

AKO-575xxx

Gas transmitter

User manual



AKO

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AKO Electromecánica thanks and congratulates you for purchasing our product, in whose development and manufacture the most innovative technology has been used, as well as strict production and quality control processes.

Our commitment to satisfy our customers and our continuous efforts to improve every day can be seen in the various quality certifications we have obtained.

This is a high performance, high technology product. The operation and final performance of the equipment depend on proper planning, installation, configuration and commissioning. Read this manual carefully before installation, and always follow its instructions.

Only qualified personnel should install or perform technical assistance on this product.

This product is designed to be used in the applications described in the product manual. AKO Electromecánica gives no guarantee of its operation in any use not foreseen in the manual, and is not responsible for any damage resulting from improper use, configuration, installation or commissioning.

It is the responsibility of the installer and the customer to comply with and ensure others comply with all regulations applicable to installations incorporating our products. AKO Electromecánica is not responsible for any damage caused by non-compliance with regulations. Follow strictly the instructions given in this manual.

To maximise the service life of our equipment, these recommendations should be followed:

Do not expose electronic equipment to dust, dirt, water, rain, humidity, high temperatures, chemicals or corrosive substances of any sort.

Do not submit the equipment to blows or vibrations nor try to manipulate it differently from shown in the manual.

Never exceed the specifications and limitations indicated in the manual.



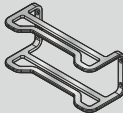
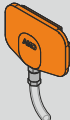
Always respect the specified ambient working and storage conditions.

During and after installation, avoid leaving loose, broken, unprotected or damaged wiring, since they might constitute a risk for the equipment and its users.

AKO Electromecánica reserves the right to make any non-metrology modification to the documentation or the equipment without previous notice.

1.- Versions and references

MODEL	DESCRIPTION	POWER SUPPLY
AKO-575022	R-22 gas transmitter	12-30 Vdc
AKO-575134A	R-134a gas transmitter	
AKO-575404A	R-404A gas transmitter	
AKO-575410A	R-410A gas transmitter	
AKO-575507A	R-507A gas transmitter	
AKO-575400	Universal gas transmitter for R-134a / R-404A / R-407A / R-410A / R-125 / R-448A / R-449A / R-407F	
AKO-575744	R-744 (Co ₂) gas transmitter	-
AKO-58500	CAMM module	
AKO-58120	Protector for push-button/detector	
AKO-58110	Calibration tool	

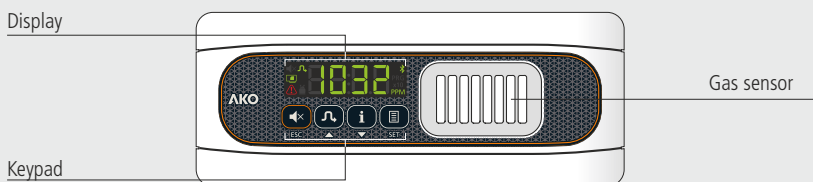
			
AKO-575xxx	AKO-58500	AKO-58120	AKO-58110

2.- Warning









- Transmitters 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 transmitter is not suitable for areas classified as potentially explosive.
- Transmitters/detectors supervise a point and not an area. If the gas leak does not reach the sensor, or the level of concentration in that point does not reach the foreseen values according to the type of gas (see page 3) no alarm will be activated. If perimeter supervision is required, several sensors should be installed around that area.





3.- Equipment description



Indicators

-  **Gas alarm on mute**
-  **Fixed:** Set Hold mode activated
Flashing: Maintenance mode activated
-  **Fixed:** CAMM module in operation
Flashing: Malfunction in CAMM module
-  **Fixed:** Gas pre-alarm activated.
Flashing: Gas alarm activated.
-  Bluetooth activated (CAMM module only)
- x10** The value displayed should be multiplied by 10.
- PPM** The display shows the current gas concentration in ppm (parts per million).
- PRG** Unit in programming mode.
-  The display shows the type of gas detected.

Keypad

-  If the gas Pre-Alarm or Alarm sounds, pressing once will mute the alarm tone (See parameter **b03**).
In the programming menu, it exits the parameter without saving changes, returns to previous level or exits programming.
-  Pressing for 3 seconds activates or deactivates Set Hold mode (See page 11).
Pressing for 6 seconds activates or deactivates maintenance mode (See page 11).
In the programming menu it allows scrolling around the different levels, or during the setting of a parameter, changing its value.
-  Pressing once (< 1 second) will show the type of gas detected, the date and time in sequential order.
Pressing for 3 seconds displays the Pre-Alarm and Alarm levels that have been configured.
In the programming menu it allows scrolling around the different levels, or during the setting of a parameter, changing its value.
-  Pressing for 3 seconds accesses the configuration of alarm levels (See page 14).
Pressing it for 6 seconds accesses the advanced programming menu (See page 14).
In the programming menu, it accesses the level shown on the display or, during the setting of a parameter, accepts the new value.

Messages



Setup wizard initiated (See page 9).



Gas Pre-Alarm activated. Flashing together with the gas concentration (See page 12).



Gas alarm activated. Flashing together with the gas concentration (See page 12).



Initialisation process of the gas sensor. This process may last for up to 3 minutes.



Error or malfunction of the sensor. Please contact your technical support centre.



Request for protection code (See pages 21 and 22).



SA reading of greater than 300 PPM has been detected during the reset to zero process (See page 21).



The temperature of the sensor has experienced a variation of greater than 5 °C during the calibration or reset to zero process (See pages 21 and 22).



The maximum time has been exceeded without the reading stabilising during the calibration process (15 min) or reset to zero process (5 min) (See pages 21 and 22).



The calibration or reset to zero process has been completed successfully (See pages 21 and 22).



The sensor has reached its maximum working temperature.



The sensor has reached its minimum working temperature.



Calibrating or resetting to zero (See pages 21 and 22).

4.- Installation



WARNING

-Transmitters/detectors supervise a point and not an area. If the gas leak does not reach the sensor, or the level of concentration in that point does not reach the foreseen values according to the type of gas (see page 3) no alarm will be activated. If perimeter supervision is required, several sensors should be installed around that area.

-The transmitter/detector 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.

-Gas transmitters/detectors are not suitable for areas classified as potentially explosive.

Working conditions:

-Avoid handling refrigerant gases near the sensor. If this is unavoidable, use Set Hold or Maintenance mode (see page 11)

-Do not paint the sensor or place it near solvents or paints.

-Exposure to acetone vapours may generate false alarms.

-The sensor should be installed away from:

- Smoke outlets located in confined spaces or from engines, generators or motorised machinery (fork-lift trucks, etc.).
- Particularly damp areas or areas with strong ventilation.



