

CE Installation instructions

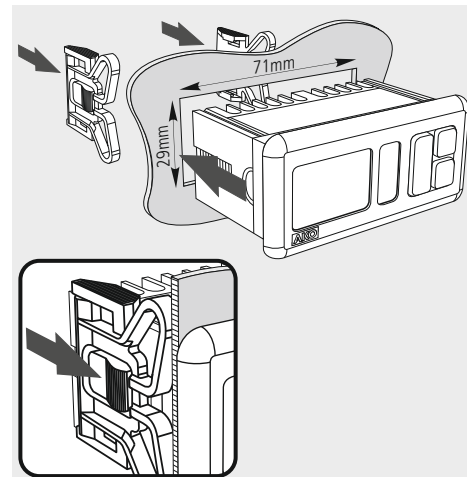


AKO-D14120 AKO-D14123 AKO-D14012
AKO-D14023 AKO-D14023-C AKO-D14024
AKO-D14124 AKO-D14125

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 mm².
- 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).

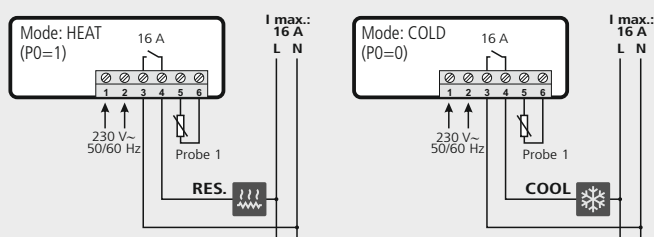
2- Installation



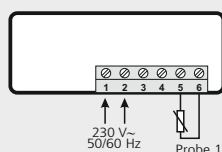
3- Wiring

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

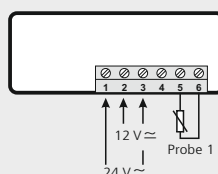
AKO-D14123, AKO-D14124, AKO-D14125



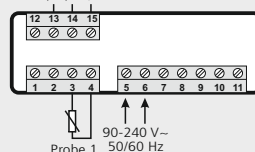
AKO-D14023, AKO-D14024



AKO-D14012

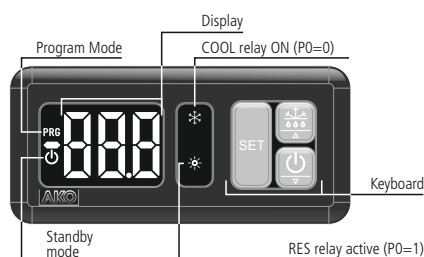


Modbus AKO-D14023-C



4- Operation

3 key equipment



SET key

Press for 5 seconds to modify the set point (SP).
 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.

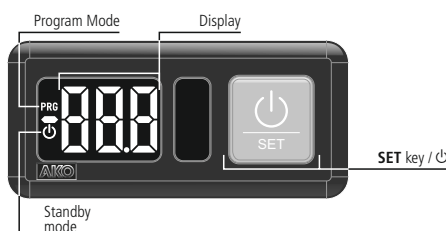
Up key ▲ / *

Pressing for 5 seconds starts/stops defrosting.
 In 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.
 In programming menu, allows you to scroll through the various levels or, during the setting of a parameter, to change the value.

1 key equipment



SET 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.

Pressing for 10 seconds goes to the programming menu.

Pressing for 5 seconds in the programming menu goes to the level displayed on the screen or, during the setting of a parameter, accepts the new value.

In the programming menu, a short press allows you to scroll through the various levels or, during the setting of a parameter, to increment the value. When upper limit is reached, it will start again from the lower limit.

5- Start-up

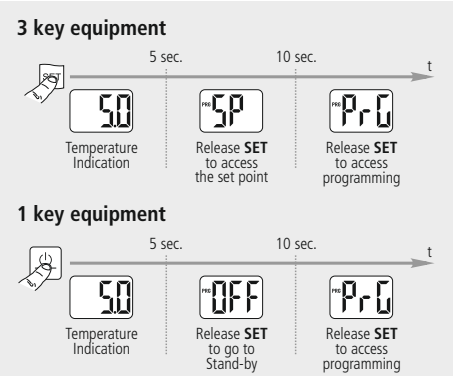
(Only 3 key models)

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").

5.1- Access to set point and programming



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 We reserve the right to supply materials which may be slightly different from those described in our Data Sheets. Updated information on our web site: www.ako.com

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AKO

Programming Menu (parameters)

After 20 seconds with no key being pressed, the equipment will return to the previous level. If you are on level 3, the changes will not be saved

3 KEY EQUIPMENT

The flowchart for 3-key equipment shows the following steps:

- OUT OF PROGRAMMING:** Temperature Indication (50) with a SET key.
- PROGRAMMING:**
 - Level 1 Menu:** Press SET (10 sec) to enter Level 1 Menu (rE). Press OK (20 sec) to return to Temperature Indication.
 - Level 2 Parameters:** Press SET (20 sec) to enter Level 2 Parameters (SP). Press OK (20 sec) to return to Level 1 Menu.
 - Level 3 Values:** Press SET (20 sec) to enter Level 3 Values (SP/25). Press OK (20 sec) to return to Level 2 Parameters.
 - Change value:** Press SET (20 sec) to change the value (e.g., 25 to 36). Press OK (20 sec) to return to Level 3 Values.
 - Change param.:** Press OK (20 sec) to change the parameter (e.g., SP to rE). Press OK (20 sec) to return to Level 2 Parameters.
 - Change Menu:** Press SET (20 sec) to change the menu (e.g., rE to EP). Press OK (20 sec) to return to Level 1 Menu.

