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.

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.

Description

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

Gas sensor
- Gas sensor with keypads and display.
- Gas transmitter keypad.
- Display shows the current gas concentration in ppm (parts per million).
- The value displayed should be multiplied by 10.
- 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.
- Pressing once (< 1 second) will show the type of gas detected, the date and time in sequential order.

Keypad
- Gas sensor with keypads and display.
- Display shows the current gas concentration in ppm (parts per million).
- The value displayed should be multiplied by 10.
- 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.
- Pressing once (< 1 second) will show the type of gas detected, the date and time in sequential order.

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)
**Setup wizard**

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

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

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

AKO-575400 only

- The display will show the message GC2. Use keys ▲ and ▼ to select the type of gas to be measured (ALL, 125, 134A, 404A, 407F, 410A, 448A, 454A, 513A, 452A, 32, 23 or 455A), and press SET to confirm.

All models

The sensor has reached its maximum working temperature.

Max. Def. Min.

Gas pre-alarm activated. Flashing together with the gas concentration.

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

The sensor has reached its minimum working temperature.

Max. Def. Min.

Comply with current local regulations. In order to modify these values, parameter InI

- 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, bDo and bOd) and the other parameters will remain the same.
  - 1: All parameters return to their factory setting except those which have been modified by the wizard.

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 InI. It does not activate Alarms or Pre-Alarms. This mode enables you to postpone configuration of the transmitter.

**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.

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.

**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 “Pr” appears on the display. To modify the Pre-Alarm and Alarm levels, press SET for 3 seconds or until “AL3” appears on the display (only if AL1=1).

**ALARM CONFIGURATION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Values</th>
<th>Min.</th>
<th>Def.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Alarm 0</td>
<td>Disabled; Enabled</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pre-Alarm Level</td>
<td>Other models</td>
<td>PPM</td>
<td>b02 / 3000</td>
<td>3000</td>
</tr>
<tr>
<td>Pre-Alarm Differential</td>
<td>PPM</td>
<td>10</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Alarm Delay</td>
<td>Disabled</td>
<td>Min.</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Alarm Level</td>
<td>Other models</td>
<td>PPM</td>
<td>AL3/4000</td>
<td>5000</td>
</tr>
<tr>
<td>Alarm Differential</td>
<td>PPM</td>
<td>10</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

**INPUT AND OUTPUT CONFIGURATION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Values</th>
<th>Min.</th>
<th>Def.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation modes (Reading only)</td>
<td>0: Demo mode; 1: Independent operation</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Programme version</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Programme revision</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bootloader version</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bootloader revision</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Parameter map revision</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CRC value of the programme</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CRC value of the bootloader</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Output to level 1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**BASIC CONFIGURATION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Values</th>
<th>Min.</th>
<th>Def.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of gas to be measured</td>
<td>Reading only</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minimum value to be shown on the display</td>
<td>Lower values are shown as 0</td>
<td>-</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Function of the mute key</td>
<td>0: Disabled; 1: Deactivate acoustic alarm; 2: Deactivate relay; 3: Deactivate both</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Access code (password)</td>
<td>1: Block access to parameters</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>MODBUS address</td>
<td>1</td>
<td>(4)</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>MODBUS speed</td>
<td>0: 9600 bps</td>
<td>1: 38400 bps</td>
<td>1: 19200 bps</td>
<td>1: 57600 bps</td>
</tr>
<tr>
<td>Operation to level 1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**MESSAGES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Values</th>
<th>Min.</th>
<th>Def.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup wizard initiated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Gas pre-alarm activated. Flashing together with the gas concentration.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Gas alarm activated. Flashing together with the gas concentration.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Initialisation process of the gas sensor. This may last for up to 3 minutes.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Error or malfunction of the sensor. The Pre-Alarm relay is activated, the transmitter emits 3 alert tones every 2 minutes and the 4-con flash lights. Deactivate the power supply and activate it again. If after a few seconds the error persists, please contact your technical support centre.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>The sensor has reached its maximum working temperature.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>The sensor has reached its minimum working temperature.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**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 °C to 50 °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: 0 - 2000 x 1 ppm
- Estimated working life: 7 years
- Dimensions: 202 mm (W) x 82 (H) x 55.5 mm (D)