings page....11
3.7 Tests page....12
3.8 Performing a factory reset....12
4 OPERATION....13
4.1 Warmup....13
4.1.1 Warmup – factory reset....13
4.2 Monitoring....13
4.3 Warnings....13
4.4 Alarms....13
4.5 Faults....14
4.6 LED status indicators....14
4.7 Webpage Alarm & Warning indication....15
4.8 Concentration conversion table....16
4.9 Operation graphs....17
5 MODBUS INTERFACE....18
5.1 Input registers....18
5.2 Holding registers....19
6. TESTING....21
6.1 Test procedure....21
REVISIONS....23
NOTES....24

1 OVERVIEW

The GLACIÄR RM is an infra-red based refrigerant gas leak detector, suited to the identification of refrigerant leaks in hotel rooms, offices, and residential properties. The unit can operate as a standalone leak detector or can be integrated into a larger BMS or alarm system.

Supported target gases:
R410a, R32 – more gases available soon.

Please specify the required target gas when ordering.

1.1 Specification

In the interest of continued product development, SAMON reserves the right to make improvements to products without notice or obligation.

General	Operating temperature range	0°C to +40°C
	Storage temperature range	-40°C to +85°C
	Operating humidity range	0-99% RH non-condensing
	IP Rating	IP21
	Enclosure options	White plastic cover plate Euro module cover plate options
Electrical	Power supply	12V to 24V AC or DC 3W maximum
	Relays	2 x SPDT 1A @ 24VDC contact rating
	Terminal sizes	16 to 28 AWG / 0.14 mm² to 1.5 mm²
Measurement	Method	NDIR
	Target Gases	R32 or R410a
	Measurement units	R32 = %LFL R410a = %VOL
	Measurement range (full-scale)	R32 = 50%LFL R410a = 7.00%VOL
	Warmup time	60 seconds
	Accuracy	+/- 10%
	Response time (T90)	<= 30 seconds
I/O and indicators	Digital outputs	2 relays Relays can be configured to operate on any of these conditions or any combination of these conditions: Warning, Alarm or Fault.
	Status LED	Tri-colour Red, Green, Blue status LED
	RS485 LED	Bi-colour Green, Orange RX/TX data LED
	Sounder	Internal alarm buzzer 85db @ 10 cm
Communications	RS485	Modbus RS485 9600bps, 8N1 default setup
	Wi-Fi	2.4GHz Wi-Fi interface (Service hotspot only)

1.2 Dimensions

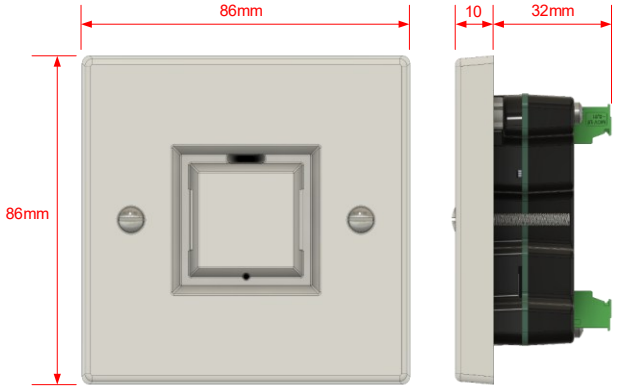


Fig 1.2 – Dimensions

2 INSTALLATION

The detector is available with a plastic cover-plate which will fit into a standard single gang electrical back box.

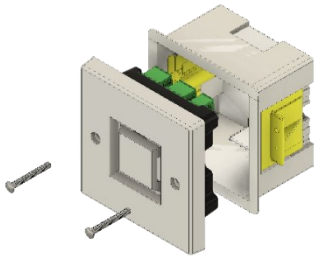


Fig 2.0 – GLACIÄR RM with dry-lining box

2.1 Back box requirements

SAMON recommends using 47 mm deep back boxes to allow maximum space for cabling and ease of installation.

Fig 2.1 – Metal dry-lining box with expanding foam sheet.

If a fire barrier is required, it is recommended that a metal back box containing heat-activated expanding foam sheets.

Careful consideration needs to be given to the cable entry point into the back box. Bringing cables into the back box on the sides of the box and as near to the rear of the box as possible, or through the rear of the box will avoid cables clashing with the detector. A cable gland on the side of the back box may foul the detector casing.

2.2 Locating the detector

The main considerations when deciding where to locate the detector are:

1. Low Level
As refrigerants are heavier than air, the detector should be mounted close to floor level.

2. Accessible
The detector should be mounted in a position where it can be easily accessed for maintenance and repairs.

3. Ensure leaks can be detected
Do not mount the detector next to the door or opening windows, where fresh air may influence readings.

4. Near potential leak source
The detector should be mounted as near to the air conditioning system as practical, preferably directly below the air conditioning system.

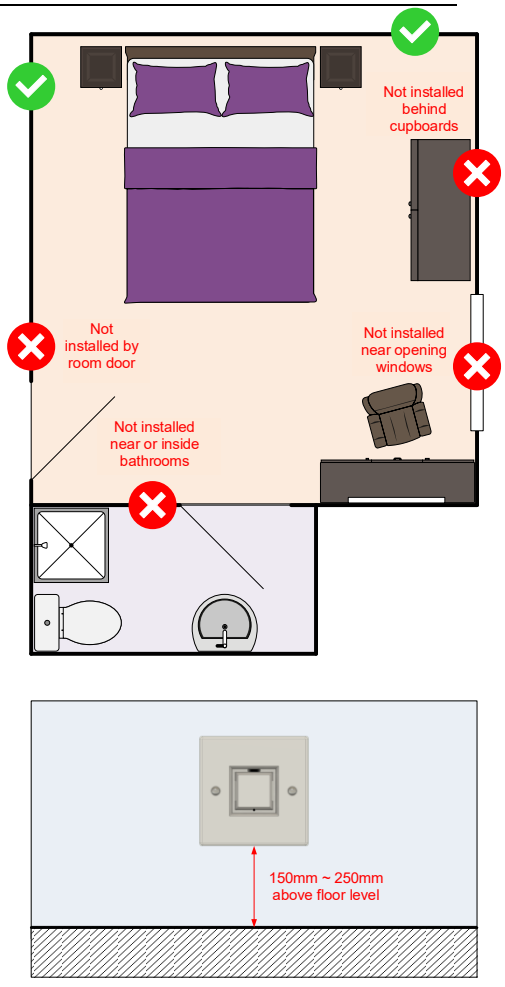


Fig 2.2 – Detector locations

2.3 Electrical connections

The detector provides connections for Power, Relays 1 & 2 and the RS485 network. All connections will accept wire sizes from 16 to 28AWG – or 1.5 mm² maximum conductor size.

