1- Warnings
- Using the equipment without following the manufacturer's instructions may affect the device's safety requirements. To ensure that the device operates correctly, only probes supplied by AKO should be used.
- The unit must be installed in a location protected from vibrations, water and corrosive gases, where the ambient temperature does not exceed that shown in the technical data.
- To ensure a correct reading, the probe must be situated in a location without any external heat influences except for the temperature which is being measured or controlled.
- The power supply circuit must be provided with a main switch rated at least 2A, 230V, located close to the equipment. The cables will enter through the back and should be type H05VV-F or H05V-K.
- The gauge will depend on local regulations, but should in no case be less than 1 mm.
- Connecting wires for the relay contacts should be sized 2.5 mm².
- Between -40 °C and +20 °C, if the probe NTC is prolonged till 1,000 m with a minimum of cable 0.5 mm², the maximum deviation will be of 0,25 °C (extension cable for probe ref. AKO-15586).

NOTE: Equipment not compatible with AKO-14917 (external communication module) and AKO-14918 (programming key).

2- Installation

3- Wiring

The probe and its cable should NEVER be installed in the same conduit as power, control or supply cables.

4- Operation

Up key ▲ / ▼
Pressing for 5 seconds starts/stops defrosting.

The programming menu, allows you to scroll through the various levels or, during the setting of a parameter, to change the value.

Down key ◀ / ◀
Pressing for 5 seconds activates Standby mode, pressing for 2 seconds returns the equipment to normal mode. In Standby mode, the equipment performs no actions and only the indicator is displayed on the screen.

The programming menu, allows you to scroll through the various levels or, during the setting of a parameter, to change the value.

4.1- Access to set point and programming

5- Start-up

On power-up, the equipment will start up in Wizard mode (P3 / 1 flashing), press ▲ or ◀ to select the most appropriate application and press SET.

1: Multipurpose 2: Frozen 3: Fruits and vegetables
4: Fresh fish 5: Soft Drinks 6: Bottle racks
7: AC 8: Heat / Incubators

The wizard will configure the parameters of the equipment for the chosen application (see table "Default settings by application").

WARNING: The default parameters by type of application have been defined for the most common applications. Check that these parameters are suitable for your installation.

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DEFAULT SETTINGS BY APPLICATION (InI)

<table>
<thead>
<tr>
<th>SP</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>0 (37ºF)</td>
<td>30 (86ºF)</td>
<td>8 (32ºF)</td>
<td>37 (99ºF)</td>
<td>99 (211ºF)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

ESD key / 退出
Press for 5 seconds to start/stop Fast Freezing mode (rapid cooling).

In the programming menu, exit without saving parameter, return to previous level or exit programming.

SET key
Press for 5 seconds to modify the set point (SP) (Set Point).
Press for 10 seconds to go to the programming menu.

In the programming menu, go to the level displayed or accept the new value while setting a parameter.
### Table of parameters and messages

**Def.** columns show factory-set default parameters. Those marked with “C” are variable parameters depending on the application chosen in the wizard or the P3 parameter (see table "Default parameters by application"). Unless otherwise stated, temperatures are expressed in °C.

#### 6. Technical specifications

**Power supply**

- AKO-D14412: 12V = 20%, 2VA
- AKO-D14412-RC: 12V = 2.3 VA
- AKO-D14420: 120V = -8% / +12%, 50/60 Hz 4VA
- AKO-D14423-2-RC/D14423-RCD14423-C: 90-240V / 50/60 Hz 7VA
- AKO-D14423: 230–500/60 Hz 3.75VA

**Maximum Voltage SELV circuits**

- Modbus RTU RS485
- RS232
- 20V Communication

**Internal 90-240V~**

<table>
<thead>
<tr>
<th>Modbus RTU RS485</th>
<th>Modbus RTU RS485</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 NTC/PTC inputs (São AKO-D14412-RC / AKO-D14423-RC)</td>
<td>2NTC/PTC inputs + 1 digital input</td>
</tr>
</tbody>
</table>

**Input**

- 1 NC-/NC- input (A5)
- 1 NC-/NC- input (A6)
- 1 NC-/NC- input (A7)
- 1 NC-/NC- input (A8)

**Output**

- 1 NC-/NC- output (A1)
- 1 NC-/NC- output (A2)
- 1 NC-/NC- output (A3)
- 1 NC-/NC- output (A4)

**Digital input**

- 1 NC-/NC- input (A1)
- 1 NC-/NC- input (A2)
- 1 NC-/NC- input (A3)
- 1 NC-/NC- input (A4)

**Communication**

- 1 Communication via Modbus RTU RS485
- 1 Communication via RS232

**S**

- Displays the message on the display.
- **Ac** Activates the alarm relay (if available).
- **M** Message expressed in the software AKO.Net

#### 7. Temperature specifications

**Temperature during ball-pressure test**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Measurement (ºC/ºF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory</td>
<td>-20.0 / -4ºF</td>
</tr>
</tbody>
</table>

**Relay 2 CV**

- Relay 16A...
- Relay 30A...
- Relay 60A...

**Number of relay operations**

| Number of relay operations | EN06730-1: 100,000 operations |

**Resolution**

<table>
<thead>
<tr>
<th>Temperature (ºC)</th>
<th>Repetition (ºC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°C / 100°F</td>
<td>-50.0 to +58.0 (58.0 to 136.0)</td>
</tr>
</tbody>
</table>

**Fixed**

- Panel-mounted with terminals
- Panel thickness: 1 mm x 29 mm
- Front panel dimensions: 79 x 38 mm

**Depth**

- 60 cm

**Connections**

- RJ45 connection via screw terminals for communication module
- RJ45 connection via screw terminals for communication module

**Rating of control device**

- Class A software and continuous operation
- Pollution class 2 / IEC-EN60730-1

**Rated pulse voltage**

| 25000V | 1200V |

**Temperature during ball-pressure test**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Measurement (ºC/ºF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory</td>
<td>75°C / 167°F</td>
</tr>
</tbody>
</table>

**Parts which position active elements**

- Parts position active elements
- Parts position active elements

**Voltage and current as per EMC test**

- AKO-D14412-2-RC/D14423/D14423-RCD14423-C: 207 V, 17 mA
- AKO-D14420: 105 mA
- AKO-D14412: 9.6V, 181 mA

**Current of radio frequency suppression tests**

| Current of radio frequency suppression tests | 0.270 mA |