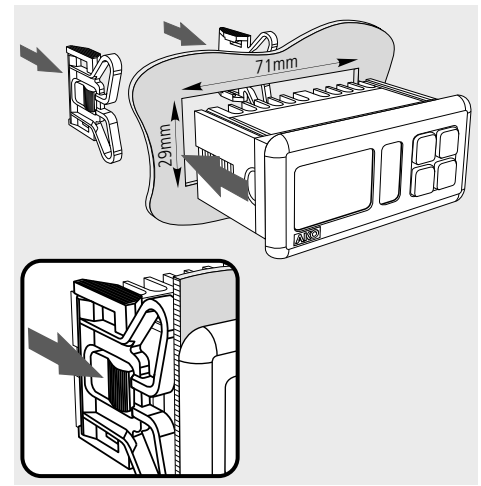


1- Warnings

- Using the unit not observing the manufacturer's instructions may alter the appliance's safety requirements. Only probes supplied by AKO should be used for the appliance to operate correctly.
- The unit 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.
- For the reading to be correct, the probe should be used in a place without heat influences apart from the temperature you want to measure or control.
- The power circuit should be equipped with a switch for its disconnection of at least 2A, 230 V, situated near the appliance. The cables will enter the back of the unit and will be H05VV-F or H05V-K.
- The section to be used will depend on current local regulations, but should never be less than 1 mm².
- Cables for relay contact wiring should have a section of 2.5 mm².
- From -40 °C to +20 °C, if the NTC probe is extended to 1000 m with at least 0.5 mm² cable, the maximum deviation will be 0.25 °C (cable for probe extension ref. AKO-15586)
- ATTENTION:** Unit not compatible with **AKO-14917** (External Communication Module) and **AKO-14918** (Programming Key)

2- Installation



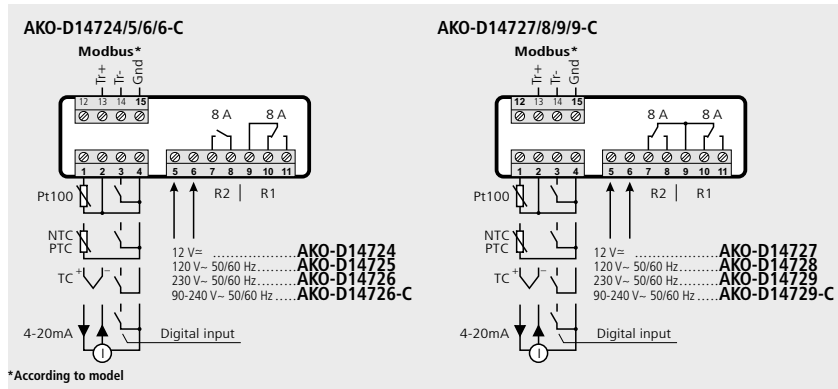
CE Instructions



- AKO-D14724** **AKO-D14725** **AKO-D14726**
AKO-D14727 **AKO-D14728** **AKO-D14729**
AKO-D14726-C **AKO-D14729-C**

3- Wiring

The probe and its cable should **NEVER** be installed in a conduit together with power control or feeder cables.



*According to model

4- Operation

ESC key

Deactivates alarms but they remain signalled (According to parameter A16).

The save without changes, return to previous level or exit programming parameter appears on the programming menu.

SET key

Pressing it for 5 seconds allows changing the SP set point of relay 1.

Pressing it for 10 seconds accesses the programming menu.

In the programming menu, it accesses the level shown on the display or, during the setting of a parameter, changing its value.

Up key ▲

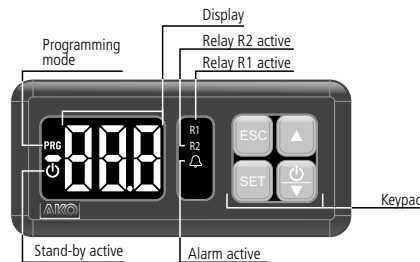
Pressing it for 5 seconds allows changing the SP2 set point of relay 2.

In the programming menu it allows scrolling around the different levels, or during the setting of a parameter, changing its value.

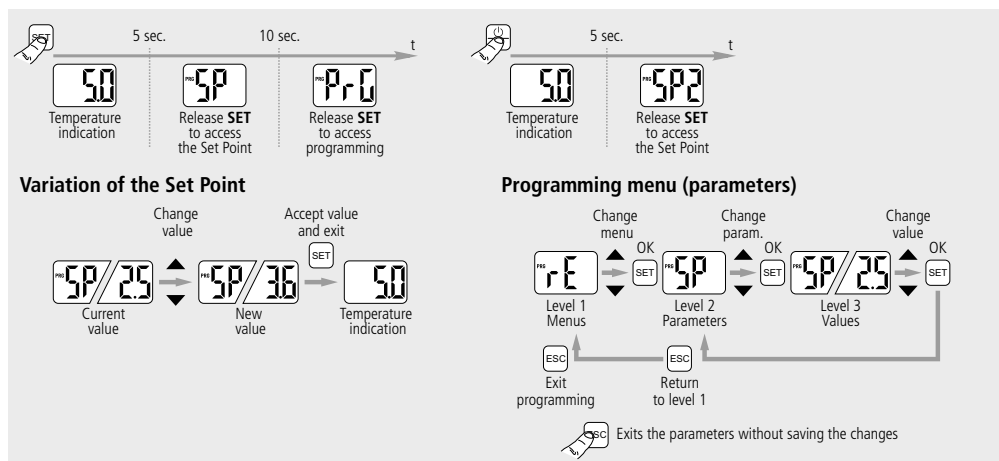
Down key ▼ / ⏻

Pressing it for 5 seconds activates the Stand-by mode, and pressing it for 2 seconds returns the device to the normal mode. In the Stand-by mode, the unit does not carry out any action and the display only shows the ⏻ indicator.

In the programming menu it allows scrolling around the different levels, or during the setting of a parameter, changing its value.



4.1- Access to set point and to programming



5- Technical specifications

| | |
|--|--|
| Power supply | AKO-D14724/D14727 12V ± ±20% 2.5VA |
| | AKO-D14725/D14728 120V~+8% -12% 50/60 Hz 4VA |
| | AKO-D14726/D14729 230V~ ±10% 50/60 Hz 3.75VA |
| | AKO-D14726-C/D14729-C 90-240V~ ±10% 50/60 Hz 7VA |
| Maximum voltage in the SELV circuits |20V |
| Inputs | 1 input NTC/PTC/Pt100/Thermocouple J or K/4-20 mA + 1 digital input |
| Relay R1 | EN60730-1: 8(4)A 250V~ SPDT |
| Relay R2 | AKO-D14724/25/26/26-C EN60730-1: 8(4)A 250V~ SPST |
| | AKO-D14727/28/29/29-C EN60730-1: 8(4)A 250V~ SPDT |
| No. of relay operations | EN60730-1: 100,000 operations |
| Measuring 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) |
| | Pt100 -100 °C to +440 °C (-148.0 °F to 824 °F) |
| | 4-20 mA -999 to 999 (Configurable) |
| | Thermocouple J 0 °C to +600 °C (32 °F to 1112 °F) |
| | Thermocouple K 0 °C to +999 °C (-32 °F to 1830 °F) |
| Resolution | NTC 0.1 °C |
| | PTC -50 to 100 °C 0.1 °C |
| | > 100 °C 1 °C |
| | Pt100 -100 to 100 °C 0.1 °C |
| | > 100 °C 1 °C |
| | 4-20 mA 0.1 from -100 to 100 and 1 for values <-100 or >100 |
| | Thermocouple J/K 1 °C |
| Precision | NTC/PTC/Pt100 ±0.5 °C |
| | 4-20 mA ±0.1 mA |
| | Thermocouple J/K ±2 °C or 1% |
| Working environment | -10 to 50 °C, <90 % humidity |
| Storage environment | -30 to 70 °C, humidity <90 % |
| Protection degree of the front part | Ip65 |
| FixingPanel mounting with anchors | |
| Panel cavity dimensions | 71 x 29 mm |
| Front part dimensions | 79 x 38 mm |
| Depth | 61 mm |
| Wiring | Terminal to screw for cables with a section of up to 2.5 mm ² |
| Control device classification: | Built-in assembly, with Type 1.B automatic operation action feature, for use in clean situations, logical support (Software) class A and continuous operation. |
| Contamination degree 2 acc/UNE-EN 60730-1. | |
| Double power input insulation, secondary circuit and relay output. | |
| Rated pulse voltage | 2,500V |
| Pressure ball test temperature | |
| Accessible parts | 75 °C |
| Parts that position active elements | 125 °C |
| Voltage and current delayed by the EMC tests | |
| AKO-D14724/D14727 9.6V, 181 mA | |
| AKO-D14725/D14728 105V, 36 mA | |
| AKO-D14726/D14729/D14726-C/D14729-C 207V, 17 mA | |
| Radio interference suppression test current | 270 mA |

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Updated information in our website: www.ako.com
 We reserve the right to supply materials slightly different to those described in our Data Sheets.
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6- Parameter and message table

The Def. column indicates the factory default parameters. Unless otherwise indicated, the temperature values are expressed in °C. (Equivalent temperature in °F)

| Level 1 Menus and description | | | | | | |
|-----------------------------------|--------------------------|---|------------------------------|-------------|------|-------------|
| rE | Level 2 Control relay R1 | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| SP | | Relay R1 temperature setting (Set Point) | (°C/°F) | A | 0 | B |
| C0 | | Probe 1 calibration (Offset) | (°C/°F) | -20.0 | 0.0 | 20.0 |
| C1 | | