AKONET.cloud

Device configuration AKOCORE
AKO-1652xx
AKOCORE

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:  Green: Active,  Orange: Inactive,  Red: Active alarm

Indicates the transmitter license type:

- Connected via Narrow Band (NBIoT)
- Connected via AKONet Edge

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 NBiot connection is available, the signal strength is also displayed and the colour indicates the signal quality:

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

Indicates whether there are any active alarms, if blank, there are no alarms.

Confirmed alarms are displayed with a double check in green.

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).

Average temperature logged in the selected period

% of time in set point (or below) in the selected period

CORE: Displays the total value of the Core Index (see page 32)

HACCP (Hazard Analysis and Critical Control Points): Indicates whether there has been any HACCP alarm in the ambient or external probe and displays its temperature value.

COOL: Displays the percentage of time that the device has been generating cooling (COOL relay activated) during the selected period.

DEFROST: Displays the percentage of time that the device has been in defrost during the selected period.
Device configuration

The controllers AKO-16520x / AKO-16523x / AKO-16524x / AKO-16525x has a series of parameters to configure its 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:

- 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 9 groups:

- Regulation and control (rE)
- Defrost (dEF)
- Fan (FAn)
- Alarms (AL)
- Cloud alarms (c-AL)
- Basic configuration (bcn)
- Inputs and outputs (InO)
- HACCP alarm (HCP)
- Information (tid)

* Options available depending on the application chosen in the quick start wizard
Regulation and control (rE)

(5P) Temperature setting (Set Point): When this temperature value is reached, cooling generation stops.

(CE)** SELFDRIVE mode: Activates or deactivates the SELF-DRIVE mode. This mode evaluates the evaporator’s performance, minimising defrosts, managing the fans and controlling the drainage resistance to optimise its operation.

(C0) Probe 1 calibration: Defines the offset of probe 1.

(C1) Probe 1 differential (Hysteresis): Cooling generation starts when the SP + C1 temperature value is reached.

(C2) Set Point top locking: Defines the maximum temperature of the temperature set point (SP).

(C3) Set Point bottom locking: Defines the minimum temperature of the temperature set point (SP).

(C4) Type of delay for the protection of the compressor: Defines the type of delay for the protection of the compressor:

- Minimum time of compressor in OFF: Defines the minimum time the compressor must remain turned off.
- Minimum time of compressor in OFF / ON: Defines the minimum time the compressor must remain turned off and on in each cycle.

(C5) Protection delay time: Defines the time for the type of protection defined in parameter C4.

(C6) COOL relay status with fault in probe 1: Defines the behaviour of the COOL relay in the event of a failure in probe 1:

- OFF
- ON
- Average of last 24 h: Copies the ON and OFF times of the last 24 hours
- Time in ON and OFF according to parameters (C7) and (C8): Fixed ON and OFF times according to parameters C7 and C8.

(C7) Relay time in ON in the event of probe 1 failure: Time that the COOL relay remains ON in case of failure of probe 1.

(C8) Relay time in OFF in the event of probe 1 failure: Time that the COOL relay remains OFF in case of failure of probe 1.

(C9) Maximum duration of the continuous cycle mode: Maximum duration of the continuous cycle function.

(C10) Variation of the SP in continuous cycle mode: Variation of the SP temperature in case of activation of the continuous cycle mode.

(C12) Variation of the Set point (SP) when the change set point function is active: Variation of the SP temperature in case of activation of the set point change mode.

(C19) Maximum start time from Pump Down: Maximum time allowed with the COOL relay active for the low pressure switch to be deactivated, otherwise the COOL relay is deactivated and the message “LP” is displayed.

(C20) Maximum time of pump down: Maximum time allowed with the COOL relay deactivated for the low pressure switch to activate and the compressor to stop, otherwise the message “Pd” is displayed, but the operation does not stop.

(C21) Probe to be displayed: Defines which probe is displayed on the device’s display.

(C22) Stop fans and compressor on opening door: Defines whether the compressor and fans stop when the cold room door is opened.

(C23) Start-up delay for fan/compressor with door open: Timeout for starting fans and compressor if the door remains open.

(C24) Delay time of cold stop (COOL relay) with door open: Time that the door must remain open for the cold production to stop (COOL relay off).

(C25)** S3 probe influence with two temperature probes: Percentage of influence of the S3 probe if I20 is configured as the 2nd cold room temperature probe (Temperature control by means of probe 1 and probe 3).

(C27) Probe 3 calibration: Defines the offset of probe 3.

** Parameter only available in AKO-16524x and AKO-16525x controllers.
Defrost (DEF)

**Defrost frequency (d0):** Time that must elapse between the start of each defrost.

**Maximum defrost duration (d1):** Maximum duration of each defrost.

**Type of message during the defrost (d2):** Defines what is shown on the display during the defrost process:
- Real temperature: Displays the real-time temperature of the cold room.
- Initial defrost temperature: Displays the temperature in the cold room before the start of the defrost and is maintained until the end of the defrost.
- DEF message: Displays “DEF” message.

