AKONET.cloud

Configuration of AKOGAS devices
AKO-575xxx / AKO-575xxxN / AKO-575xxxV
AKOGAS

Widget

The box that summarises the information on each device is referred to as the "Widget".

The device sends the stored data to Akonet.cloud, as well as the alarms and alerts detected according to the configured transmission interval. When received, the widget for the corresponding device flashes for 1 minute indicating correct reception. During this time, the data shown correspond to the real-time measurement. After 1 minute, the operation averages are displayed again.

The striped area shows the full measurement range of the device, while the solid area indicates the range of actual work (maximum and minimum value reached) during the selected time period. If there is an alarm, the outline flashes red; if the alarm has been confirmed (mute) the outline is turned off.

Device status: **Active, Inactive, Active alarm**

The name assigned to the device

A flashing red halo means that the alarm(s) has/have not been confirmed

By passing the mouse over the indicator, it displays the date and time of the last synchronisation. If a NBloT connection is available, the signal strength is also displayed and the colour indicates the signal quality:

- **Green**: Good
- **Yellow**: Satisfactory
- **Red**: Low

Select the time period for the calculation of the mean levels of the indicators: 24 hours, 7 days, 30 days or last val. (last value received).

**REMARK:** The concentration value always shows the last registered value

By moving the mouse over the solid area, the maximum and minimum value of the selected time period is displayed.

AKO-575744x (CO₂)

MIN / MAX: Indicates the minimum and maximum concentration recorded in the selected period.

Other models

**IPF (Índice potencial de fugas):** Estimation of the percentage of gas charge that will be lost (in one year) due to the average leakage detected in the selected analysis period**

**TGCY (Time Gas concentration Index):** Indicates the time zone where the possibility of leak detection is greatest, if the leak has a non-constant time pattern.

**T. eq CO₂ (Toneladas equivalentes de CO₂):** Estimation of the amount of tonnes of CO₂ equivalent that will be emitted (in one year) due to the average leakage detected in the selected analysis period. **

**For this the volume parameter must be correctly set.**
Device configuration

The AKO-575xxx / AKO-575xxxN / AKO-575xxxV gas transmitters have a series of parameters to configure their operation according to requirements, these parameters can be modified through AKONET.cloud, by accessing the device details and by clicking on the "Parameters" tab.

There are two types of parameters:

- The parameters associated with akonet.cloud
- Parameters associated with the device

Changes to the parameters associated with AKONET.cloud have immediate effect, while the parameters associated with the device generate a task that runs in the next transmission (variable depending on configuration). Refer to the device manual to force the transmission.

If, upon altering a parameter, there is a pending task, the change is added to that task, otherwise it generates a new task. The list of tasks and their status can be consulted in the backlog section (See AKONET.cloud User’s Guide).

The parameters are organised into 6 groups:

- Narrow Band (nb) (Only AKO-575xxxN / AKO-575xxxV)
- Datalogger (dlG) (Only AKO-575xxxN / AKO-575xxxV)
- Alarm configuration (Al)
- Basic configuration (bcn)
- Inputs and outputs (InO)
- Cloud alarms (c-AL)
Narrow Band (nb) (Only AKO-575xxxN / AKO-575xxxV)

**Initial transmission hour (GMT+0):** Sets the time of day when the first transmission starts. The transmission interval is counted as from this point.

**Datalogger (dlG) (Only AKO-575xxxN / AKO-575xxxV)**

- **Data logger week initial day:** Sets the day of the week on which a new log block is started.
- **Interval of the continuous log:** Sets the frequency interval with which the device records gas concentration data, i.e. how often the device measures and saves the data.
  - 5 minutes: Saves the gas concentration data every 5 minutes
  - 15 minutes: Saves the gas concentration data every 15 minutes.
  - 30 minutes: Saves the gas concentration data every 30 minutes
  - 1 hour: Saves the gas concentration data every 60 minutes

**Alarm configuration (AL)**

- **Alarm configuration (AL):** If an alarm is activated, it is transmitted immediately to akonet.cloud

