5220H141 Ed.02 E GB F D PT

AKO
we make it easy

CE Alarma de detección de fugas de gases + alarma de hombre encerrado
Gas leak detection alarm + trapped person alarm
Alarme de détection de fuites de gaz + alarme homme enfermé
Gasleck-Detektionsalarm + Alarm eingeschlossene Person
Alarme de detecção de fugas de gases + alarme de homem fechado

AKO-522014 AKO-522024 AKO-522104
AKO-52211 AKO-52212 AKO-52062

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AKO Electromecànica thanks you and congratulates you on the purchase of our product, the development and manufacture of which involved the most innovative technologies, as well as rigorous production and quality control processes.

Our commitment to achieving customer satisfaction and our continuous efforts to improve day by day are confirmed by the various quality certificates obtained.

This is a high performance, technologically advanced product. Its operation and the final performance achieved will depend, to a great extent, on correct planning, installation, configuration and commissioning. Please read this manual carefully before proceeding to install it and respect the instructions in the manual at all times.

Only qualified personnel may install the product or carry out technical support.

This product has been developed for use in the applications described in the manual. AKO Electromecànica does not guarantee its operation in any use not foreseen in this document and accepts no liability in the case of damage of any type which may result from incorrect use, configuration, installation or commissioning.

Complying with and enforcing the regulations applying to installations where our products are destined to be used is the responsibility of the installer and the customer. AKO Electromecànica accepts no liability for damage which may occur due to failure to comply with these regulations. Rigorously follow the instructions described in this manual.

In order to extend the lifetime of our products to the maximum, the following points must be observed:

Do not expose electronic equipment to dust, dirt, water, rain, moisture, high temperatures, chemical agents or corrosive substances of any type.
Do not subject equipment to knocks or vibrations or attempt to handle them in any way differently to that indicated in the manual.
Do not under any circumstances exceed the specifications and limitations indicated in the manual.
Respect the indicated environmental conditions for operation and storage at all times.
During installation and on completion of this, avoid the presence of loose, broken or unprotected cables or cables in poor condition. These may constitute a risk for the equipment and its users.

AKO Electromecànica reserves the right to make any modification to the documentation and the product without prior notification.

1.- Introduction

4-input optical and acoustic alarm station for help request luminous buttons, to be installed inside coldrooms. Two of the inputs can be used by refrigerator gas detectors to be installed in the compressor room.

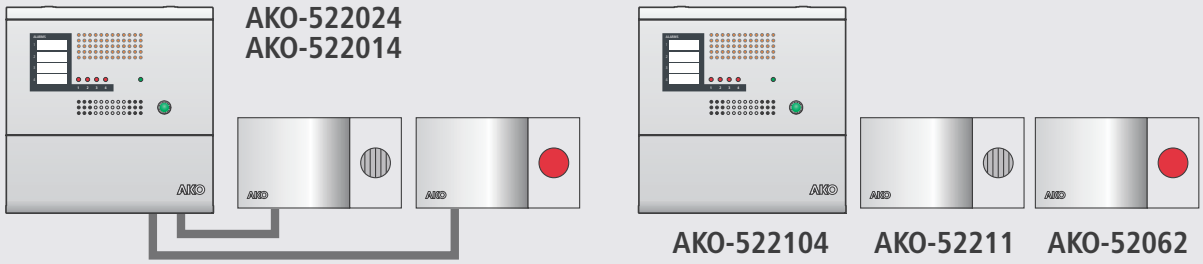
The system is powered by the 230 V~ mains supply and incorporates a battery that guarantees its operation in the event of a power failure.

The unit constantly controls the connection state of the buttons and/or detectors, warning if this connection is interrupted (wiring supervision function).

This unit complies with standards EN 378 1 and EN 378 3 for refrigeration systems.

2.- Versions and references

MODEL	DESCRIPTION	DETECTOR INCLUDED	POWER SUPPLY
AKO-522014	Alarm station + detector + button	AKO-52211 (A)	90-260V~ 50/60 Hz
AKO-522024	Alarm station + detector + button	AKO-52212 (B)	
AKO-522104	Alarm station	-	
AKO-52211	Gas detector for freon. Type A	-	-
AKO-52212	Gas detector for freon. Type B	-	
AKO-52062	Luminous button	-	-

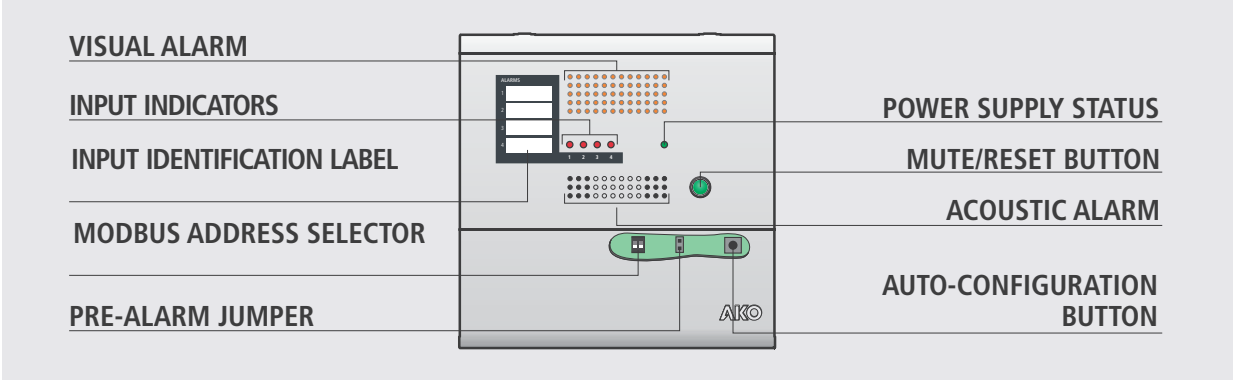


DETECTOR	GASES IT DETECTS	PRE-ALARM	ALARM
AKO-52211	R-134a, R-407C, R-410A, R-417A, R-409A, R-32	500 ppm*	1000 ppm*
AKO-52212	R-404A, R-507A, R-22, R-23, R-422D, R-422A, R-434A, R-437A, R-408A, R-403B, R-124, R-407A		

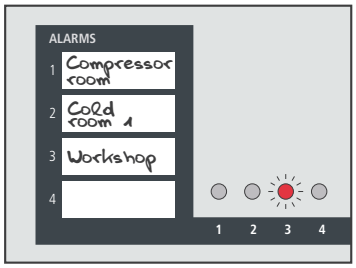
*** The pre-alarm and alarm levels may slightly differ from the values shown in the table depending on the detected type of gas.**

3.- Equipment description

Alarm station



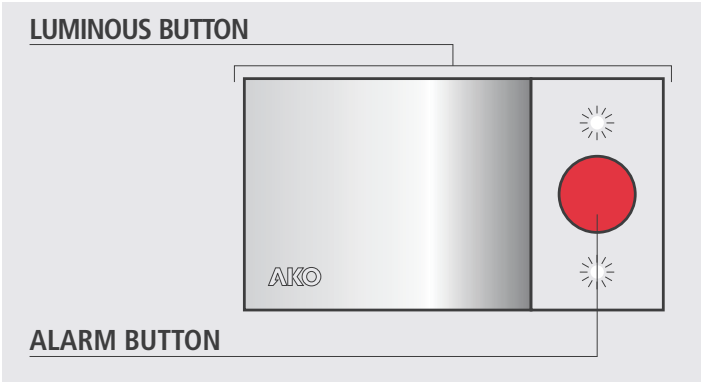
Input identification label
We recommend filling in the input identification label included with the station to optimise alarm origin identification.



Luminous button

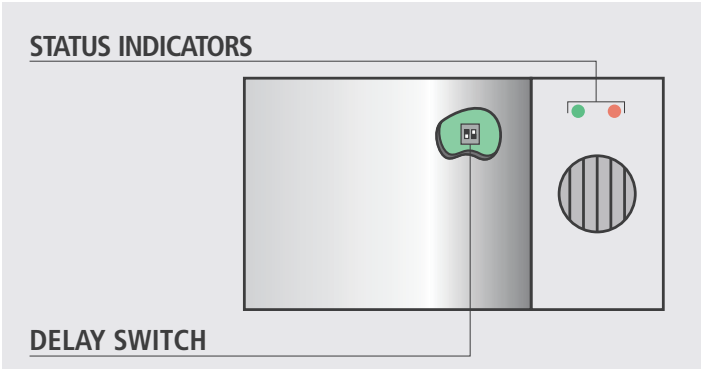
In stand-by, the button's luminous indicator will be permanently on even though the power supply fails, as long as the battery is not flat.

Press the button to activate the alarm, and to deactivate it turn the button clockwise until it is released.



Gas detector

Delay switch
It delays the activation of alarms detected in the station.
The detector status indicators will indicate the alarms and pre-alarms immediately, without taking into account the delays.



* Default value

IMPORTANT: The delay configuration should be carried out with the station's power supply disconnected, as if not it will not work.

4.- Installation

The wiring between the detector/button and the station should **NEVER** be installed in a conduit together with power, control or feeder cables.

WARNINGS

- The alarm and detectors should be installed in a place protected from vibrations, water and corrosive gases, where the ambient temperature does not exceed the value indicated in the technical data. The station should be installed in a place where the regular presence of people who can alert to the presence of alarms is guaranteed.
- To prevent false alarms, the detector should be installed away from:
  - Maintenance rooms where solvents, paints or refrigerator gases are handled.
  - Fruit ripening or storage rooms, as some fruits can emit gases.
  - Smoke outlets located in confined spaces (carbon dioxide, propane, LPG) or from engines, generators or motorised machinery (fork-lift trucks, etc.).
  - Particularly damp areas or with the risk of getting wet.
  - Areas with strong ventilation.
- Do not paint the detector or place it near solvents or paints.
- Neither the alarm or gas detector are suitable for areas classified as potentially explosive.

Station assembly

- Remove the cover T of the equipment (Fig. 1).
- Open the equipment and remove the front of the housing (Fig. 2).
- Drill the holes needed for the cable entry glands using the pre-stamped centres on the sides of the housing for guidance.
- Drill 3 holes on the wall following the fixing holes 1, 2, 3. (Fig. 3).
- Fasten the glands into the equipment.
- Insert the 3 screws and wall plugs through the housing into the holes in the wall and tighten.
- Insert the cables through the glands.
- Fit the front of the housing (Fig.2).
- **Connect the battery before closing the cover.**
- Insert and tighten screws D, F (Fig. 1).
- Connect the cables as shown in the wiring diagram, close the cover T, insert and tighten screws A, C (Fig. 1).

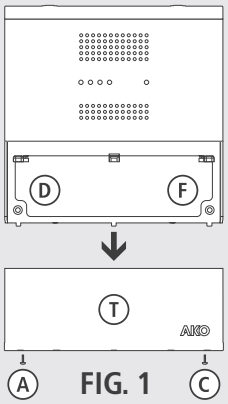


FIG. 1

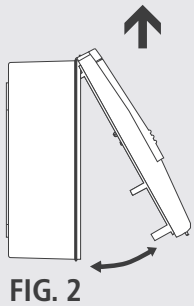


FIG. 2

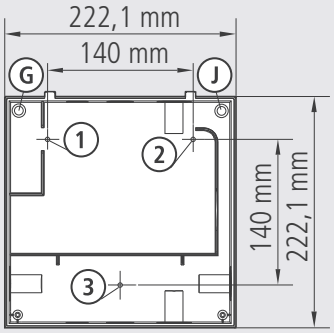


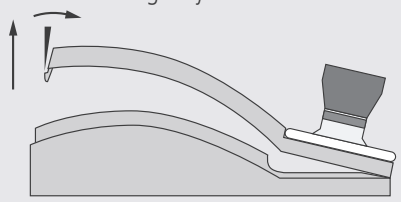
FIG. 3

Button assembly

The button should be installed inside the coldroom, in a visible place and no higher than 125 cm from the floor.

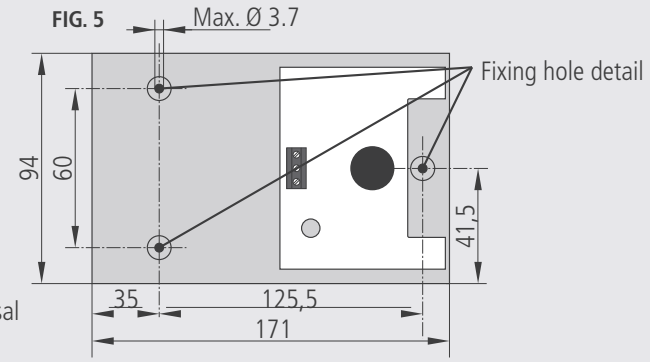
- Remove the button's cover (Fig. 4).
- Drill the hole for the glands needed for the cable entry following the pre-stamped centres on the bottom or top of the base.
- Drill 3 holes on the wall following the fixing holes. (Fig. 5).
- Fasten the gland onto the base.
- Insert the 3 screws+plugs through the base, into the 3 holes on the wall and tighten.
- Insert the cables into the gland and connect them according to the wiring diagram.
- Insert the cover and gently press it until you hear a "click".

FIG. 4



Fixing holes suitable for universal built-in housing

FIG. 5



Detector assembly

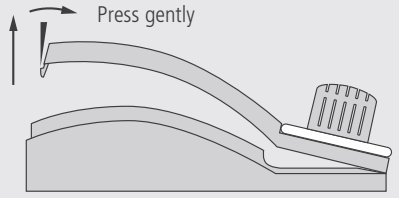
The detector should be installed in an area where the highest amount of gas may concentrate, near places where gas leaks could start and accessible for maintenance work. It is also advisable to place it away from transit areas or areas where it could be accidentally knocked.

Different types of gas can have different densities, and this means that leaks could concentrate in the lowest part of the room or near the roof. Take this into account when deciding on the height of the detector.

It is advisable to install the freon detectors around 20 cm from the ground, with an free distance around them of some 50 cm.

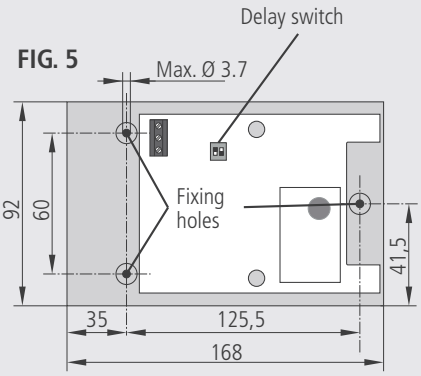
- Remove the detector's cover (Fig. 6).
- Drill the hole for the glands needed for the cable entry following the pre-stamped centres on the bottom or top of the base.
- Drill 3 holes in the wall following the fixing holes. (Fig. 7).
- Fasten the gland onto the base.
- Insert the 3 screws+plugs through the base, into the 3 holes on the wall and tighten.
- Insert the cables into the gland and connect them according to the wiring diagram.
- Adjust the alarm/pre-alarm delays using the delay switch (See page 14).
- Insert the cover and gently press it until you hear a "click".

FIG. 4



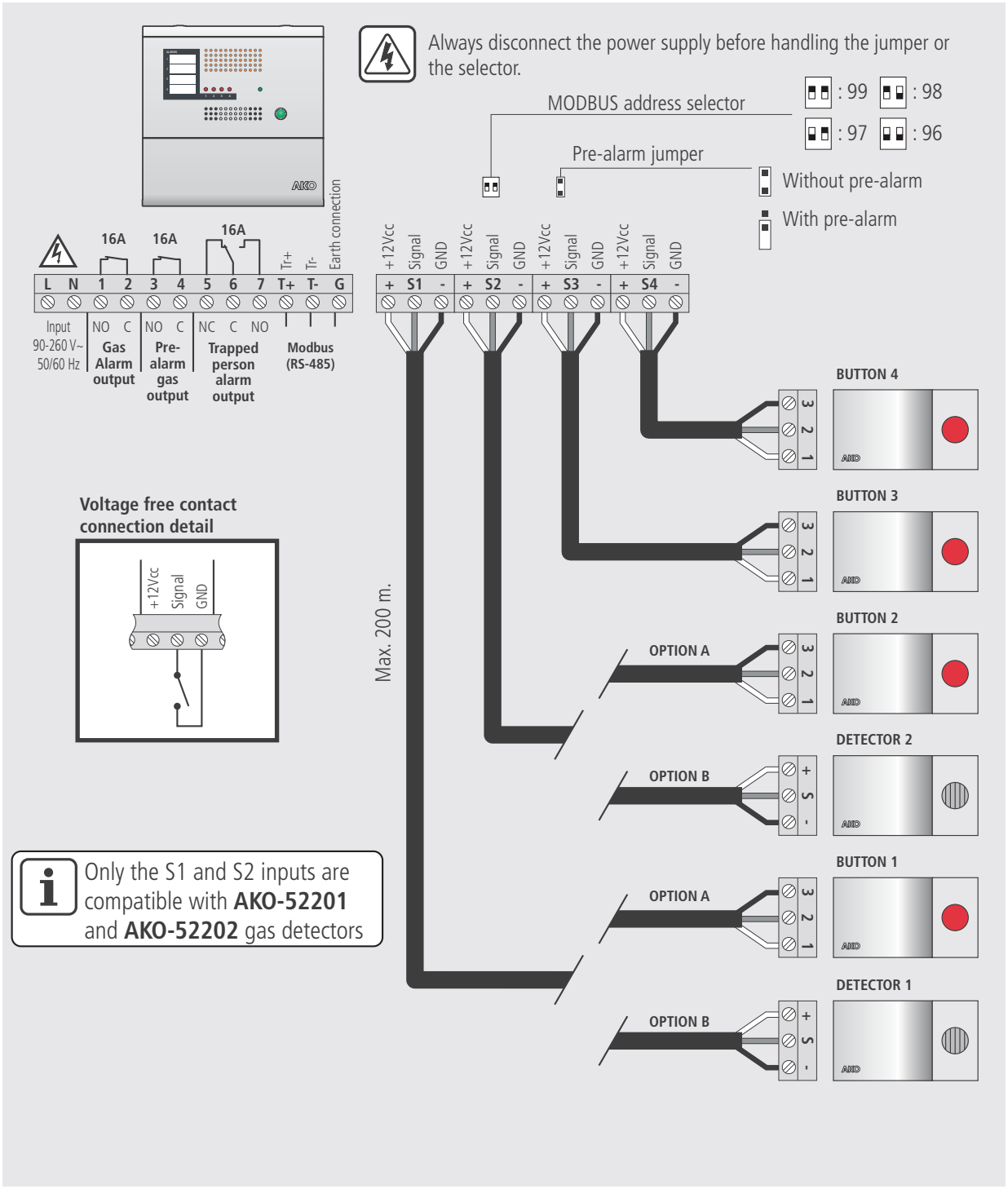
Fixing holes suitable for universal built-in housing

FIG. 5



Wiring

Always disconnect the power supply to do the wiring.
The power circuit should be equipped with a switch for its disconnection of at least 2 A, 230 V, situated near the appliance. The power supply cable should be H05VV-F or H05V-K type. The gauge will depend on local regulations, but should in no case be less than 1 mm².
Cables for wiring the relay contact should have an adequate section depending on the unit to be connected.
AKO recommends the use of shielded cable for the wiring of the detectors.
Ensure the batteries are connected before switching on the equipment.

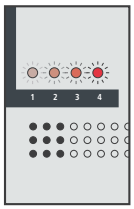


Configuration

Auto-configuration function

This function configures the station automatically according to the devices connected in each input.

When the station receives power for the first time (factory settings), it will sequentially turn on all the input indicators, which indicates that it has not been configured.



Press the auto-configuration button for more than 5 seconds to activate this function (see page 14), and the station will emit 5 short beeps and turn on the detected input indicators for 5 seconds.

If any of the indicators does not turn on, this means that nothing has been detected in that input.

Return to factory settings

Press auto-configuration button 5 times (See page 14), and the station will emit a confirmation beep and return to the factory setting.

IMPORTANT: Both functions should be carried out during the first 5 minutes after connecting the power supply.

Pre-alarm jumper (gas detectors)

It allows deactivating pre-alarm detection (See page 17), before using this option, make sure that regulations allow for only one alarm level.

MODBUS address selector

It allows configuring the station's MODBUS address (See page 17), and then this address can be reassigned using the management programme. If this unit is connected in a network, make sure you use a free address.