**Maximum duration of the message (d3):** Maximum duration of the message displayed.

**Final defrost temperature (by probe) (d4):** When this temperature is reached, the defrost is stopped. If it is not reached, it stops for the maximum time (d1).

**Defrost on connecting the unit (d5):** Defines whether or not a defrost is started when the controller is started.

**Delay of the defrost start on connecting the unit (d6):** Delay time from controller start-up to first defrost.

**Type of defrost (d7)**: Displays the type of defrost that is configured in the controller

**Count of time between defrost periods (d8):** Defines the way the time between defrosts is counted (d0):
- Total real time: Real time elapsed
- COOL running time sum: Counts the total time the compressor is running

**Drip time when completing defrost (d9):** The time which must elapse between the end of defrost and the start of cold regulation.

**Defrost strategy in SELFDRIVE node (d30)**: Defines the defrost strategy, a lower value allows less formation of frost in the evaporator, while a higher value acts with lower frequency allowing more frost to accumulate in the evaporator.

As a rule, a more aggressive strategy provides the system with greater efficiency allowing more frost to accumulate.

Adapting the value of this parameter to the type of evaporator used and to the type of defrost configured according to the following table is recommended:

<table>
<thead>
<tr>
<th>Fin spacing of the evaporator in mm</th>
<th>1≤ 3</th>
<th>3.5</th>
<th>4</th>
<th>4.5</th>
<th>5</th>
<th>5.5</th>
<th>6</th>
<th>6.5</th>
<th>7</th>
<th>7.5</th>
<th>8</th>
<th>8.5</th>
<th>9</th>
<th>9.5</th>
<th>10</th>
<th>10.5</th>
<th>≥ 11</th>
</tr>
</thead>
</table>
| DEFROST TYPE                        | Electric | Air | Hot Gas
| Total real time                     | 0 | 1 | 2 | 1 | 3 | 4 | 0 | 1 | 2 |
| COOL running time sum               | 0 | 1 | 2 | 1 | 3 | 4 | 0 | 1 | 2 |
| Maximum duration of the message     | 1 | 2 | 3 | 2 | 4 | 5 | 1 | 2 | 3 |
| Initial defrost temperature         | 2 | 3 | 4 | 3 | 5 | 6 | 1 | 2 | 3 |
| DEF message                         | 3 | 5 | 7 | 3 | 5 | 7 | 1 | 2 | 3 |
| Maximum duration of each defrost    | 4 | 6 | 8 | 4 | 6 | 8 | 1 | 3 | 4 |
| Type of message during the defrost  | 5 | 7 | 9 | 5 | 7 | 9 | 2 | 3 | 4 |
| Final defrost temperature (by probe)| 6 | 8 | 10| 6 | 10| 10| 4 | 5 | 6 |
| Defrost on connecting the unit       | 7 | 10| 10| 7 | 10| 10| 4 | 5 | 6 |
| Delay of the defrost start on        | 8 | 10| 10| 8 | 10| 10| 4 | 5 | 6 |
| Maximum time without defrosting      | 9 | 10| 10| 9 | 10| 10| 4 | 5 | 6 |
| Maximum time of cold room outside    | 10| 10| 10|10 | 10| 10| 4 | 5 | 6 |

**Strategy:**
- Conservative
- Moderate
- Aggressive

**Maximum time without defrosting (d31):** Sets a time limit without making defrosts, if the cold room does not require defrosts set it to 0, if the cold room can generate frost it is recommended to set a security time of between 2 and 7 days.

**Maximum time of cold room outside the temperature regulation range (d32):** Defines the maximum time permitted of the cold room without reaching the set point, after which an emergency defrost starts to unlock the evaporator.

* Informative, cannot be changed from akonet cloud

** Parameter only available in AKO-16524x and AKO-16525x controllers.**
Fan (FAn)

Shutdown temperature of fans (F0): When the set temperature is reached, the fans stop.

Probe 2 differential if fans are shut down (F1): When the temperature defined at F0 minus differential F1 is reached, the fans are activated (if they are stopped).

Shut down fans when compressor shuts down (F2): Defines whether or not the fans are stopped when the compressor stops.

Status of the fans during defrost (F3): Defines whether the fans are stopped during defrost.

Delay of start-up after defrost (F4): Time that must elapse from the end of drip time (d9) until the fans are started again.

Alarms (AL)

Configuration of the temperature alarms (A0):
- Absolute: The temperature at which the alarm should be activated is indicated.
- Relative to Set Point: The increase or decrease of the number of degrees with respect to the set point is indicated.


Alarm of minimum in probe 1 (A2): Minimum temperature alarm activation value.

Delay of temperature alarms in start-up (A3): Temperature alarm turn-on delay time from controller start-up.

Delay of temperature alarms from the end of defrost (A4): Temperature alarm turn-on delay time from when the defrost ends.

