AKO

CE Gas transmitter with NBIoT communication
Quick guide

AKO-575xxxN / AKO-575xxxV

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Warning

⚠️ - Transmitters / 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 transmitters / detectors are 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 no alarm will be activated. If perimeter supervision is required, several sensors should be installed around that area.

- Avoid installing the device on metal walls or near devices that may produce radio emissions.
- This device must be installed in a location where a minimum distance of 20 cm to the human body can be guaranteed, in order to ensure compliance with standards on human exposure to electromagnetic fields.

Working conditions:
- Avoid handling refrigerant gases near the sensor. If this is unavoidable, use Set Hold or Maintenance mode. 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
- 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.

DIG. IN

DI1 Gnd DI2

(A)

Mute remoto   Set Hold remoto

(A)
(B)
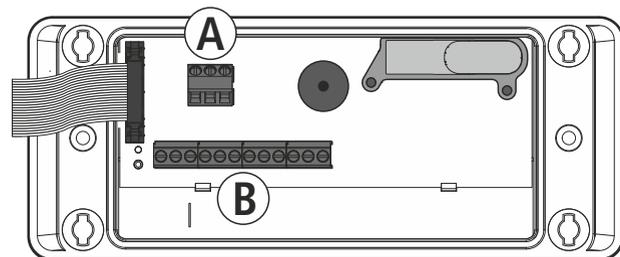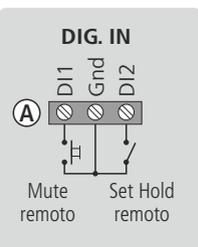
⚡ Always disconnect the power supply to do the wiring.
The wiring between the transmitter and the station must **NEVER** be installed in a conduit together with power, control or power supply cables.
Cables for wiring the relay contact should have an adequate section depending on the unit to be connected.
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.**
If connecting to a MODBUS network the double connection strips included must be used (see box)

int = 1: Connection to alarm station

RS485   Pre-Alarm   Alarm

Tr+ Tr- Gnd | NC C NO | NC C NO | 15V S Gnd

(B)

Gas Pre-Alarm   Gas Alarm

Alarm station

Input x

15V In Gnd

int = 2: Independent operation

RS485   Pre-Alarm   Alarm

Tr+ Tr- Gnd | NC C NO | NC C NO | 15V S Gnd

(B)

Gas Pre-Alarm   Gas Alarm

12 - 30 Vdc

Detail of MODBUS connection
(Wire ferrules included)

Tr+ Tr- Gnd

Descripción

Display   Gas sensor

Keyboard

⚠️ **Fixed:** Gas pre-alarm activated.
Flashing: Gas alarm activated.

Fixed: Set Hold mode activated
Flashing: Maintenance mode activated

🛢️ The display shows the type of gas detected.

▭ **Constant:** NBIoT module in operation
Flashing: Malfunction in NBIoT module

((•)) **Constant:** Connected to the NBIoT network (Narrow band)
Switched off: **NOT** connected to the NBIoT network or expired license.

🔇✕ Gas alarm on mute

PRG Unit in programming mode.

PPM The display shows the current gas concentration in ppm (parts per million).

x10 The value displayed should be multiplied by 10.

🔇✕ 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.
Pressing for 6 seconds activates or deactivates maintenance mode.
In the programming menu it allows scrolling around the different levels, or during the setting of a parameter, changing its value.

ℹ️ 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.

▤ **SET** Pressing for 3 seconds accesses the configuration of alarm and pre-alarm levels.
Pressing it for 6 seconds accesses the advanced programming menu.
In the programming menu, it accesses the level shown on the display or, during the setting of a parameter, accepts the new value.

🔇✕ **ESC** + ▤ **SET** Forces data transfer to the cloud via NBIoT connectivity.

Operation

Without alarms

The display shows the current gas concentration in ppm.
Parameter **b02** allows you to fix a value below which the display will always show zero.
The transmitter regularly sends to the cloud (akonet.cloud) the gas concentration data and other operation information at specific intervals based on the akonet.cloud parameter "continual log interval".
Any change in the configuration of the transmitter or its operation (mode changes, errors, etc.) are sent to the cloud instantly.

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 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.