**Pre-Alarm:** Allows for Pre-alarm detection to be enabled and disabled. Before using this option, ensure that regulations allow for two alarm levels.
- **Pre-Alarm level:** Sets the level of gas concentration at which the Pre-Alarm is activated.
- **Pre-Alarm Differential:** Sets the Pre-Alarm differential (hysteresis).
- **Pre-Alarm Delay:** Allows a delay to be defined between the detection of the Pre-Alarm and its activation.
- **Severity for Pre-Alarm:** Sets the severity of the Pre-Alarm
  - Unassigned: Severity unassigned, the Pre-Alarm is displayed in grey.
  - Low: Low severity, the Pre-Alarm is displayed in yellow.
  - Medium: Medium severity, the Pre-Alarm is displayed in orange.
  - High: High severity, the Pre-Alarm is displayed in red.
- **Alarm levels setup:** Allows defining whether Pre-Alarm and Alarm levels are defined by the user or if values are set according to regulations.
  - According to regulations: The Pre-Alarm and Alarm levels are set according to regulations. The values vary depending on the type of transmitter.
  - According to the user: The user sets the Pre-Alarm and Alarm levels according to requirements. The user is responsible for complying with the regulations in force.
- **Alarm Level:** Sets the level of gas concentration at which the Alarm is activated.
- **Alarm Differential:** Sets the Pre-Alarm differential (hysteresis).
- **Alarm Delay:** Allows a delay to be defined between the detection of the Pre-Alarm and its activation.
- **Severity for Alarm:** Sets the severity of the Alarm
  - Unassigned: Severity unassigned, the Alarm is displayed in grey.
  - Low: Low severity, the Alarm is displayed in yellow.
  - Medium: Medium severity, the Alarm is displayed in orange.
  - High: High severity, the Alarm is displayed in red.
- **Early detection warning (EDW):** Allows the early leak detection warning to be enabled and disabled.
- **Early detection warning (EDW) level:** Sets the level of gas concentration at which the early leak detection warning is activated.
- **Early detection warning (EDW) differential:** Sets the early leak detection warning differential (hysteresis).
- **Early detection warning (EDW) delay:** Allows a delay to be defined between the early leak detection warning and its activation.
- **Severity for EDW:** Sets the severity of the early leak detection warning
  - Unassigned: Severity unassigned, the warning is displayed in grey.
  - Low: Low severity, the warning is displayed in yellow.
  - Medium: Medium severity, the warning is displayed in orange.
  - High: High severity, the warning is displayed in red.
- **Rapid variation of concentration**: Sets the increase in ppm necessary to activate an early leak warning, provided that this increase occurs within the time range defined in the “Rapid variation of concentration delay” parameter and the concentration value has exceeded that established in the “Level of early detection warning” parameter.
- **Delay of rapid variation of concentration **: Sets the time limit of the “Rapid variation of concentration” parameter.

*Not available in CO2 transmitters*
Early leak detection warning example

Parameters:

- Early detection warning (EDW): Enabled
- Level of early detection warning (EDW): 150 ppm
- Early detection warning (EDW) differential: 50 ppm
- Early detection warning (EDW) delay: 3 min
- Severity for EDW: Medium
- Rapid variation of concentration*: 30 ppm
- Delay of rapid variation of concentration: 10 min

At point 1, the concentration increases by 30 ppm in less than 10 minutes, but the warning is not activated as 150 ppm are not exceeded.

At point 2, the concentration increases by 30 ppm in less than 10 minutes and 150 ppm are exceeded, but the warning is not activated because there is a 3 minute delay.

At point 3, the warning is activated, once 3 minutes have elapsed from point 2.

Basic configuration (bcn)

Type of gas to be measured: Informs about the type of gas measured by the sensor (not configurable).

Visualization type: Defines what is shown on the transmitter’s display:
- PPM: Shows the current gas concentration
- GAS: Shows the type of gas measured by the transmitter

Minimum value to be shown: Defines the minimum value that must be detected by the transmitter so as to be shown on the display. Lower values detected are shown as 0 ppm.

Measurement with Broadband sensor: Selects the refrigerant gas measured to be configured (Only in AKO-575400 / AKO-575400N transmitters).

Access code: Defines an access code to access certain functions of the transmitter from its keypad (See “Access with code function”)

Function of access code: Defines the lock with access code function:
- Disabled: The access code function is disabled.
- Access to parameters disabled: The access code is requested when trying to access the parameter configuration.
- Keypad disabled: The access code is requested for any keypad function.

Acoustic alarm: Enables / Disables the transmitter’s acoustic alarm.

Function of mute key: Defines the function of the Mute key:
- Disabled: The mute function is disabled.
- Only acoustic: If there is an alarm, the mute key only silences the acoustic alarm.
- Only relay: If there is an alarm, the mute key only deactivates the alarm relay.
- Acoustic and relay: If there is an alarm, the mute key silences the acoustic alarm and deactivates the alarm relay.

MODBUS address: Defines the transmitter’s MODBUS address.

MODBUS speed: Defines the transmitter’s MODBUS speed.
Inputs and outputs (InO)

**Polarity of digital input 1 (Remote mute):** Defines the polarity of digital input 1 (Remote mute function):
- Normally closed: The function is activated when the contact opens.
- Normally open: The function is activated when the contact closes.

**Polarity of digital input 2 (Set Hold):** Defines the polarity of digital input 2 (Set Hold function):
- Normally closed: The function is activated when the contact opens.
- Normally open: The function is activated when the contact closes.

**Type of 4/20 mA output:** Informs about the type of output configured on the transmitter:
- Tabulated: The output is calibrated to operate with AKOGAS and AKOALARM alarm stations.
- Linear: The output is linear, 4 mA= 0 ppm, 20 mA= Full scale.