The detector should usually be installed in an area where gas may concentrate, near places where gas leaks could start:

- **In compressor/cooling generator rooms:** near to compressors and pressure accumulation tanks. In this environment, the elements most susceptible to refrigerant leaks are valves, pressure sensors, flanges and soldering. In this environment (compressor/cooling generator rooms) with little ventilation there are two practical strategies for installation:

- **Point detection:** Transmitters are placed close to places identified as being critical/susceptible to leaks.
- **Perimeter detection:** Transmitters surround the service area to ensure that a potential leak in the system is detected by one of the transmitters.

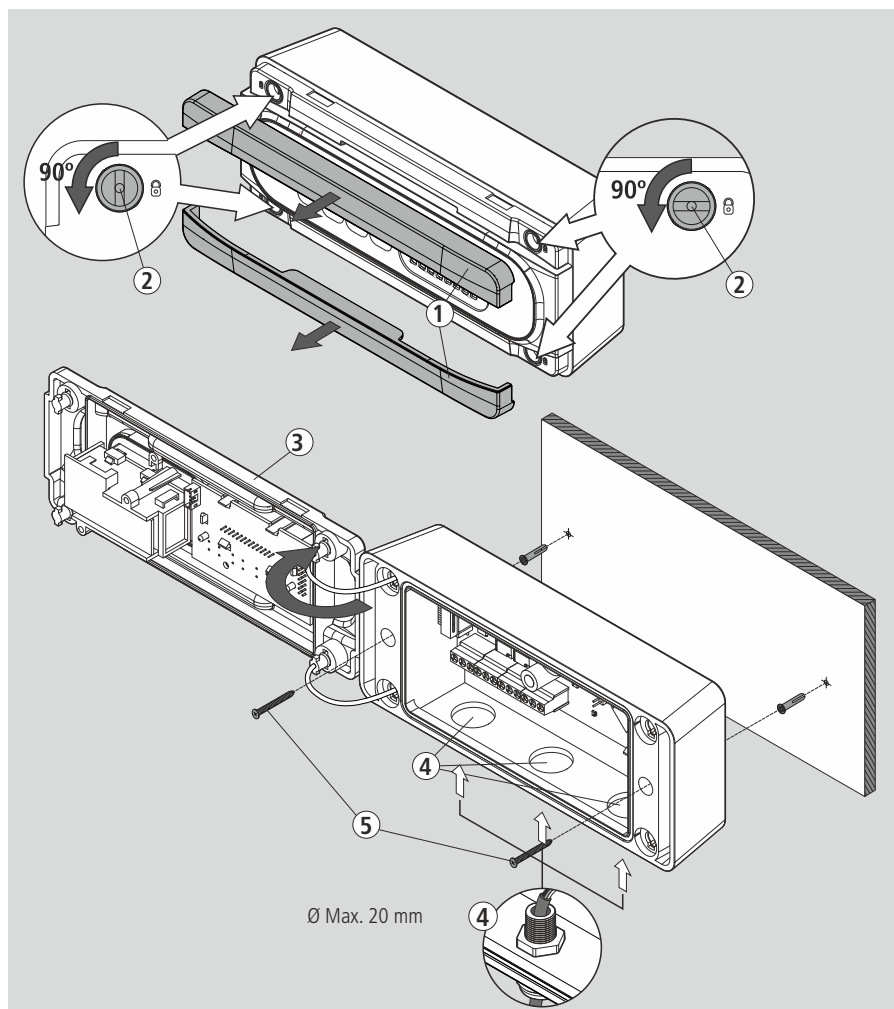
- **Refrigerated spaces (chambers, islands, cabinets, display cases, etc.):** It is advisable to use the sensor in low-lying areas close to the evaporator. However, it is important to avoid areas with high air velocity such as the input/output of air in the evaporator and areas close to doors with heavy footfall.

Accessible installation is important for carrying out maintenance tasks. It is also advisable to place the sensor away from transit areas or areas where it could be accidentally knocked.

The gases currently used in industrial refrigeration, for which this transmitter has been designed, are heavier than air. They are therefore always concentrated in the lowest part of the refrigerated room or space. Please take this into consideration when choosing the installation site. It is advisable to leave a distance of around 50 cm free.

Assembly

- Remove the bezels (1) from the unit.
- Loosen the screws (2) by turning them a 1/4 turn and open the cover (3).
- Drill the holes needed for the cable entry glands using the pre-stamped centres on the sides of the housing for guidance. Fix the glands onto the device (4).
- Make the 2 holes in the wall using template included.
- Fix the unit to the wall using the screws and plugs supplied (5). If the wall is made of sheet metal (prefabricated cold room stores), use only the screws provided without plugs.
- Insert the cables into the glands. Wire the unit following the diagram on page 8.
- Close the cover (3), insert and tighten the screws (2) and replace the bezels (1).



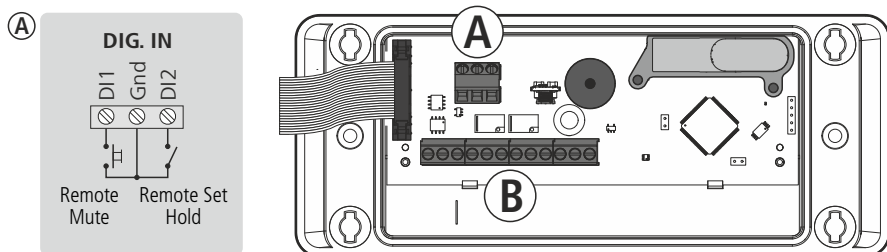
Wiring



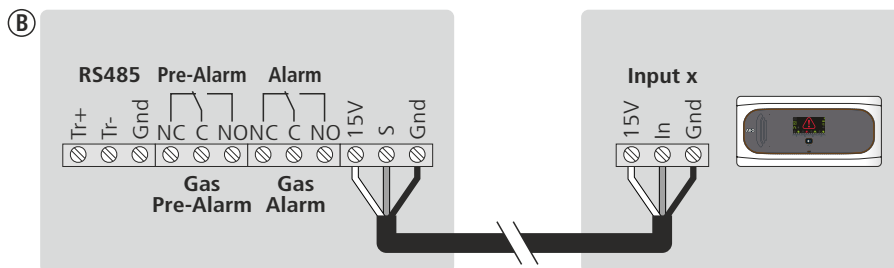
The wiring between the transmitter and the station must **NEVER** be installed in a conduit together with power, control or power supply cables.

Always disconnect the power supply to do the wiring.

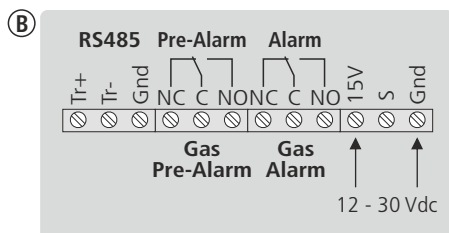
Cables for wiring the relay contact should have an adequate section depending on the unit to be connected. Certain international standards maintain that the power supply of the alarm should originate from a different circuit to that used by the refrigeration and ventilation system. **Please ensure that you comply with current local regulations.**



Connection to alarm station



Independent operation



Setup wizard

- 1-.The first time the transmitter receives the power supply, it will enter into ASSISTANT mode. The display will show the message **Inl** flashing with **0**.
- 2-.Using keys ▲ and ▼, select one of the options depending on the type of installation and press **SET** to confirm:

Inl=0: Demo mode* **Inl=1:** Connection to alarm station

Inl=2: Independent operation

i If 1 minute elapses without any key being pressed, the transmitter will automatically proceed to demo mode*.