1 KEY EQUIPMENT

The flowchart for 1-key equipment shows the following steps:

- OUT OF PROGRAMMING:** Temperature Indication (50) with a single key.
- PROGRAMMING:**
 - Level 1 Menu:** Press key (10 sec) to enter Level 1 Menu (rE). Press key (> 5sec) to return to Temperature Indication.
 - Level 2 Parameters:** Press key (< 5sec) to enter Level 2 Parameters (CO). Press key (> 5sec) to return to Level 1 Menu.
 - Level 3 Values:** Press key (< 5sec) to enter Level 3 Values (CO/00). Press key (> 5sec) to return to Level 2 Parameters.
 - Change value:** Press key (< 5sec) to change the value (e.g., 00 to 00). Press key (> 5sec) to return to Level 3 Values.
 - Change param.:** Press key (< 5sec) to change the parameter (e.g., CO to SP). Press key (> 5sec) to return to Level 2 Parameters.
 - Change Menu:** Press key (< 5sec) to change the menu (e.g., rE to CO). Press key (> 5sec) to return to Level 1 Menu.

Change set point (only equipment with three keys)

The flowchart for changing the set point with 3 keys shows the following steps:

- OUT OF PROGRAMMING:** Temperature Indication (50) with a SET key.
- PROGRAMMING:**
 - Level 1 Menu:** Press SET (5 sec) to enter Level 1 Menu (SP/25).
 - Level 2 Parameters:** Press SET (20 sec) to enter Level 2 Parameters (SP/36).
 - Change value:** Press SET (20 sec) to change the value (e.g., 36 to 36).
 - Accept value and Esc.:** Press SET (20 sec) to accept the value and return to Level 1 Menu.
 - Temperature Indication:** Press SET (20 sec) to return to Temperature Indication (50).

Def. column shows factory-set default parameters. Those marked with * 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. (Equivalent values in °F)

 **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.

	DEFAULT SETTINGS BY APPLICATION (P3)							
	1 Multipurpose	2 Frozen	3 Fruit and Vegetables	4 Fresh Fish	5 Soft Drinks	6 Bottle Racks	7 AC	8 Heat/ Incubators
SP	2 (35,6°F)	-18 (-0,4°F)	10 (50°F)	0 (32°F)	3 (37,4°F)	12 (53,6°F)	21 (69,8°F)	37 (98,6°F)
d1	4	4	4	4	24	24	96	-
P0	20	20	20	20	20	20	0	-
	0	0	0	0	0	0	0	1

MESSAGES			
L5	Access code (Password) request	D	
dEF	Indicates a defrost is underway. (Only if parameter d2=2)	D	-
E1	Probe 1 faulty (open circuit, crossover, NTC : temp. >110°C or <55 °C PTC : temp. >150 °C or <58 °C) - (equivalent limits in °F)	D	S

D: Displays the message on the display
S: Shows the message in the **AKONet** software (Only **AKO-D14023-C**)

Power supply	AKO-D14023/D14024/D14123/D14124/D14125 . 230V~ ±10 % 50/60 Hz 3.5 VA
	AKO-D14120 . 120V~ +8 % -12 % 50/60 Hz 4 VA
	AKO-D14023-C . 90-240V ~ 50/60 Hz 6 VA
	AKO-D14012 . 12/24V ≈ ±20% 2.5 VA
Maximum Voltage SELV circuits	20V
Communication (Only AKO-D14023-C)	Modbus RTU RS485
Inputs (According to P4)	1 NTC/PTC
Relay COOL 16 A	(EN60730-1: 12(9)A 250V-)
Number of relay operations	EN60730-1: 100.000 operations
Types of probe	NTC AKO-149xx / PTC AKO-1558xx
Measurement range NTC	-50,0 °C to +99,9 °C (-58,0 °F to 211 °F)
PTC	-50,0 °C to +150 °C (-58,0 °F to 302 °F)
Resolution	0,1 °C
Working environment	-10 to 50 °C, humidity <90 %
Ambient storage humidity	-30 to 70 °C, humidity <90 %
Class of protection - front panel	IP65
Fixation	Panel-mounted with anchors
Panel cutout dimensions	71 x 29 mm
Front panel dimensions	79 x 38 mm
Depth	61 mm
	AKO-D14023-C
	Other models . 43 mm
Connections	Screw terminals for cables up to 2.5 mm²
Rating of control device: built-in, automatic operation feature Type 1.B, for use in clean environments, Class A software and continuous operation. Pollution classification 2 / UNE-EN 60730-1.	
Double insulation between supply, secondary circuit and relay output.	
Rated pulse voltage	2500V
Temperature during ball-pressure test	Accessible parts 75 °C
	Parts which position active elements 125 °C
Voltage and current as per EMC tests	AKO-D14023/D14023-C/D14024/ AKO-D14123/D14124/D14125/ . 207V, 17 mA
	AKO-D14120 . 105V, 36 mA
	AKO-D14012 . 9,6V, 181 mA
Current of radio jamming suppression tests	270 mA