Cloud alarms (c-AL)

**Calculate LCI & LPI:** Enables / Disables the calculation of the LCI (leak charge index) and LPI (leak potential index) indices.

**Transmitter location:** Defines the installation location of the transmitter, and the zone volume. If the most suitable option cannot be found, select the option "customised volume" and introduce the value in the "Customised area volume" parameter.

**Volume of the location customized:** Allows for the volume (in m³) of the zone where the transmitter is installed to be customised (See previous parameter).

**Gas charge:** Defines the gas charge of the facility in kg.

**Refrigerant:** Defines the type of refrigerant present in the facility. If the refrigerant used is not on the list, please contact AKO customer service.

**Severity for communication error:** Defines the severity of the communication error:
- Unassigned: Severity unassigned, the communication error is displayed in grey.
- Low: Low severity, the communication error is displayed in yellow.
- Medium: Medium severity, the communication error is displayed in orange.
- High: High severity, the communication error is displayed in red.

**LCI Alarm:** Defines what percentage of leaking gas charge (% of the total per year) activates the LCI alarm.

**LCI hysteresis:** Defines the hysteresis for the LCI alarm.

**Severity of LCI alarm:** Defines the severity of the LCI alarm:
- Unassigned: Severity unassigned, the Pre-Alarm is displayed in grey.
- Low: Low severity, the Pre-Alarm is displayed in yellow.
- Medium: Medium severity, the Pre-Alarm is displayed in orange.
- High: High severity, the Pre-Alarm is displayed in red.

**LPI Alarm:** Defines what annual quantity (kg) of leaked refrigerant gas activates the LPI alarm.

**LPI hysteresis:** Defines the hysteresis for the LPI alarm.

**Severity of LPI alarm:** Defines the severity of the LPI alarm:
- Unassigned: Severity unassigned, the Pre-Alarm is displayed in grey.
- Low: Low severity, the Pre-Alarm is displayed in yellow.
- Medium: Medium severity, the Pre-Alarm is displayed in orange.
- High: High severity, the Pre-Alarm is displayed in red.
Leak potential index (LPI)
Taking into account a detected leak, the LPI it estimates the projection, in kg, of gas charge that would be lost in the period of one year (if no action is taken).

The LPI (Leakage Potential Index) is an indicator calculated on akonet.cloud that, in the event of a leak, enables the estimation of the severity thereof (measured in kg of refrigerant gas per year). This calculation is necessary given that the correlation between the severity or strength of the leak (in kg/year) and the level of gas concentration (as a consequence of the leak) is not linear, and it depends on several factors; mainly on the expansion space of the refrigerant gas (size of the transmitter’s location), use of the expansion space (quality of closures, transit, etc.) and density of the refrigerant gas, among others. For calculation, it is necessary to activate the function in the Cloud Alarms tab and fill out the “Transmitter location”, “refrigerant” and “gas charge” parameters if it is necessary to calculate the LCI as explained below. The LPI estimates the projection of the leak (in kg/year of refrigerant gas) detected in real time by the AKOGAS system. That is, assuming that the leak is continuous during the following year and is not repaired. This value provides an indication as to the significance thereof and enables decisions to be made with regards to its repair: whether it is necessary, its urgency and its economic and operative impact, regardless of the level of concentration observed by the transmitter of the AKOGAS system.

Leakage charge index (LCI)
Taking into account a detected leak, it estimates the projection, as a percentage of the gas charge of the whole facility, that would be lost in the period of one year (if no action is taken).

The LCI (Leakage charge Index) is to measure the % of the facility’s total refrigerant gas charge that represents the calculated LPI, that is, the relative significance of the leak on the refrigeration system. When LCI is 100%, it indicates that as a result of the detected leak all of the refrigerant at the facility will escape in the following year. Alarms can be set based on both indices (LPI and LCI), to generate notifications in the event that the leak detected exceeds a limit value of (kg/year) or of (% of total charge/year), respectively.

Potential leakage index alarm example
Parameters:
- Calculate LCI & LPI: Enabled
- Location of the transmitter: Refrigerated chamber: Small (>10 <50 m³)
- Gas charge: 150 kg
- Refrigerant: R-448A
- LCI Alarm: 20%
- LCI hysteresis: 2%
- Severity of LCI alarm: High

Or alternatively:
- LPI Alarm: 30 kg/year
- LPI hysteresis: 2 kg/year
- Severity of LPI alarm: High

If akonet.cloud (taking into account the configuration of the aforementioned parameters) estimates that, within the period of one year, this leak may exceed 20% (equivalent to 30 kg) of the facility’s total charge, the LCI (or LPI) alarm is activated.
REMARK: Severity of alarms
Assigning different severities to different types of alarms allows classifying them according to their importance in order to subsequently be able to quickly identify them in the timeline graph or in the list of alarms.
Assigning severity (low, medium, high) to an alarm is necessary to define user notification rules.
We reserve the right to supply materials that might vary slightly to those described in our Technical Sheets. Updated information is available on our website.