AKO-575400 only

- 3-.The display will show the message **Gas2**. Use keys ▲ and ▼ to select the type of gas to be measured (ALL, 134A, 404A, 407A, 410A, 125, 448A, 449A or 407F), and press **SET** to confirm.

All models

The transmitter will begin to operate normally.

! If the transmitter is connected to an alarm station, initiate the setup wizard in the transmitter before doing so in the station.

i This function will not reactivate once the transmitter has been configured. To reactivate the function, disconnect the power supply, reconnect it and press ▲, ▼ and **SET** before 2 minutes are up.

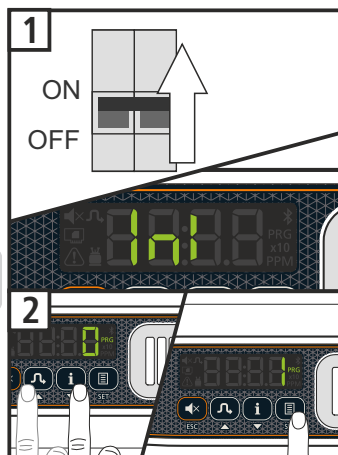
- 4-.If this is not the first time you initiate the wizard, after completing the last step the display will show the message **dFP** (parameters per defect). You may choose between two options:

0: Only changing the parameters which affect the wizard (**Gas2**, **b04** and **o00**). The other parameters will remain the same.

1: All parameters return to their factory setting except those which have been modified by the wizard.

i It is advisable to reset to zero on start-up. See the different methods on page 21.

* * Demo mode shows the reading of the gas concentration on a flashing panel with the message **Inl**. It does not activate Alarms or Pre-Alarms. This mode allows postponement of the configuration of the transmitter.



Operating modes

Demo mode

Demonstration mode in which the display alternates between displaying the gas concentration and the message **Inl**. No alarm is activated and no function may be activated.

This mode is activated using option 0 on the setup wizard or after 60 seconds if none of the other options has been selected.

If you press any key, the device will return to "Setup wizard" mode.

Connection to alarm station

Choose this option if the transmitter is connected to a compatible alarm station.

In this mode, the acoustic alarm is disabled and the output is configured to communicate with the station.

- Compatible stations: **AKO-555241 AKO-555242 AKO-558241**
AKO-558242 AKO-55624 AKO-55724.

Independent operation

Choose this option if you want the transmitter to function independently.



Both the operation mode and the configuration of the output can be checked using the read only parameters of **Inl** and **o00** respectively.

5.- Operation

Without alarms

The display shows the current gas concentration in ppm (Parts per million) (If **b01**=0) or the type of gas to be measured (**b01**=1).

Parameter **b02** allows you to fix a value below which the display will always show zero.



Concentrations measuring under 75 PPM can be due to measuring or calibration errors. For greater precision, it is recommendable to carry out a calibration once installation of the transmitter has been completed.



Sensor error/malfunction

The station emits 3 short beeps every two minutes and the input indicator affected flashes red.



MUTE function

Mutes the sound and/or deactivates the relays of gas pre-alarms and alarms according to the configuration of parameter **b03**. This does not affect the operation of the indicators.

To activate this function, press the  key at any time when a pre-alarm or alarm is activated. The display shows the  indicator of alarm on mute.

You may also activate this function remotely using digital input 1 (DI1) if required.



This function will automatically cancel each type an alarm changes status (from pre-alarm to alarm, from alarm to pre-alarm).



Set Hold mode

Prevents false alarms when charging or cleaning the chambers.


While this mode is activated, pre-alarms will not signal and alarms will signal as pre-alarms when faced with all effects (sound, relay activation and signalling).

To activate/deactivate this mode, press the  key for 3 seconds. The display will show the  indicator.

You may also activate/deactivate this function remotely using digital input 2 (DI2) if required.

This mode will remain active for a maximum of 5 hours, then will deactivate automatically.



If this mode is activated using the  key, it can only be deactivated using the same key. This is also true when activating the mode using digital input 2.

Maintenance mode

Disables gas pre-alarms and alarms for 1 hour for maintenance tasks.

While this mode is activated, no gas pre-alarm or alarm will sound.

To activate/deactivate this mode, press the  key for 6 seconds. The  indicator will flash.



If there is a sudden increase in temperature near the transmitter, either in the cold room loading process, or because the door has been accidentally left open, there is a risk of condensation occurring inside the transmitter. In these conditions, the maintenance mode temporarily activates to avoid false alarms. The transmitter returns to normal operation after 3 to 15 minutes.

In these cases, the maintenance mode cannot be manually deactivated.



The maintenance mode automatically activates for 5 minutes to prevent activation of alarms after calibration has finished.

In this case, the maintenance mode cannot be manually deactivated.

Access code (Password)

Restricts access to the transmitter's functions to authorised personnel. Parameter **b11** defines the code and parameter **b10** defines the function of the code:

b10=0 Disabled

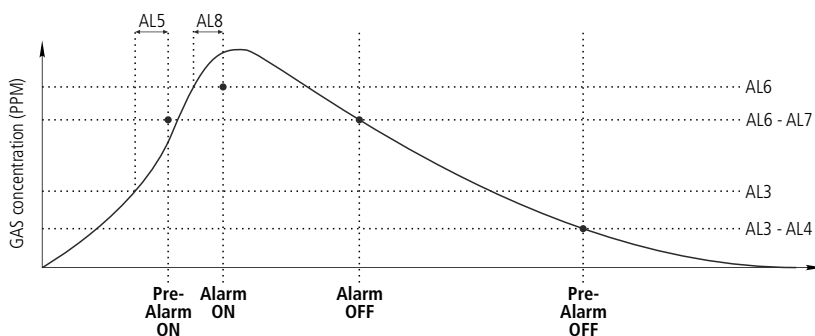
b10=1 Blocks access to programming (Parameters) but enables the use of the rapid keypad functions

b10=2 Blocks any keypad function

Alarms

The transmitter emits an acoustic alarm, the alarm indicator flashes and activates the relays when certain gas concentration levels are exceeded. If the transmitter is connected to a station, the station will emit the acoustic alarm. The relays will be activated in both devices.

There are two alarm levels depending on the concentration of gas detected: Pre-Alarm and Alarm. These levels have a factory setting of 500 and 1000 PPM respectively. These values comply with domestic and international regulations. However, please ensure that these values comply with current local regulations. In order to modify these values, parameter **AL1** should be configured to 1.