Activations and deactivations of pre-alarms and alarms are sent to the cloud instantly.
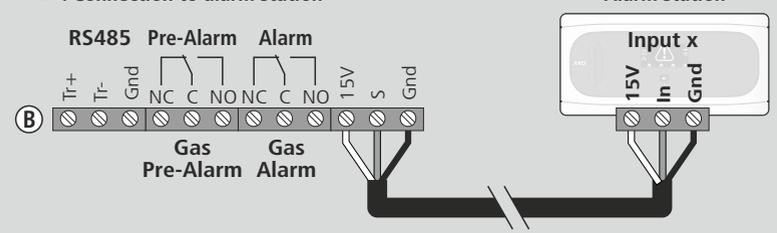
Simplified declaration of conformity

AKO Electromecánica S.A.L. hereby declares that the radioelectric device types **AKO-575xxxx** (Gas transmitter with NBIoT communication) conform to the provisions set forth by Directive 2014/53/EU.
The full text of the EU conformity declaration is available at the following internet address:
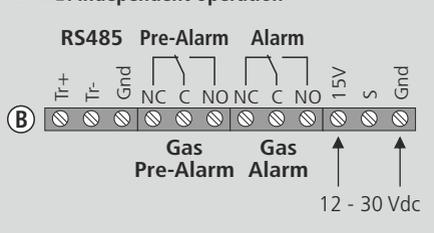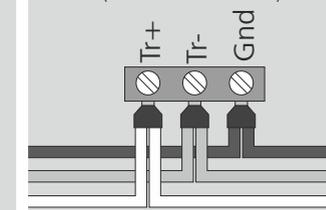http://help.ako.com/assets/uploads/DUEC575xxxx.pdf

Setup wizard

1-.Connect the power supply. The display will show the message Inl flashing with 0.

2-.Use keys ▲ and ▼ to select one of the options depending on the type of installation and press **SET** to confirm:
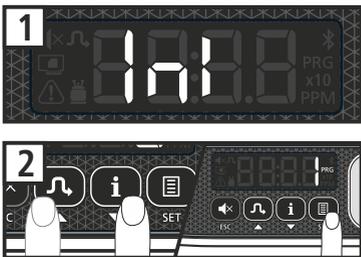
    Inl=0: Demo mode*
    Inl=1: Connection to alarm station
    Inl=2: Independent operation

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

AKO-575400N only

3-.The display will show the message *Gc2*. Use keys ▲ and ▼ to select the type of gas to be measured (ALL, 125, 134A, 404A, 407A, 407F, 410A, 448A, 449A, 513A, 452A, 32, 23 or 455A), 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 configuration 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 (*Gc2*, *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. For further information, refer to the user manual available on **www.ako.com**

* 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 enables you to postpone configuration of the transmitter.

Signing up to akonet.cloud

In order for the transmitter to be able to send operating data to akonet.cloud, it must be registered. To do this, go to https://akonet.cloud (requires registration), click on "Add new device" ⊕ and continue with one of these two methods:

    A.-Enter the serial number (S/N) and validation code / IMEI that appear on the tag and press "Search".
    B.-Capture the **QR** code that appears on the tag using the 🔲 option (requires having a camera on your PC, tablet or mobile phone).
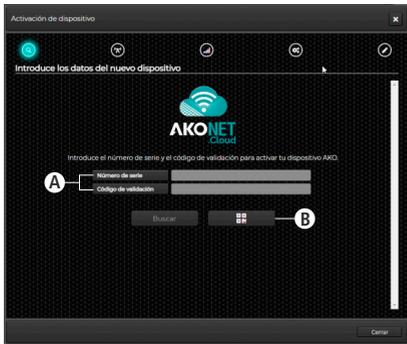
These data are found on the tag on the right hand side of the transmitter.
More information can be found in the akonet.cloud user guide at:
"http://help.ako.com/manuales/akonet-cloud"
To access akonet.cloud, enter this address in your browser (the use of Google Chrome is recommended): https://akonet.cloud.

> ⚠ Before activating the device, make sure that there is enough reception at the installation location. **Activated devices may not be returned.**

Forcing transmission

When the steps of the configuration wizard and the registration process are completed in akonet.cloud, you must force a first transmission to verify the level of reception:

- Press and hold the ESC and SET keys for 3 seconds.
- After a moment, the display shows the quality of the NBIoT signal received:

Low quality	Intermediate quality	High quality	Communication error

> ⚠ **The transmitter does not start transmitting data to akonet.cloud until the first transmission is forced.**

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. In order to access the programming menu, hold the **SET** key for 6 seconds, or until ''*PrG*'' appears on the display. To modify the Pre-Alarm and Alarm levels, press **SET** for 3 seconds or until "*AI3*" appears on the display (Only if AL1=1).

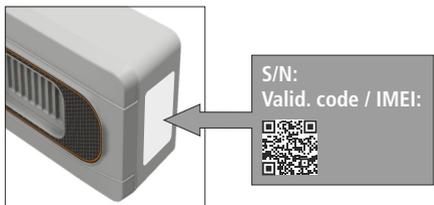|		
▲ ▼ This allows you to scroll through the different levels, or when setting a parameter, to change its value.	**SET** This accesses the level shown on the display or, when setting a parameter, it accepts the new value.	**ESC** This exits the parameter without saving changes, returns to previous level, or exits programming.

ALARM CONFIGURATION

Level 1	Level 2	Description		Values	Min.	Def.	Max.
AL	*AL1*	Alarm levels:	**0:** According to regulation **1:** Set by user	0	1	1	
	AL2	Pre-Alarm **0:** Disabled; **1:** Enabled		0	1	1	
	AL3	Pre-Alarm Level (1)	AKO-575744	PPM	b02 / AL4+1	3000 500	AL6
			Other models				
	AL4	Pre-Alarm Differential		PPM	10	100	200
	AL5	Pre-Alarm Delay (**0:** Disabled)		Min.	0	0	15
	AL6	Alarm Level (1)	AKO-575744	PPM	AL3	4000 1000	5000 2000
			Other models				
	AL7	Alarm Differential		PPM	10	100	200
	AL8	Alarm Delay (**0:** Disabled)		Min.	0	0	15
	EP	Output to level 1					

BASIC CONFIGURATION

Level 1	Level 2	Description	Values	Min.	Def.	Max.
bcn	*Gc1*	Type of gas to be measured (Reading only)	-	-	-	-
	Gc2	Gas to be measured with the Universal sensor (Only if Gc1=brd1) **ALL; 125; 134A; 404A; 407A; 407F; 410A; 448A; 449A; 513A; 452A; 32; 23; 455A** (2)			(3)	
	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	0	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	(3)	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	(4)	247	
	b21	MODBUS speed **0:** 9600 bps **1:** 19200 bps **2:** 38400 bps **3:** 57600 bps	0	0	3	
	EP	Output to level 1				

INPUT AND OUTPUT CONFIGURATION

Level 1	Level 2	Description	Values	Min.	Def.	Max.
inO	*i00*	Reset to zero of the sensor (Calibration only) **0:** Disabled **1:** Reset to zero activated	0	-	1	
	i01	Setting the sensor (Calibration only) **0:** Disabled **1:** Setting activated	0	-	1	
	i11	Polarity of digital input 1 (Remote Mute) **0:** Activates on opening contact; **1:** Activates on closing contact	0	0	1	
	i21	Polarity of digital input 2 (Remote Set Hold) **0:** Activates on opening contact; **1:** Activates on closing contact	0	0	1	
	o00	Type of output 4/20 mA (Reading only) **0:** Calibrated for alarm station; **1:** Linear	0	(3)	1	
	EP	Output to level 1				

INFORMATION (Reading only)

Level 1	Level 2	Description		Values	Min.	Def.	Max.
tid	*Ini*	Operation modes (Reading only)	**0:** Demo mode; **1:** Connection to alarm station **2:** Independent operation	0	(3)	2	
	PU	Programme version		-	-	-	
	Pr	Programme revision		-	-	-	
	bU	Bootloader version		-	-	-	
	br	Bootloader revision		-	-	-	
	PAr	Parameter map revision		-	-	-	
	PCr	CRC value of the programme		-	-	-	
	bCr	CRC value of the bootloader		-	-	-	
	EP	Output to level 1					

MESSAGES

Inl	Setup wizard initiated
PAL	Gas pre-alarm activated. Flashing together with the gas concentration.
AL	Gas alarm activated. Flashing together with the gas concentration.
Scn	Initialisation process of the gas sensor. This may last for up to 3 minutes.
ES	Error or malfunction of the sensor. The Pre-Alarm relay is activated, the transmitter emits 3 alert tones every 2 minutes and the ⚠ icon flashes. Deactivate the power supply and activate it again. If after a few seconds the error persists, please contact your technical support centre.
tSh	The sensor has reached its maximum working temperature.
tSL	The sensor has reached its minimum working temperature.

(**1**) In order to modify these levels, parameter **AL1** should be configured to 1.
(**2**) R-450A, R-442A, R-454A, R-454C, R-1234YF, R-1234ZE are detected using **GC2=ALL**.
(**3**) According to the setup wizard.
(**4**) The MODBUS address will be shown on the transmitter label by default.

Technical specifications

Power supply	12 - 30 Vdc
Consumption Typical	75 mA
Maximum	125 mA
Pre-Alarm/Alarm relay	SPDT 30 Vdc, 2 A, cos φ =1
Working ambient temperature	-30 ℃ to 50 ℃
Storage ambient temperature	-30 ℃ to 60 ℃
Range of maximum moisture permitted	0 - 95 % HR (without condensation)
Protection degree	IP 68
Type of sensor	NDIR (Non-Dispersive Infrared Technology)
Display range	0 - 2000 x1 ppm
Estimated working life	7 years
Dimensions	202 mm (W) x 82 (H) x 55.5 mm (D)
Band	NBIoT (Narrow band, B20 for Europe)
	Tx:832 - 862 MHz;Rx:791 - 821 Mhz
Maximum transmission power	23.5 dBm conducted
Antenna	Internal