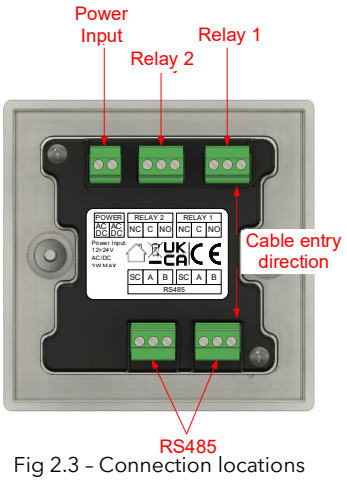


Fig 2.3 – Connection locations

2.3.1 Power input

The detector can be powered from a 12V to 24V AC or DC supply. The maximum power consumption of the detector is 3Watts.

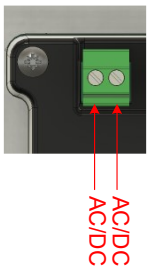


Fig 2.3.1 – Power Input Connection

2.3.2 Relays 1 & 2

Relays 1 & 2 each provide connections for Normally open (NO), Common (C) and Normally closed (NC) contacts. Relay contacts are rated at 1A @ 24VDC.

With factory default settings, relay 1 will activate under fault or warning conditions, relay 2 will activate under an alarm condition. Both relays are set to fail-safe operation (energized when healthy).

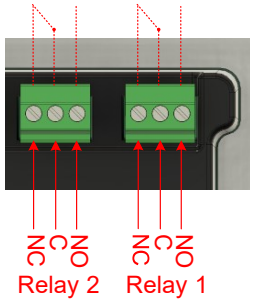


Fig 2.3.2 – Relay Connections

2.3.3 RS485

The detector provides an RS485 network connection which can be used by BMS and alarm systems to collect status and alarm information from the unit.

The RS485 port allows up to a maximum of 32 detectors to be linked on the same network.

With factory default settings the RS485 parameters are 9600bps 8 N 1 – address 1.

Belden 8761 (or equivalent twisted pair cable) is recommended for RS485 connections.

On the side of the detector there is a green / orange LED which can be configured to blink when data is received and sent via the RS485 interface:

Green = Receiving data / Orange = Transmitting data

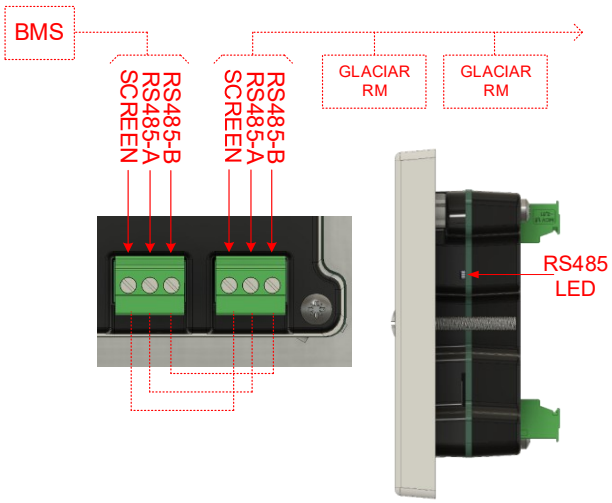


Fig 2.3.3 – RS485 Connections & LED location

3 CONFIGURATION & TEST REPORT

The detector is supplied pre-configured to suit most applications, however, should you wish to adjust settings this can be done through the Wi-Fi service access point.

3.1 Connecting to Wi-Fi

The detector provides a 2.4GHz Wi-Fi access point which can be used with a mobile device or laptop to access webpages providing access to settings, unit status and test functions.

Information can also be accessed via the Modbus RS485 interface, see section 5.

To activate the Wi-Fi access point, press the service button for at least 5 seconds, the access point will be activated when the button is released.

The Wi-Fi access point will be automatically activated after initial power up.

Once activated the Wi-Fi access point will remain active for 3 minutes only but will remain active if a device is connected.

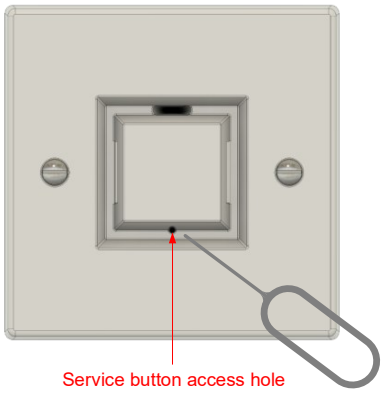


Fig 3.1 – Service button access

Access point name: GlaciarRM_AP_*serial number**

Password: RM260370

IP address: 192.168.4.1 *Only the last part of the serial number will be shown.

3.2 Login page

Once you are connected to the detector – open any web browser on your device and enter the IP address. The detector's login page will now be displayed.

If the login screen fails to load, on some mobile devices it may be necessary to disable mobile data so that the IP address is resolved over the Wi-Fi connection rather than the mobile data connection.

Enter a valid password to access the overview screen.

Password: 260370

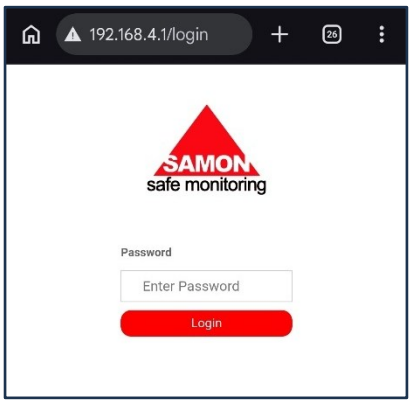


Fig 3.2 – Login page

3.3 Overview page

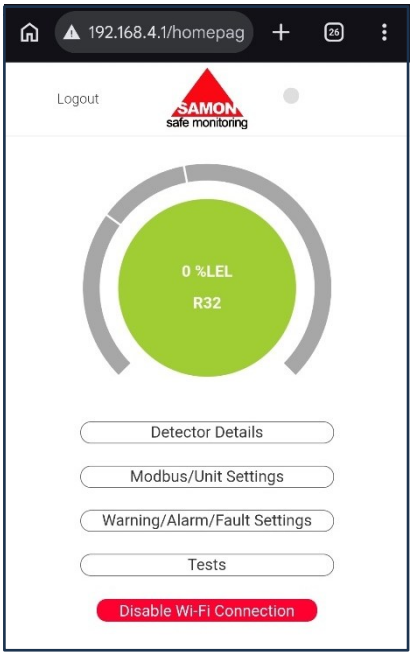


Fig 3.3 – Overview page

The overview page displays the concentration, alarm status (see section 4.7) and allows access to other pages containing settings and other service functions:

Sensor Details: Sensor serial number, product lifetime, bump testing and commissioning reports.

Modbus/Unit Settings: Configure the Modbus RS485 interface and general unit settings.