Pre-Alarm

Warns the user that the gas concentration is increasing.

The Pre-Alarm relay can be connected to air extraction systems to disregard possible temporary leaks or false detections caused by external agents.

The activation level of the Pre-Alarm is determined by parameter **AL3** and is deactivated when it drops below **AL3** minus differential **AL4**.

Parameter **AL5** can be used to apply a delay period between **AL3** being exceeded and the Pre-Alarm being set off.

Parameter **AL2** can be used to disable the Pre-Alarm. Before doing this, ensure that relevant regulations permit this action.



Alarm

Warns the user that the gas concentration has reached high levels.

It is advisable to use the alarm relay to halt installation by connecting it to the security chain.

The activation level of the Pre-Alarm is determined by parameter **AL6** and is deactivated when it drops below **AL6** minus differential **AL7**.

Parameter **AL8** can be used to apply a delay period between **AL6** being exceeded and the Alarm being set off.

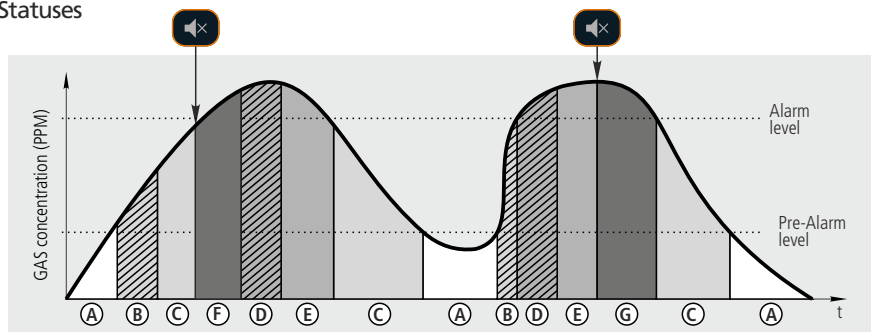


Digital inputs

The transmitter has 2 digital inputs which are used to remotely activate the Mute (DI1) and Set Hold (DI2) functions. The wiring of both is explained on page 8.

Pressing once activates or deactivates each function. The polarity of the inputs is configured using parameters **I11** (DI1) and **I21** (DI2).

Statuses



TRANSMITTER						
STATUS					Relays	
					Pre-alarm	Alarm
Ⓐ Without alarm		83 ppm		OFF		
Ⓑ Delayed pre-alarm		536 ppm		OFF		
Ⓒ Pre-alarm		PAL		Intermittent sound		
Ⓓ Delayed alarm		PAL		Intermittent sound		
Ⓔ Alarm		AL		Bitonal sound		
Ⓕ Muted pre-alarm		PAL		OFF	Depending on b03	Depending on b03
Ⓖ Muted alarm		AL		OFF	Depending on b03	Depending on b03
Sensor error		ES		3 short tones every 2 minutes		
Without power supply		ES		OFF		

6.- Configuration

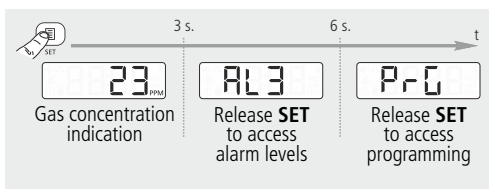
Direct access to alarm levels

To configure the Pre-Alarm and Alarm levels, hold the **SET** key down for 3 seconds. (Only if **AL1=1**)

Programming menu

Use the programming menu to configure the various parameters in order to adapt the transmitter's operation to the requirements of its installation.

Press the **SET** key for 6 seconds to access the programming menu.



IMPORTANT: If the function of the password has been configured as a keypad block (**b10=2**), or as an access block to parameters (**b10=1**), you will be requested to enter the access code programmed in **b11** when attempting to access either of the two functions. If the password entered is not correct, the unit will go back to showing the gas concentration. (See page 11).

Operation of the keypad in programming



It exits the parameter without saving changes, returns to previous level, or exits programming.



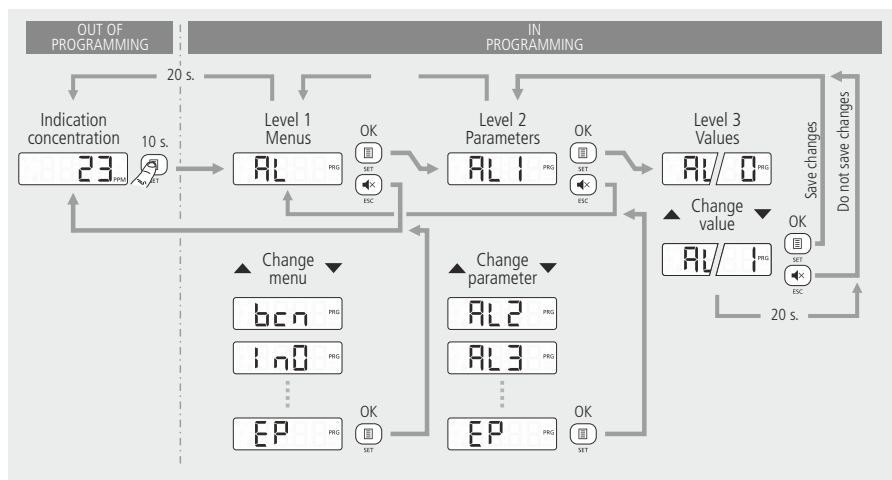
It allows you to scroll through the different levels, or when setting a parameter, to change its value.



It allows you to scroll through the different levels, or when setting a parameter, to change its value.



It accesses the level shown on the display or, when setting a parameter, it accepts the new value.



Parameters

The unit operating parameters are organised in different groups or families according to their function.

The **Def.** column indicates the default parameters set in the factory.

Level 1	Level 2				
ALARM CONFIGURATION					
	Description	Values	Min.	Def.	Max.
RL1	Alarm levels: 0 : According to regulation 1 : Set by user		0	0	1
RL2	Pre-Alarm 0 : Disabled 1 : Enabled		0	1	1
RL3	Pre-Alarm Level *	PPM	b02 or AL4+1	3000	AL6
	AKO-575744 Other models			500	
RL4	Pre-Alarm Differential	PPM	0	100	200
RL5	Pre-Alarm Delay (0 : Disabled)	Min.	0	0	15
RL6	Alarm Level *	PPM	AL3	4000	5000
	AKO-575744 Other models			1000	2000
RL7	Alarm Differential	PPM	10	100	200
RL8	Alarm Delay (0 : Disabled)	Min.	0	0	15
EP	Exit to level 1				
BASIC CONFIGURATION					
	Description	Values	Min.	Def.	Max.
bcn	Type of gas to be measured (Reading only)		-	-	-
gc2	Gas to be measured with the Universal sensor (Only if Gc1=brd1) ALL 134A 404A 407A 410A 125 448A 449A 407F			**	
b01	Display 0 : Measurement in PPM; 1 : Type of gas to be measured		0	0	1
b02	Minimum value to be shown on the display (Lower values are shown as 0) Does not affect the values shown by communication (AKONet or CAMM module)	PPM	0	75	250
b03	Function of the mute key (Applicable to Alarm and Pre-Alarm) 0 : Disabled 1 : Deactivate acoustic alarm 2 : Deactivate relay 3 : Deactivate both		0	1	3
b04	Acoustic alarm 0 : Disabled; 1 : Enabled		0	**	1
b10	Access code (password) function 0 : Disabled; 1 : Block access to parameters 2 : Block keypad		0	0	2
b11	Access code (password)		0	0	99
b20	MODBUS address		1	***	247
b21	MODBUS speed 0 : 9600 bps 1 : 19200 bps 2 : 38400 bps 3 : 57600 bps		0	0	3
EP	Exit to level 1				

* In order to modify these levels, parameter **AL1** should be configured to 1.

** According to the setup wizard, see page 9.

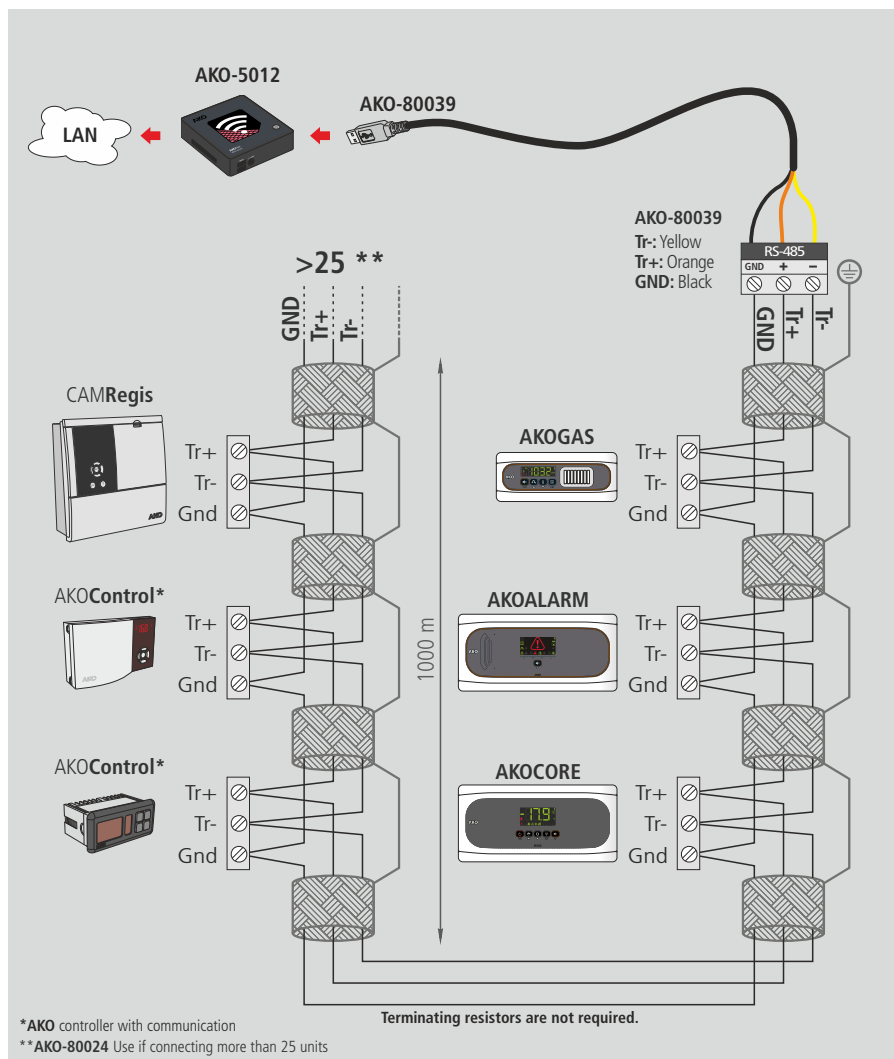
*** The MODBUS address will be shown on the transmitter label by default.

** According to the setup wizard, see page 9.

7.- Connectivity

The transmitters are equipped with a port for connection of RS485 (MODBUS) data, which allows it to remotely manage these using an **AKO-5012** server.

The MODBUS address is set at the factory and is indicated on the rating plate located on the left side of the alarm. This address must be different for each unit within the same network. The address can be changed using parameter **b20**. Once modified, the old address indicated on the plate will not be valid.

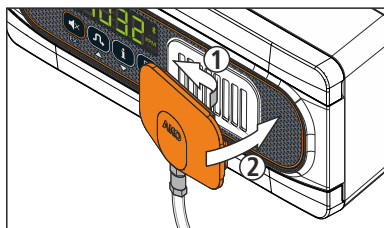


8.- Maintenance

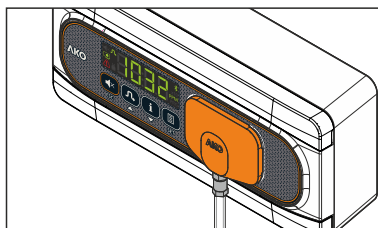
- Clean the surface of the unit with a soft cloth, water and soap.
- Do not use abrasive detergents, petrol, alcohol or solvents, as this might damage the sensor.

9.- Installation of AKO-58110 calibration kit

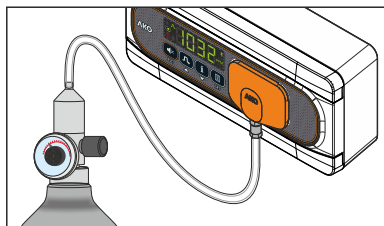
The **AKO-58110** calibration kit enables the testing, verification of accuracy, reset to zero and calibration of the transmitter. These tasks will be explained in the following pages.



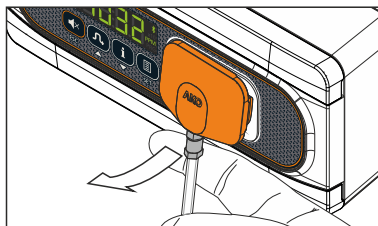
Install the kit, attaching it to the transmitter window as shown in the image.



Press hard until it fits together perfectly.



Connect the regulator of the gas pump to the free end of the transparent tube.



To extract it, pull out from the lower end.

10.- Operation test (Bump Test)

Materials required: **AKO-58110** calibration kit
Gas cylinder*



EN-378 and **F-GAS** international standards require verification of the correct operation of the transmitter at least once per year. Please check what current local regulations specify for such cases.

Always ensure that you comply with current local regulations.