Self-diagnosis function

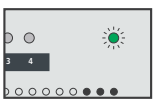
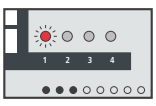
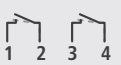
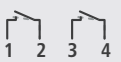
The unit incorporates a self-diagnosis system for the gas detector and wiring between the detector/button and the alarm station, and if the wiring malfunctions, the station will emit 3 beeps every 2 minutes and the corresponding input indicator will turn on. In the event of an operating error in the gas detector, its LEDs will turn on alternately.

Detector heating time

After receiving the electrical power supply, the gas detector needs a heating time of around 5 minutes, during which it will NOT detect leaks. This time is indicated by means of a quick flashing of the green led on the detector itself.

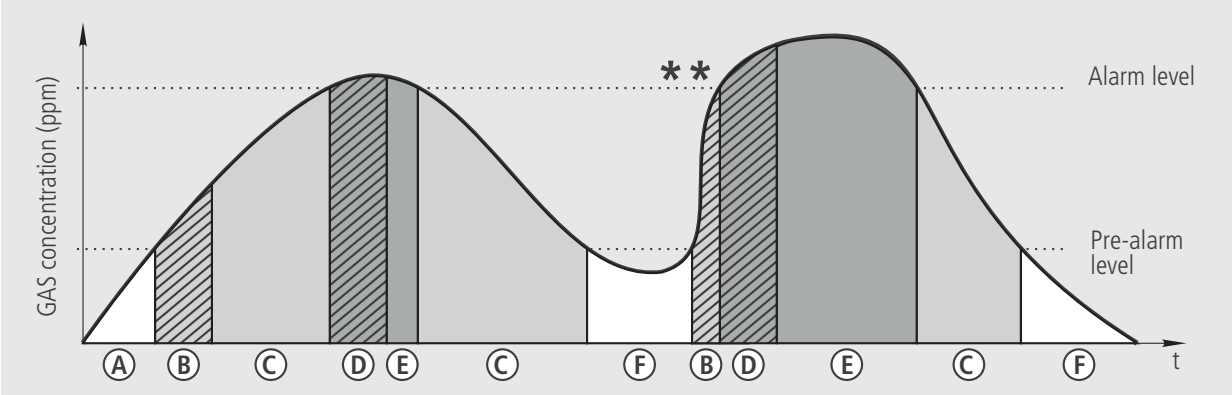
5.- Operation

Alarm station

	ALARM STATION				
STATUS			**RELAYS**		**OBSERVATIONS**
			Gas Alarma	**Trapped person**	
With power supply	ON	According to active alarms	According to active alarms	According to active alarms	-
Without power supply/With battery	Flashing	ON*		According to active alarms	Disabled gas detectors
Without power supply/Without	OFF	OFF			-

* Input indicators with connected gas detectors will stay on indicating that they are disabled. The rest of the inputs will turn on in the event of an alarm (active button).

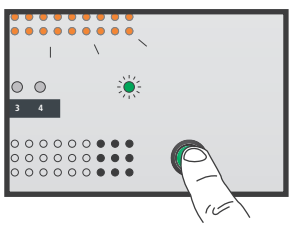
Gas detector (Only inputs S1 and S2)



STATUS	ALARM STATION					GAS DETECTOR	
			ACOUSTIC ALARM	RELAYS			
				Alarm	Pre-alarm		
Ⓐ **Without alarm**	Off	Off	Off	1 2	3 4	Slow flashing	Off
Ⓑ **Delayed pre-alarm**	Off	Off	Off	1 2	3 4	Off	Quick flashing
Ⓒ **Pre-alarm**	Flashing	On[1]	Flashing	1 2	3 4	Off	Quick flashing
Ⓓ **Delayed alarm**	Flashing	On[1]	Flashing	1 2	3 4	Off	On
Ⓔ **Alarm**	Flashing	On[1]	Two-tone sound	1 2	3 4	Off	On
Ⓕ **Saved alarm/ pre-alarm***	Off	Flashing	Off	1 2	3 4	Slow flashing	Off
Detector/ wiring fault	On	On[1]	3 short tones every 2 minutes	1 2	3 4	Flashing/alternative[2]	

[1] The input indicator corresponding to the active detector will turn on.
[2] Only if the malfunction is in the detector.

** If during the delay time of a pre-alarm the gas concentration increases to the alarm value, for safety reasons, the pre-alarm delay will be cancelled, activating the signalling in the station.



*** Saved alarm/pre-alarm**
They let us check if any alarm/pre-alarm has triggered during our absence.

Mute/reset button
During an alarm, it silences the acoustic alarm, in delay (without alarm), deletes the existing saved alarms.

Luminous button

BUTTON	ALARM STATION		ACOUSTIC ALARM	TRAPPED PERSON ALARM RELAY
	Off	Off	Off	
	On	On[1]	Two-tone sound	
Detector/wiring fault	On	On[1]	3 short tones every 2 minutes	

[1] The input indicator corresponding to the active button will turn on.

6.- Maintenance

- Clean the surface of the equipment with a soft cloth, water and soap.
- Do not use abrasive detergents, petrol, alcohol or solvents, as this might damage the sensor.
- **AKO guarantees the calibration of the detectors during the first 3 years from the date of purchase, and after this time, it is advisable to replace the detector.**
- We recommend changing the detector in the event of having been exposed to high gas concentrations.

According to standard EN-378, the correct operation of the detector should be checked at least once a year, ask about if your current local regulations require lower intervals.

CHECK METHOD

Preparation:

- Disconnect the unit's power supply, open the detector's cover and turn the delay switch to "Without delay".
- Close the cover and connect the unit's power supply again. Wait for 5 minutes before making the check.

Start of the check:

- **AKO-52211 (Type A):** Put a normal lighter 5 cm underneath the detector and release gas for 4 seconds.
- **AKO-52212 (Type B):** Put a normal lighter 10 cm underneath the detector and release gas for 2 seconds.

Check that:

- The pre-alarm activates after a few seconds. The detector's green indicator turns off and the red indicator starts to flash. The station beeps intermittently. The pre-alarm relay activates.
- The alarm then activates, and the detector's red indicator turns on permanently. The alarm station emits a two-tone sound. The alarm relay activates.
- The alarms disappear after 1 to 2 minutes. The detector's red indicator turns off and the green indicator starts to flash slowly. The alarm and pre-alarm relays deactivate.

- If the pre-alarm does not activate, check that it has not been cancelled in the alarm station.
- If the pre-alarm or alarm do not activate, try it again releasing gas for a longer time.

-An excessive exposure might reduce the delay between the activation of the pre-alarm and the alarm, and lengthen the waiting time for their deactivation.

-Remember to press the reset button to delete the alarm log (green button) after checking.

When you have finished the check, remember to turn the delay switch to its initial configuration again, disconnecting the power supply before using it.

7.- Technical data

AKO-522104

Power supply .....90-260 V~ 50/60 Hz
Maximum input power .....20 VA
Accumulators .....Ni-MH 1.6 Ah
Lighting + alarm duration .....> 10 Hours (*)
No. of inputs.....4
Compatibility of inputs.....AKO-52062 button
Only S1 and S2: .....AKO-52062 button or AKO-52211/52212 gas detector
Gas alarm/prealarm relay .....SPST 230 Vac, 16 A, cos j =1
Trapped person alarm relay .....SPDT 230 Vac, 16 A, cos j =1
Working ambient temperature .....0 ºC to 50 ºC
Storage ambient temperature .....-30 ºC a 70 ºC
Protection degree .....IP 65
Installation category .....II s/EN 61010-1
Pollution degree .....II s/EN 61010-1
Double isolation between power supply, secondary circuit and relay output.
Sound power.....90 dB(A) at 1 metre

AKO-52211/52212

Power supply.....15 Vdc ±3 Vdc
Consumption Typical .....75 mA
Maximum .....100 mA
Working ambient temperature .....-20 ºC to 50 ºC
Storage ambient temperature .....-20 ºC a 60 ºC
Range of maximum allowed humidity .....5 - 85% RH (without condensation)
Protection degree .....IP 40
Life.....Depending on temperature and humidity conditions
EMC Standard .....EN 61000

AKO-52062

Power supply.....15 Vdc ±3 Vdc
Working ambient temperature .....-50 ºC to 50 ºC
Storage ambient temperature .....-50 ºC a 70 ºC
Protection degree Ip65

*Duration with 4 push-buttons connected to an ambient temperature of 5 to 30 ºC.