Warning/Alarm/Fault Settings: Configure time delays, relay setup.

Tests: Access unit test functions.

Disable Wi-Fi connection: Selecting this button will turn off the Wi-Fi access point and disconnect your device.

3.4 Detector details page

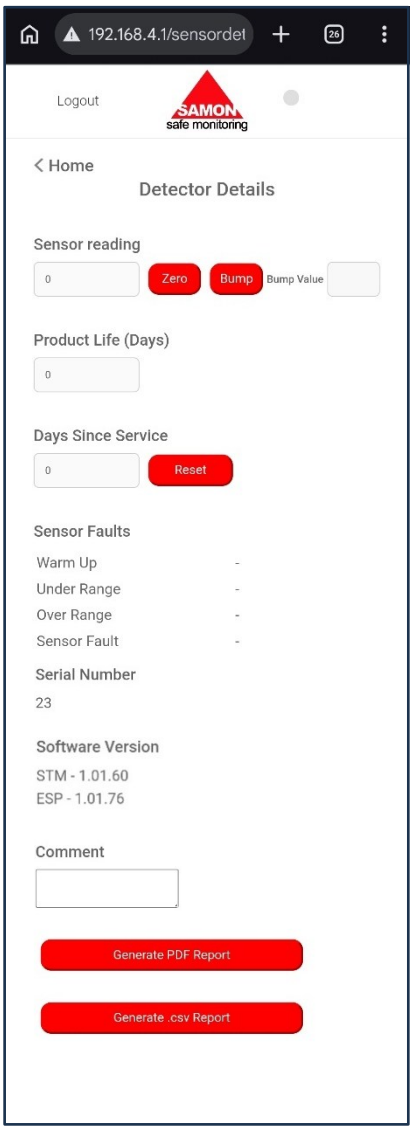


Fig 3.4a – Detector details page

Home: Selecting "Home" returns to the overview page.

Sensor Reading: The current sensor concentration reading.

Zero button: Selecting the zero button will reset the sensor reading to zero. This should only be performed after applying a zero-air source across the sensor for 3 minutes.

Bump test: A bump test can be performed in this page, for this you will need to be able to apply a calibrated gas test sample across the sensor.

1. Enter concentration of the calibration gas into the "Bump Value" box.
2. Apply the calibration gas across the sensor.
3. Click the "Bump" button.
4. The concentration will now be measured, as soon as the sensor reading is with 10% of the calibration gas concentration – the bump test will pass.

Calibration gas from 10% to 25% of the measurement range should be used for bump testing.

Product life: The number of days that sensor has been active.

Days since service: The number of days since the "Reset" button was selected. Selecting the "Reset" button will reset this value to 0.

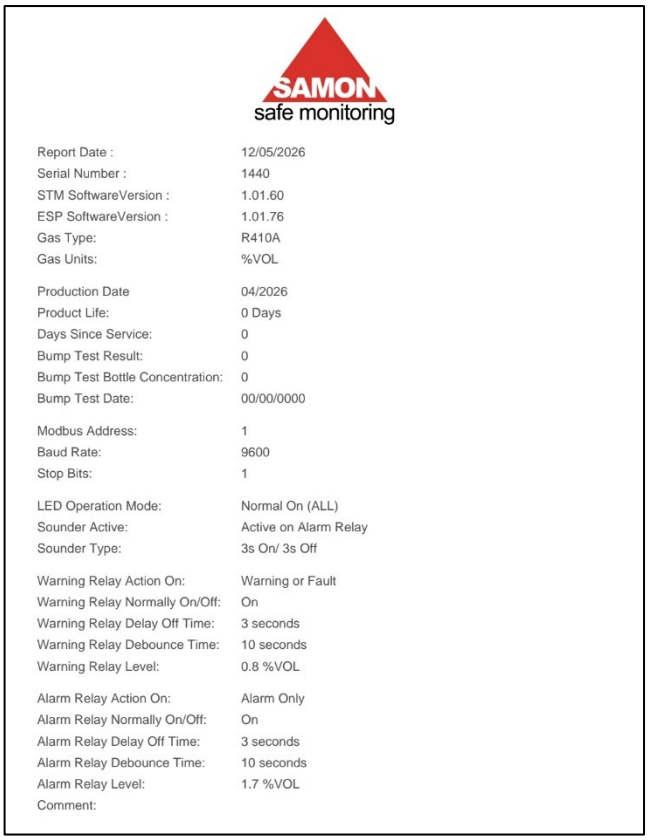
It is recommended that the detector's operation is checked annually.

Sensor faults: Details of any fault with the detector will be shown here.

Serial number: The detectors serial number.

Comment: Any additional comments to be included in the report can be entered here, such as Room number or detector location.

Generate PDF report: Generates a PDF report detailing the results of any bump tests completed since being connected to GLACIÄR RM and also status, settings and serial number details.



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Report Date :	12/05/2026
Serial Number :	1440
STM SoftwareVersion :	1.01.60
ESP SoftwareVersion :	1.01.76
Gas Type:	R410A
Gas Units:	%VOL
Production Date	04/2026
Product Life:	0 Days
Days Since Service:	0
Bump Test Result:	0
Bump Test Bottle Concentration:	0
Bump Test Date:	00/00/0000
Modbus Address:	1
Baud Rate:	9600
Stop Bits:	1
LED Operation Mode:	Normal On (ALL)
Sounder Active:	Active on Alarm Relay
Sounder Type:	3s On/ 3s Off
Warning Relay Action On:	Warning or Fault
Warning Relay Normally On/Off:	On
Warning Relay Delay Off Time:	3 seconds
Warning Relay Debounce Time:	10 seconds
Warning Relay Level:	0.8 %VOL
Alarm Relay Action On:	Alarm Only
Alarm Relay Normally On/Off:	On
Alarm Relay Delay Off Time:	3 seconds
Alarm Relay Debounce Time:	10 seconds
Alarm Relay Level:	1.7 %VOL
Comment:	

Fig 3.4b – PDF commissioning report

Generate CSV report: Generates a report in CSV (comma separated) file format containing the same information in the PDF commissioning report.

3.5 Modbus / Unit settings page

Modbus Address: The RS485 Modbus network address.
Range = 1 to 250

Default = 1

Baud Rate: The RS485 Modbus network baud rate.
Range = 9600bps, 19200bps, 38400bps, 56000bps
Default = 9600bps

Parity: The RS485 network Modbus parity.
Range = None, Odd, Even
Default = None

Stop Bits: The RS485 network Modbus Stop-bits.
Range = 1, 2
Default = 1

Any changes to the RS485 settings will only be applied after a power reset.

LED: Configures how the indicator LEDs will work.