- Before starting the verification procedure, check the Pre-Alarm configuration (**RL 2**). This should be enabled in order to check it has been activated. It is advisable to disable the Pre-Alarm delay (**RL 5**) and Alarm delay (**RL 8**) to speed up the verification process.
- Install the **AKO-58110** calibration kit following the instructions on page 18.
- Open the shut-off valve of the gas cylinder and wait.
- After a few moments, the transmitter concentration reading will begin to rise until it reaches the Pre-Alarm and then Alarm level.
- Check that both the Pre-Alarm and the Alarm signal correctly and that the corresponding relays are activated.
- Close the shut-off valve of the gas cylinder, disconnect the cylinder and remove the calibration kit from the transmitter.



The transmitter may take a few moments to go back to showing the concentration values from before the verification procedure.

Once the verification procedure is complete, remember to readjust the Pre-Alarm (**RL 2**) and delay (**RL 5** and **RL 8**) parameters to the values prior to the beginning of the verification procedure.

*Use a cylinder with a type of gas that is suitable to the sensitivity of the transmitter to be calibrated. When calibrating the **AKO-575400** universal gas transmitter, use a R134a gas cylinder.

11.- Verification of accuracy

Materials required: **AKO-58110** calibration kit
Calibrated gas cylinder*



AKO recommends verifying the accuracy of the transmitter at least once per year. Please check what current local regulations specify for such cases.

Always ensure that you comply with current local regulations.

- Install the **AKO-58110** calibration kit following the instructions on page 18.
- Open the shut-off valve of the gas cylinder and wait.
- After a few moments, the transmitter concentration reading will begin to rise. Wait for the reading to stabilise.
- Compare the reading displayed with the calibrated value of the gas cylinder. If the accuracy is sufficient for the intended application, it is not necessary to carry out a calibration. If the opposite is true, calibrate the transmitter following the instructions set out on page 22.
- Close the shut-off valve of the gas cylinder, disconnect the cylinder and remove the calibration kit from the transmitter.




The transmitter may take a few moments to go back to showing the concentration values from before the verification procedure.

*Use a cylinder with a type of gas that is suitable to the sensitivity of the transmitter to be calibrated. When calibrating the **AKO-575400** universal gas transmitter, use a R134a gas cylinder.


12.- Reset to zero

OPTION A: CLEAN AIR (Not valid for AKO-575744)

- Before beginning the reset to zero procedure, ensure that the area of the premises is **free of freon gas** and any other substances that could affect the transmitter, and that the transmitter **has been operating for at least 20 minutes**.
- Enter the programming menu by pressing the **SET** key for 10 seconds and access parameter **! 00** (See page 14). The unit will request a confirmation code (**cod**). Use keys **▼** and **▲** to enter code 63 and press **SET**.
- Use keys **▼** and **▲** to select option 1 and press **SET**. This will start the process.
- During the process, the display will alternate between showing the gas concentration and the **CARL** message and the illuminated  symbol. This process will last for between 30 seconds and 5 minutes. On completion, if the reset to zero process has been successful, the display will show "**End**" and emit a long beep.

OPTION B: WITH NITROGEN GAS

Materials required: **AKO-58110** calibration kit
Nitrogen gas cylinder

- After initiating the reset to zero process, ensure that the transmitter **has been operating for at least 20 minutes**.
- Install the **AKO-58110** calibration kit following the instructions on page 18.
- Enter the programming menu by pressing the **SET** key for 10 seconds and access parameter **! 00** (See page 14). The unit will request a confirmation code (**cod**). Use keys **▼** and **▲** to enter code 63 and press **SET**.
- Use keys **▼** and **▲** to select option 1 and press **SET**. This will start the process.
- Open the shut-off valve of the gas cylinder and wait.
- During the process, the display will alternate between showing the gas concentration and the **CARL** message and the  symbol illuminated. This process will last for between 30 seconds and 5 minutes. On completion, if the reset to zero process has been successful, the display will show "**End**" and emit a long beep.
- Close the shut-off valve of the nitrogen gas cylinder, disconnect the cylinder and remove the calibration kit from the transmitter.



If any problems have been detected during the reset to zero process, the transmitter will emit three short beeps and display one of the following error codes:


CODE	ERROR
EC	A reading of greater than 300 PPM has been detected during the process.
Et	The temperature of the sensor has experienced a variation of greater than 5 °C.
Eto	The maximum time period (5 min) has been exceeded and the reading has not stabilised.

13.- Calibration of transmitter

Materials required: **AKO-58110** calibration kit
2000 PPM calibrated gas cylinder* (5000 PPM for AKO-575744)



Check whether current local regulations require a specific calibration frequency. **Always ensure that you comply with current local regulations.**

- After initiating the calibration process, ensure that the transmitter **has been operating for at least 20 minutes**.
- Reset the transmitter to zero following the instructions on page 21.
- Install the **AKO-58110** calibration kit following the instructions on page 18.
- Press the **SET** key for 10 seconds to enter the programming menu.
- When calibrating an **AKO-575400** universal transmitter, configure parameter **LC2** to **RL1**.
- Access parameter **! 0 !**. The unit will request a confirmation code (**Code**). Use keys **▼** and **▲** to enter code 63 and press **SET**.
- Use keys **▼** and **▲** to select option 1 and press **SET**. This will start the process.
- Open the shut-off valve of the gas cylinder and wait.
- During the process, the display will alternate between showing the gas concentration and the **CR1** message and the illuminated  symbol. This process will last for up to 15 minutes. On completion, if the calibration process has been successful, the display will show "**End**" and emit a long beep.
- Close the shut-off valve of the nitrogen gas cylinder, disconnect the cylinder and remove the calibration kit from the transmitter.



If any problems have been detected during the calibration process, the transmitter will emit three short beeps and show one of the following error codes:

CODE	ERROR
Et	The temperature of the sensor has experienced a variation of greater than 5 °C.
Eto	The maximum time period (15 min) has been exceeded and the reading has not stabilised.



The transmitter may take a few moments to go back to showing the concentration values from before the calibration procedure.

AKO-575400 only: Once the verification procedure has been completed, remember to adjust parameter **LC2** to the value prior to the start of the calibration procedure.



The maintenance mode automatically activates for 5 minutes to prevent activation of alarms after calibration has finished.

In this case, the maintenance mode cannot be manually deactivated.

*Use a cylinder with a type of gas that is suitable to the sensitivity of the transmitter to be calibrated. When calibrating the **AKO-575400** universal gas transmitter, use a R134a gas cylinder.