Delay of temperature alarms from when the A1 or A2 value is reached (A5): Alarm activation delay from when the temperature in probe 1 reaches the programmed value.

Show warning if the defrost ends for max. time (A8): Displays the Adt message if the defrost ends for maximum time (d1) instead of for temperature (d4).

Relay alarm polarity (A9): Defines the behaviour of the alarm relay:
- Relay active in the event of an alarm
- Relay inactive in the event of an alarm

Differential of temperature alarms (A10): Differential for the minimum and maximum temperature alarms.

Delay of open door alarm (A12): Open door alarm turn-on delay time.

Severity for probe 1 max. temp. alarm: Defines the severity of the maximum temperature alarm:
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Severity for probe 1 min. temp. alarm: Defines the severity of the minimum temperature alarm:
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Severity for open door alarm: Defines the severity of the open door alarm:
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Severity for external alarm: Defines the severity of the external alarm:
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Severity for severe external alarm: Defines the severity of the severe external alarm:
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.
Cloud alarms (c-AL)

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

**Alarm of percentage time out of Set Point**: If the % of time out of set point reaches the defined value, this alarm is activated.

**Severity of alarm of percentage time out of Set Point**: Defines the severity of this alarm.
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

**Alarm of defrost time percentage**: If the % of time in defrost reaches the defined value, this alarm is activated.

**Severity for alarm of defrost time percentage**: Defines the severity of this alarm.
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

**Alarm of cooling time percentage**: If the % of time generating cold reaches the defined value, this alarm is activated.

**Severity for Alarm of cooling time percentage**: Defines the severity of this alarm.
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

**Alarm of core index percentage**: If the % of core index drops below the defined value, this alarm is activated.

**Severity for Alarm of core index percentage**: Defines the severity of this alarm.
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Basic configuration (bcn)

**(b00) Delay of all functions on receiving power supply**: The controller does not take any action until this time has elapsed since start-up.

**(b01) Cold room light timing**: Time that the light remains on from the opening of the cold room door.

**(b10) Function of password**: Defines password function:
- Inactive: Does not carry out any function.
- Block access to parameters: The password is required to access the parameters.
- Lock any keyboard function: The password is required for any keypad function.

**(PAS) Access code (Password)**: Defines the password.

**(b20) MODBUS address**: Assigns a MODBUS address to the controller.

**(b21) MODBUS speed**: Defines the MODUS communications speed.

**(b22) Acoustic alarm enabled**: Enables or disables the acoustic alarm.

**(Unt) Work units**: Defines the operating units of the controller between ºC and ºF.

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** Parameter only available in AKO-16524x and AKO-16525x controllers.
Inputs and outputs (InO)

(I00) Connected probes*: Defines the controller’s active probes.

(I10) Digital input 1 configuration*: Informs about the function of digital input 1.

(I11) Polarity digital input 1: Defines polarity of digital input 1:
- Active on closing contact
- Active on opening contact

(I20) Digital input 2 configuration: Defines the function of digital input 2.
- Disabled
- Door contact
- External alarm
- Severe external alarm
- Set point change
- Remote defrost
- Defrost lockout
- Temperature log
- 2on Evaporator temperature
- Hot gas low pressure switch
- 2on Cold room temperature
- Product temperature
- Remote Stand-by mode activation

(21) Polarity digital input 2: Defines polarity of digital input 2:
- Active on closing contact
- Active on opening contact

(o00) Configuration of relay AUX 1*: Informs about the function of AUX relay 1.

(o10) Configuration of relay AUX 2: Defines function of AUX 2 relay.
- Disabled: Does not carry out any function
- Alarm: Activated in the event of an alarm
- Light: Controls the cold room light
- Virtual control: Allows remote control of the relay from the AKONet
- Door frame resistance: Controls frost resistance of the cold room door frame.
- Defrost second evaporator: Regulates the defrosting of the 2nd evaporator.
- Same as solenoid status: Copies the state of the liquid solenoid.
- Same as device status: It is activated while the controller is on, it is deactivated when entering stand-by mode.
- Drainage heater: Controls drain resistance.

HACCP Alarm (HCP)

(h1) Maximum temperature of HACCP alarm: If this temperature is reached and remains for the time set in h2, the HACCP alarm is activated.

(h2) Maximum permitted time for activation of the HACCP alarm: If the temperature remains above h1 during this time, the HACCP alarm is activated.

Severity for HACCP alarm: Defines the severity of this alarm.
- Unassigned: Severity unassigned, the alarms are displayed in grey.
- Low: Low severity, the alarms are displayed in yellow.
- Medium: Medium severity, the alarms are displayed in orange.
- High: High severity, the alarms are displayed in red.

Information (tid)

Installation configuration (InI)*: Displays the option chosen in the quick start wizard during the first start-up.

Pump down function*: Shows if pump down is active.

For further information, please refer to the user manual available on our website:
AKO-16523x / AKO-16520x: 1652H301
AKO-1652xA: 1652H4A01

* Informative, cannot be changed from akonet cloud
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.