Range = Always OFF
Always ON
Always ON – blinks on comms
Always OFF – Wi-Fi active indication only
Active on Alarm
Active on Alarm & Fault
Default = Always ON

See section 4.6 for more details on the indicator LED operation.

Sounder Active: Selects which conditions will activate the sounder.
Range = Warning only, Alarm only, Warning or Alarm
Default = Alarm only

Sounder type: Configures the type of sound produced by the sounder.
Range = Always OFF, Pulsing 3s ON 3s OFF, Constant ON
Default = Pulsing 3s ON 3s OFF

After making any changes you must select the "Save" button at the bottom of the page.

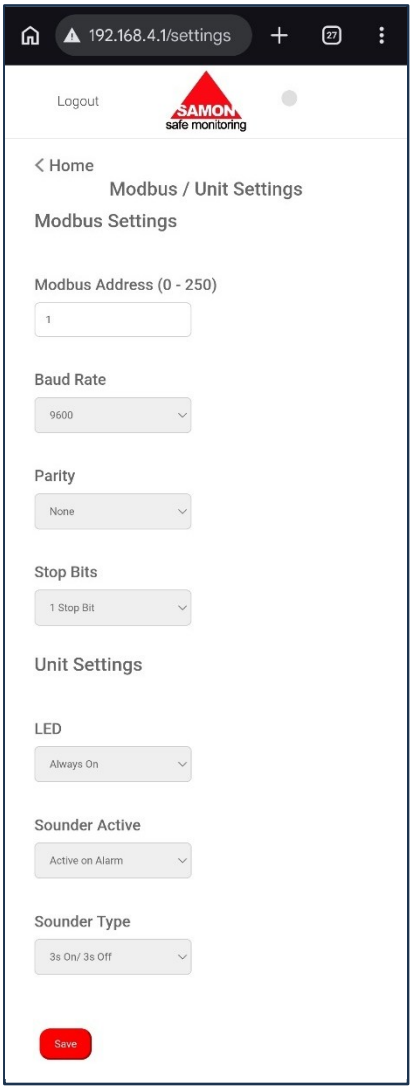


Fig 3.5 – Modbus / Unit settings page

3.6 Warning/Alarm/Fault settings page

Alarm reset: Determines if a manual reset of an alarm is required (Latching or Non-Latching Alarm).
Range = Rising (Auto-Reset) (non-latching), Rising Latch (Manual reset) (latching).
Default = Rising (Auto-Reset) (non-latching)

Warning - Level (%VOL) or (%LFL): The concentration must exceed this level before a warning can occur.

Range R32 = 2.5%LFL to 45%LFL
R410a = 0.49%VOL to 6.30%VOL
Default R32 = 15%LFL
R410a = 0.8%VOL

Warning - Debounce Time: The concentration must be continuously higher than the threshold for this period before a warning occurs.
Range = 3 – 600 seconds
Default = 10 seconds

Warning - Delay Off Time: Once warning condition clears, the delay time before any associated relay is allowed to switch OFF.
Range = 3 – 600 seconds
Default = 3 seconds

Alarm - Level (%VOL) or (%LFL): The concentration must exceed this level before an alarm can occur.
Range R32 = 2.5%LFL to 45%LFL
R410a = 0.49%VOL to 6.30%VOL
Default R32 = 23%LFL
R410a = 1.7%VOL

Alarm - Debounce Time: The concentration must be continuously higher than the threshold for this period before an alarm occurs.
Range = 3 – 600 seconds
Default = 10 seconds

Alarm - Delay Off Time: The warning delay off time – once warning condition clears, the delay time before any associated relay is allowed to switch OFF.
Range = 3 – 600 seconds
Default = 3 seconds

Relay 1 & 2 – Action On: Configures the conditions that will activate Relay 1 and Relay2.
Range = Not used (relay disabled)
Warning only
Alarm only
Fault only
Warning or Fault
Alarm or Fault
Relay 1 default = Warning or Fault
Relay 2 default = Alarm only

Fig 3.6 – Warning/Alarm/Fault settings page

Relay 1 & 2 – Normally On/Off: Selects if each relay is Normally ON (Failsafe) or Normally Off (Non-Failsafe.
Range = ON, OFF
Default = ON (Failsafe)

After making any changes you must select the "Save" button at the bottom of the page.

3.7 Tests page

The tests page allows access to test functions which allows the operation of the detector to be overridden. Ensure you are fully aware of what effect this might have on connected systems and devices before proceeding.

Select the "Test Mode" slider and the override options will be displayed. Selecting each item will allow you to toggle it ON or OFF.

If the relays are set to be normally ON they will initially remain ON, you must toggle each relay ON in this screen first – before toggling OFF.

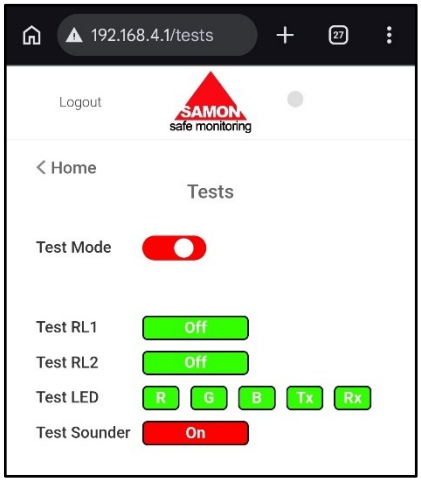


Fig 3.7a – Tests page – test mode

The "Force Reading" button allows you to force the detector to read a specified concentration. Enter the concentration required and select "OK". The concentration will revert to the actual sensor concentration after 60 seconds or if ESC is selected.

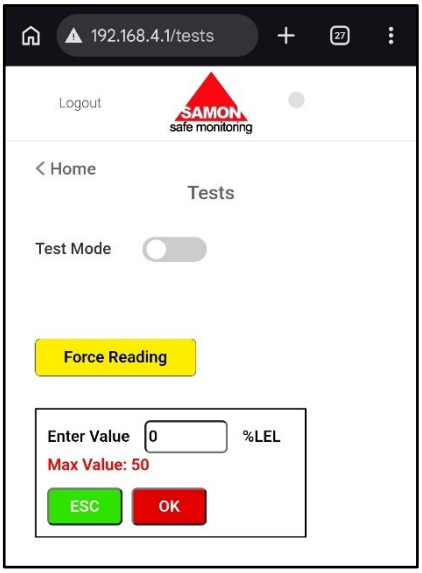


Fig 3.7b – Tests page – force reading

3.8 Performing a factory reset

A factory reset of all configuration settings can be performed by pressing and holding the service button for 20 seconds, whilst the unit is in Warmup mode (see section 4.1.1).

4 OPERATION

From power up the detector will start automatically, and after a short warmup period it will start to detect potential gas leaks.

Unless otherwise stated, the operation explained within this section is the operation to be expected with default settings.

4.1 Warmup

After power up the unit will enter a 1-minute warmup cycle, during this time the status LED will blink GREEN. No gas leaks will be detected, warning and alarms will not occur whilst the detector is in warmup.

4.1.1 Warmup – factory reset

If the service button is pressed for more than 20 seconds, whilst the unit is in warmup, a factory reset will be performed. The button press must start and end whilst the unit is still in warmup:

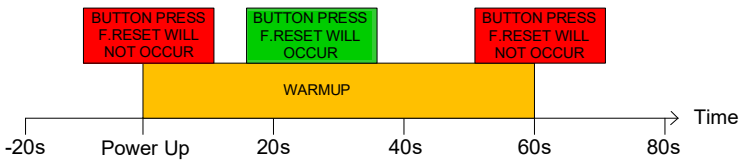


Fig 4.1 – Factory reset conditions

4.2 Monitoring

After warmup, the detector will continuously monitor the concentration. If the concentration is below the warning and alarm limits, and there are no faults the status LED will turn GREEN.

4.3 Warnings

If the concentration rises above the *Warning level*, and remains above the warning level for the period of the *Warning – debounce time* a Warning will occur:
>The status LED will BLINK RED
>Relay 1 will switch OFF.

When the concentration falls below the *Warning level - Hysteresis* the unit will clear the Warning:
>The status LED will return to GREEN
>After the period of the *Warning -Delay off time* Relay 1 will switch ON.

4.4 Alarms

If the concentration rises above the *Alarm level*, and remains above the warning level for the period of the *Alarm – debounce time* an Alarm will occur:
>The status LED will turn RED
>Relay 2 will switch OFF
>The buzzer will begin to pulse.

When the concentration falls below the *Alarm level – Hysteresis* the unit will clear the Alarm:
>The buzzer will turn OFF.
>The LED may return to BLINKING RED (warning) or GREEN depending on the concentration.
>After the period of the *Alarm -Delay off time* Relay 2 will switch ON.

4.5 Faults

If an internal detector or sensor fault is detected a Fault will occur:
>The status LED will turn ORANGE
>Relay 1 will switch OFF

When the fault clears:
>The status LED will return to GREEN
>Relay 1 will switch ON

4.6 LED status indicators

The detector includes a 3-colour status LED and also a 2 colour RS485 status LED.

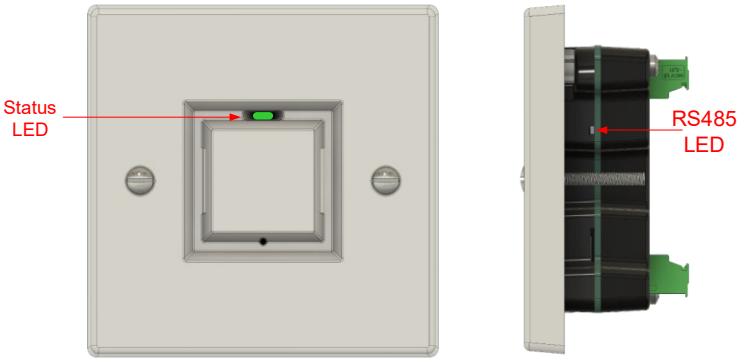


Fig 4.6 – LED locations

The LEDs can be configured to work in different ways according to the "LED" setting:

LED Setting:	Always OFF						
Detector Status → LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	○	○	○	○	○	○	○
RS485 LED	○	○	○	○	○	○	○

LED Setting:	Always ON (default)						
Detector Status → LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	◐	●	●	●	●	◐	●
RS485 LED	○	○	○	○	○	○	○

LED Setting:	Always ON – blinks on comms						
Detector Status → LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	◐	●	◐	●	●	◐	●
RS485 LED	○	○	○	◐ ◐*	○	○	○

*The RS485 LED will only blink green if only receiving data.

LED Setting:	Always ON – Wi-Fi active indication only						
Detector Status→ LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	○	○	◑	○	○	○	○
RS485 LED	○	○	○	○	○	○	○

LED Setting:	Active on Alarm						
Detector Status→ LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	○	○	○	○	○	○	●
RS485 LED	○	○	○	○	○	○	○

LED Setting:	Active on Alarm or Fault						
Detector Status→ LED ↓	Warmup	Monitoring	Wi-Fi Active	RS485 Active	Fault	Warning	Alarm
Status LED	○	○	○	○	●	○	●
RS485 LED	○	○	○	○	○	○	○

Status LED priority – Warmup/Monitoring/ Wi-Fi Active > Fault > Warning > Alarm (highest)

4.7 Webpage Alarm & Warning indication

As well as indicating a Warning and Alarm via the status LED, the overview webpage will also show this:

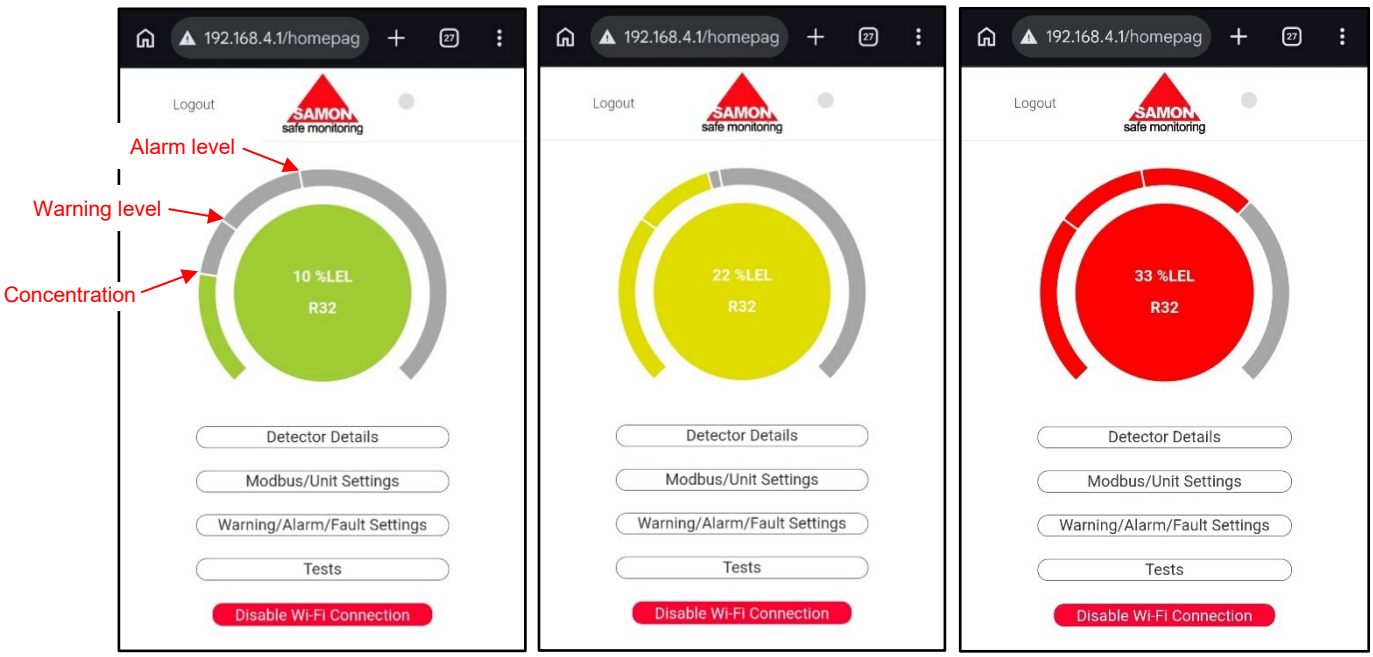


Fig 4.7 – Overview page – Monitoring / Warning and Alarm

4.8 Concentration conversion table

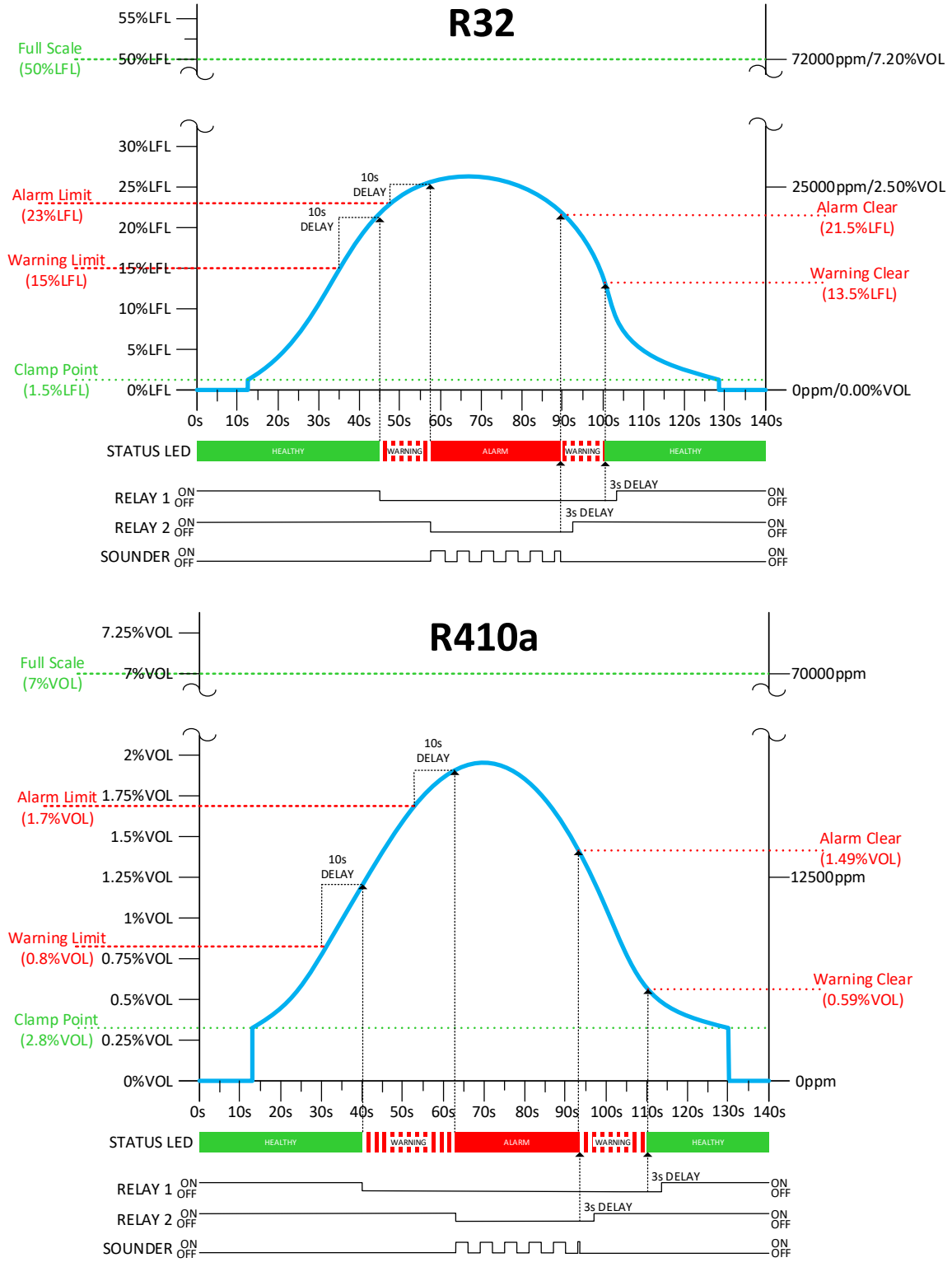
The detector will work in different concentration units depending on the target gas. The table below shows key values in different concentration units:

Target Gas	R32			
Refrigerant category	A2L			
LFL	14.4%VOL			
Value	**Comments**	**%VOL**	**%LFL***	**PPM**
Min. measurement Range	Readings <3% of Max Measurement range will be clamped to zero	0.21%VOL	1.5%LFL	2100ppm
Max. measurement Range	-	7.20%VOL	50%LFL	72000ppm
Warning Limit	-	2.16%VOL	15%LFL	21600ppm
Alarm Limit	-	3.31%VOL	23%LFL	33100ppm
Warning Limit – Min. Allowed	5% of Max. Measurement range	0.36%VOL	2.5%LFL	3600ppm
Warning Limit – Max. Allowed	90% of Max. Measurement range	6.48%VOL	45%LFL	64800ppm
Alarm Limit – Min. Allowed	5% of Max. Measurement range	0.36%VOL	2.5%LFL	3600ppm
Alarm Limit – Max. Allowed	90% of Max. Measurement range	6.48%VOL	45%LFL	64800ppm
Warning & Alarm Hysteresis (applied below limit)	3% of Measurement range	0.21%VOL	1.5%LFL	2100ppm
*Detector default operating units The accuracy is +/-10% of reading (Reading 15%LFL / accuracy +/-1.5%LFL)				

Target Gas	R410a			
Refrigerant category	A1			
LFL	N/A			
Value	**Comments**	**%VOL***	**%LFL**	**PPM**
Min. measurement Range	Readings <4% of Max Measurement range will be clamped to zero	0.28%VOL	N/A	2800ppm
Max. measurement Range	-	7.00%VOL	N/A	70000ppm
Warning Limit	-	0.80%VOL	N/A	8000ppm
Alarm Limit	-	1.70%VOL	N/A	17000ppm
Warning Limit – Min. Allowed	7% of Max. Measurement range	0.49%VOL	N/A	4900ppm
Warning Limit – Max. Allowed	90% of Max. Measurement range	6.3%VOL	N/A	63000ppm
Alarm Limit – Min. Allowed	7% of Max. Measurement range	0.49%VOL	N/A	4900ppm
Alarm Limit – Max. Allowed	90% of Max. Measurement range	6.3%VOL	N/A	63000ppm
Warning & Alarm Hysteresis (applied below limit)	3% of Measurement range	0.21%VOL	N/A	2100ppm
*Detector default operating units The accuracy is +/-10% of reading (Reading 0.80%VOL / accuracy +/-0.08%VOL)				

4.9 Operation graphs

The graphs below represent how the detector will raise and clear warnings and alarms with default settings:



5 MODBUS INTERFACE

The detector will be supplied with the following factory default Modbus RS485 communication settings, other settings that can be used are shown in brackets:

Modbus address : 1 (1 – 250)
Baud rate : 9600bps (19200bps, 38400bps, 57600bps)
Parity : None (Even, Odd)
Stop bits : 1 (2)

The detector incorporates a full power RS485 driver chip, therefore a maximum of 32 x detectors can be connected to the same RS485 network.

5.1 Input registers

The following input registers are provided by the detector:

Addr.	Name	Type	Description
101	Concentration	16-bit UINT	The measured gas concentration – scaled depending on measuring unit. %LFL = Register value x1 %VOL = Register value /100
102	Application Status	16-bit UINT	The detectors application status. Bit 0 = Invalid parameter setting Bit 1 = Warning Bit 2 = Alarm Bit 3 = Service due Bit 4 = End of product life Bit 5 = Self-test Bit 6 = EEPROM corrupt Bit 7 = FLASH corrupt Bit 8 = Relay 1 malfunction Bit 9 = Relay 2 malfunction Bit 10 = Voltage out of range (Input) Bit 11 = Voltage out of range (5V rail) Bit 12 = Voltage out of range (3V rail) Bit 13 = Voltage out of range (3V3 rail) Bit 14 = Any other hardware fault (MCU temperature, button jam) Bit 15 = Any sensor fault
103	Other Status	16-bit UINT	The detectors other status. Bit 0 = Warmup Bit 1 = Under range Bit 2 = Over range Bit 3 = Sensor fault Bit 4 = Sensor offline Bit 5 = Reserved for other sensor state
104	Temperature	16-bit UINT	The operating temperature in DegC. No scaling required, to the nearest 1DegC.
105	Firmware Version (YY.ZZ)	16-bit UINT	The STM32 processor (MCU) software version (parts YY.ZZ of X.YY.ZZ) Divide by 100 (eg 101 – version X.1.01)
106	Hardware Version	16-bit UINT	The hardware version. Divide by 100 (eg 101 – version X.1.01)
107	Production Month	16-bit UINT	Month that the device was manufactured. 1 to 12
108	Production Year	16-bit UINT	Year that the device was manufactured.
109	NOT USED		
110	FSN1	16-bit UINT	Serial number 1. Low byte
111	FSN2	16-bit UINT	Serial number 2 High Byte
112	*Reserved*		
113	Firmware Version (X)	16-bit UINT	The STM32 processor (MCU) software version (part X of X.YY.ZZ)
114	Firmware Version ESP32 (X)	16-bit UINT	The ESP32 processor (Wifi) software version (part X of X.YY.ZZ)
115	Firmware Version ESP32 (YY.ZZ)	16-bit UINT	The ESP32 processor (Wifi) software version (part YY.ZZ of X.YY.ZZ)

5.2 Holding registers

The following holding registers are provided by the detector:

Addr.	Name	Type	Description	Factory Setting	Reset in Factory Reset?	User access	Tech. access
201	Gas Group	16-bit UINT	The sensor gas group (core sensor type). 0=NONE* 1=R290* 2=R32 *Future use	2	No	RO	RO
202	Target Gas	16-bit UINT	The target gas For gas group 1 1 = R290* For gas group 2 1 = R32 2 = R454a* 3 = R454c* 4 = R455a* 5= R410a *Future use	Refer to detector target gas labelling	No	RO	RO
203	Range	16-bit UINT	Sensor range (measurement range) R32 = 50 (x 1 %LFL) R410a = 700 (/100 %VOL)	Refer to detector target gas labelling	No	RO	RW
204	Measuring unit	16-bit UINT	Sensor units of concentration 0=PPM* 1 = %VOL 2= %LEL *Future use	R32 = 2 R410a = 1	No	RO	RW
Registers 205 to 209 are reserved or not used							
210	Warning Limit	16-bit UINT	The Warning threshold Minimum limit = R32 5% of Range R410a 7% of Range Maximum limit = 90% of Range	R32 = 15 (15%LFL) R410a = 80 (0.8%VOL)	No	RO	RW
211	Alarm Limit	16-bit UINT	The Alarm threshold Minimum limit = R32 5% of Range R410a 7% of Range Maximum limit = 90% of Range	R32 = 23 (23%LFL) R410a = 170 (1.7%VOL)	No	RO	RW
Register 212 is reserved or not used							
213	Reset Alarm Setting	16-bit UINT	Determines if a manual reset is required (Latching or Non-latching Alarm) 0 = Auto reset (Non-latching) 1 = Manual reset (Latching)	0	No	RO	RW
214	SN1	16-bit UINT	User serial number – part 1 0 to 65535 (0x0000 to 0xFFFF)	0	No	RO	RW
215	SN2	16-bit UINT	User serial number – part 2 0 to 65535 (0x0000 to 0xFFFF)	0	No	RO	RW
216	SN3	16-bit UINT	User serial number – part 3 0 to 65535 (0x0000 to 0xFFFF)	0	No	RO	RW
217	SN4	16-bit UINT	User serial number – part 4 0 to 65535 (0x0000 to 0xFFFF)	0	No	RO	RW
218	Modbus address	16-bit UINT	The modbus network address – changes only applied after a power reset. 1 to 250	1	Yes	RW	RW
219	Modbus speed	16-bit UINT	The modbus network speed – changes only applied after a power reset. 0 = 9600bps 1 = 19200bps 2 = 38400bps 3 = 57600bps	0	Yes	RW	RW
220	Modbus parity	16-bit UINT	The modbus network parity – changes only applied after a power reset. 0 = None 1 = Even 2= Odd	0	Yes	RW	RW
221	Modbus stop-bit	16-bit UINT	The Modbus network stop-bits – changes only applied after a power reset. 1 = 1 stop-bit 2 = 2 stop-bits	1	Yes	RW	RW

Addr.	Name	Type	Description	Factory Setting	Reset in Factory Reset?	User access	Tech. access
222	Status LED mode	16-bit UINT	Selects how the status LED will operate 0 = Always OFF in any condition 1 = Always ON Green when healthy 2 = Same as 1 – also blinks RS485 LED on activity with slow blink on Wi-Fi activity. 3 = Same as 0 – also slow blink on Wi-Fi activity. 4 = Active only on Warning 5 = Active only on Fault (See section 4.6 for more details on the LED modes)	1	Yes	RW	RW
223	Sounder Active	16-bit UINT	Sets when the sounder will be active. 1 = Warning only 2 = Alarm only 3 = Warning or Alarm	2	Yes	RW	RW
224	Sounder Type	16-bit UINT	Set the type of sound produced by the sounder. 0 = Always OFF 1 = Pulsing (3sec ON, 3 sec OFF) 2 = Constant ON	1	Yes	RW	RW
225	Warning de-bounce time	16-bit UINT	De-bounce delay time before a Warning is confirmed. 3 to 600 seconds	10	Yes	RW	RW
226	Warning delay off time	16-bit UINT	Delay before de-activating any associated relay once a Warning has ended. 3 to 600 seconds	3	Yes	RW	RW
227	Relay 1 link	16-bit UINT	Defines which conditions will activate relay 1. 0 = Not used 1 = Warning only 2 = Alarm only 16 = Fault only 17 = Warning or Fault 18 = Alarm or Fault	17	Yes	RW	RW
228	Relay 1 mode	16-bit UINT	Defines if relay 1 is normally OFF or normally ON (non-failsafe or failsafe) 0 = Normally OFF 32 = Normally ON	32	Yes	RW	RW
229	Alarm de-bounce time	16-bit UINT	De-bounce delay time before a Alarm is confirmed. 3 to 600 seconds	10	Yes	RW	RW
230	Alarm delay off time	16-bit UINT	Delay before de-activating any associated relay once an Alarm has ended. 3 to 600 seconds	3	Yes	RW	RW
231	Relay 2 link	16-bit UINT	Defines which conditions will activate relay 1. 0 = Not used 1 = Warning only 2 = Alarm only 16 = Fault only 17 = Warning or Fault 18 = Alarm or Fault	2	Yes	RW	RW
232	Relay 2 mode	16-bit UINT	Defines if relay 2 is normally OFF or normally ON (non-failsafe or failsafe) 0 = Normally OFF 32 = Normally ON	32	Yes	RW	RW
233	Product lifetime	16-bit UINT	Product life counter in days.	0	No	RO	RO
234	Days since service	16-bit UINT	Number of days since last service, must be reset to 0 after a service is completed.	0	No	RO	RW
Registers 235 to 402 are reserved or not used							
403	Technician authentication	16-bit UINT	Used to elevate access to technician (Tech.) level. Set to 2222 to elevate – returns 0000 if successful, FFFF if wrong code	N/A	N/A	N/A	RW
Registers 404 to 409 are reserved or not used							
410	Reset alarm	16-bit UINT	Resets a latched alarm. 1 = reset (returns to 0 once completed)	N/A	N/A	RW	RW

6. TESTING

To verify correct operation of the detector, test gas can be used to trigger a Warning and Alarm.

The parts needed for testing (test gas, flow regulator (0.5ltr/m), calibration hood and clear tubing) are available from SAMON.

Test gas concentration should be 1.6x the Alarm setpoint (maximum) – as per EN14624.

6.1 Test procedure

1. Ensure the test gas cylinder has been left to settle at room temperature before use.
2. Ensure the detector is in the Normal operating state before testing (see step 10).
3. Connect the tubing to the flow regulator and the calibration hood.
4. Fit the flow regulator onto the test gas cylinder and check that the pressure shown on the regulator is above 10bar.
5. Agitate the gas cylinder for 1 minute.
6. Place the calibration hood over the detector as shown in Fig 6 >
7. Open the flow regulator fully to release the test gas. The measured gas concentration should begin to rise, passing the Warning setpoint first and creating a Warning operating state:

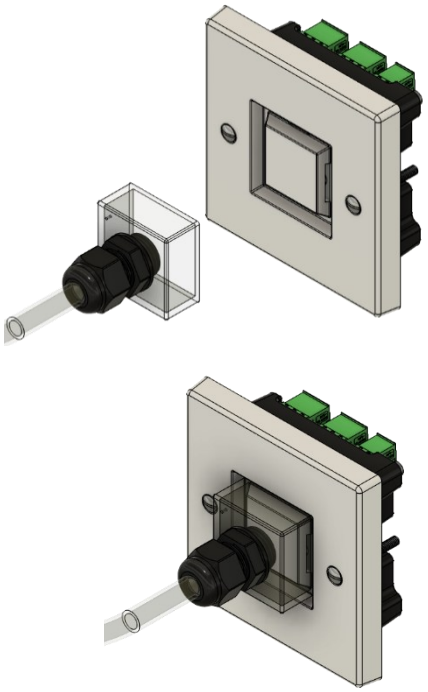
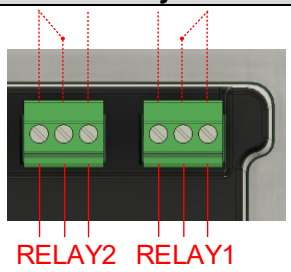
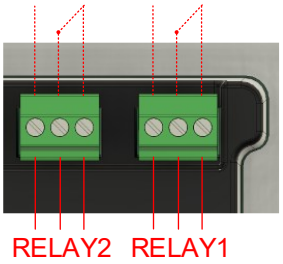


Fig 6 – Applying calibration hood

Operating state	Relays	Buzzer	Status LED
Warning		OFF	

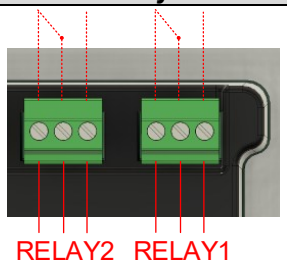
8. The gas concentration will continue to rise, passing the Alarm setpoint and creating an Alarm operating state:

The detector should enter the Alarm state within 30 seconds from the start of applying the test gas.

Operating state	Relays	Buzzer	Status LED
Alarm		ON & Pulsing	

9. Once the Alarm state occurs remove the calibration hood from the detector and close the flow regulator.

10. The detector should return to its Normal operating state within 5 minutes:

Operating state	Relays	Buzzer	Status LED
Normal		OFF	

11. Detector testing is now complete.

If testing is complete or no further detectors are to be tested immediately, remove the regulator from the test gas cylinder.

The detector relay, buzzer and LED operation explained within the test procedure above assume factory default detector settings are used.

REVISIONS

Software version : STM (MCU) 1.1.61 / ESP (Wi-Fi) 1.1.76
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1.0	29/05/2026	First Release	KR

NOTES

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