14.- Technical specifications

Power supply	12 - 30 Vdc
Consumption Typical	75 mA
Maximum	100 mA
Pre-Alarm/Alarm relay	SPDT 30 Vdc 2 A, 30 Vac 2 A $\cos \varphi=1$
Working ambient temperature	-30 °C to 40 °C
Storage ambient temperature	-30 °C to 60 °C
Range of maximum moisture permitted	0 - 95 % HR (without condensation)
Protection degree	IP 68
Type of sensor	NDIR (Non-Dispersive Infrared Technology)
Display range AKO-575744	0 - 5000 x1 ppm
Other models	0 - 2000 x1 ppm
Estimated working life	7 years
Dimensions	202 mm (W) x 82 (H) x 55.5 mm (D)
Sensor specifications:	

		AKO-57522 (R-22)	AKO-575134A (R-134a)	AKO-575404A (R-404a)	AKO-575410A (R-410a)	AKO-575507A (R-507A)	AKO-575400 (Universal)	AKO-575744 (CO ₂)
Precision -30 °C to -20 °C		7%	8%	7%	8%	8%		7%
Precision -20 °C to 45 °C		4%	5%	3%	5%	4%	See table 2	3%
Precision 45 °C to 50 °C		7%	8%	7%	8%	8%		7%
Level of concentration detectable (PPM)	Minimum	20	20	20	40	10	20	20
	Maximum	2000						5000
Alarm levels (PPM)*	Less	500						3000
	Greater	1000						4000
Alarm response time (seconds)**		60						
Full scale response time (seconds)		180						
Recovery time (seconds)		300						
Working life (years)		7						
Recommended verification frequency (years)***		1						

The precision values indicated are valid if the transmitter is reset to zero once installed in its definitive location and with the planned working temperature.

Table 2: Accuracy of AKO-575400 transmitter

According to the configuration of parameter $\zeta c2$									
	ALL	R-134a	R-404A	R-407A	R-410A	R-125	R-448A	R-449A	R-407F
Precision -30 °C to -20 °C	32%	6%	10%	8%	10%	10%	12%	12%	12%
Precision -20 °C to 45 °C	25%	4%	7%	5%	7%	7%	10%	10%	10%
Precision 45 °C to 50 °C	32%	6%	10%	8%	10%	10%	12%	12%	12%

* Alarm levels are customisable. The values are shown by default and are acceptable for complying with all local and international regulations covering the safety of individuals. These values can be excessive for detecting small leaks.

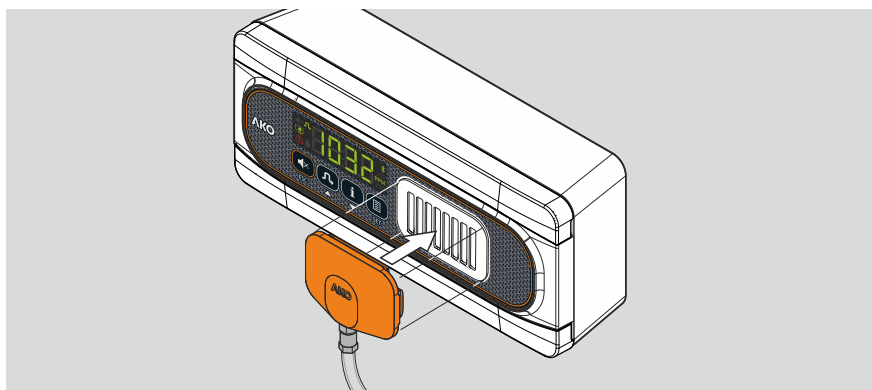
** The response time was indicated for an alarm level at 1000 PPM. The time depends on the alarm value set by the user.

*** It is necessary to use a calibrated gas when carrying out the verification procedure.

15.- Accessories

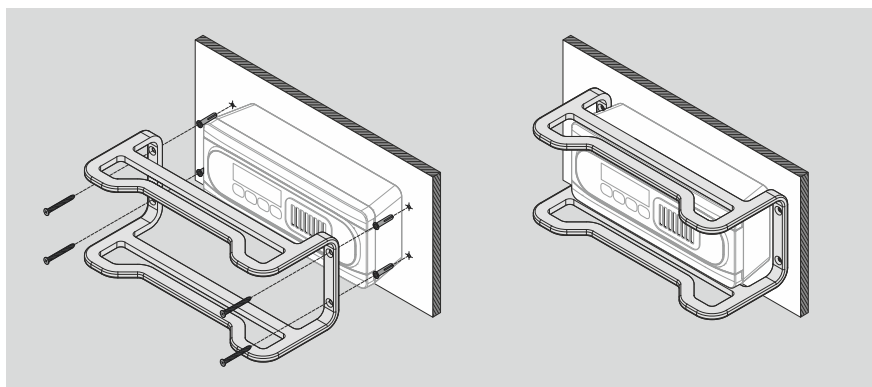
Calibration tool for AKO-58110 transmitters and detectors

This enables testing (Bump Test), verification of accuracy, reset to zero and field calibration of **AKO-575xxx** gas transmitters.



AKO-58120 protector

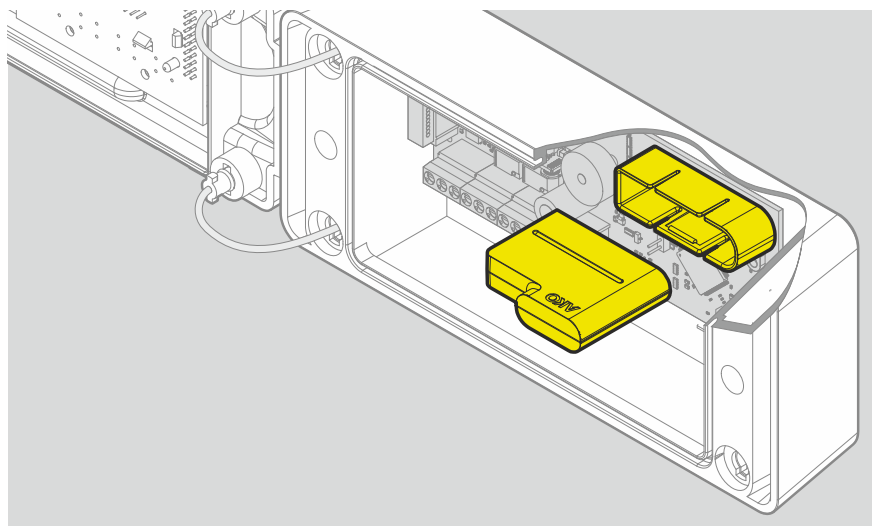
Protects the **AKO-575xxx** gas transmitter against possible knocks.

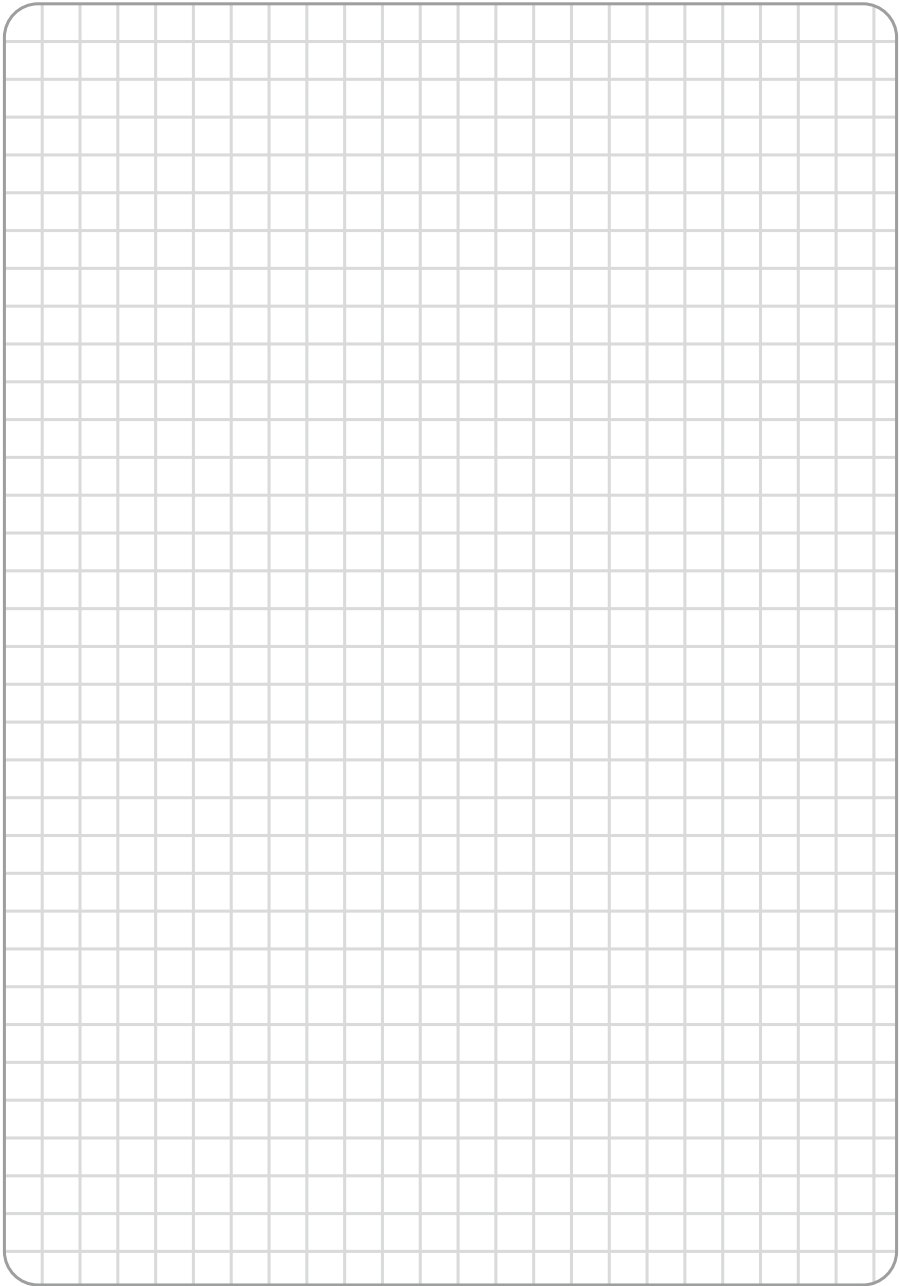


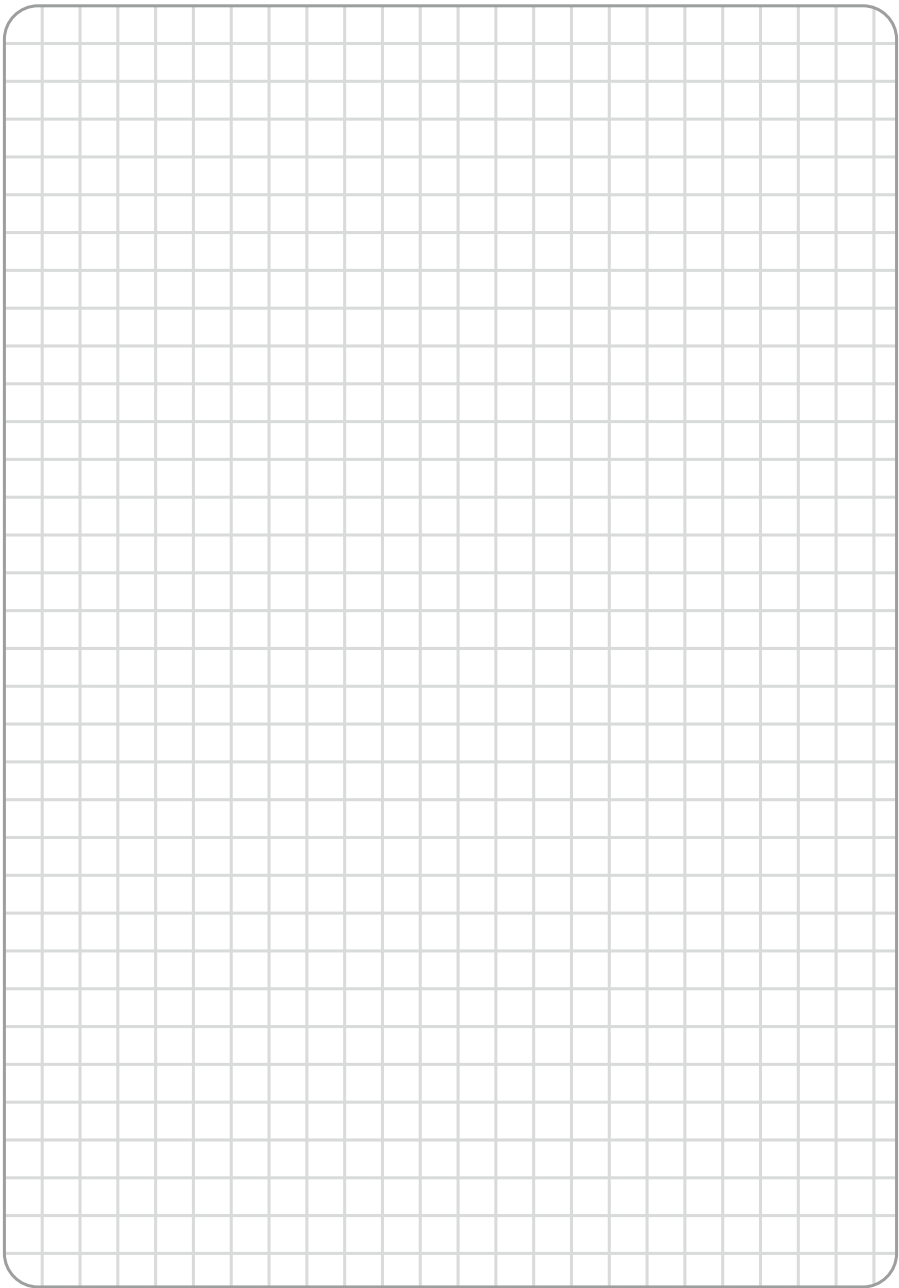
AKO-58500 CAMM Module

Together with the application for mobile devices, this module provides the unit with multiple functionalities:

- Data logging
- Logging of configuration changes
- Remote configuration
- Clock functions in real time
- Activity summaries
- Logging of events and alerts
- Remote control of functions







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355750002 REV.02 2018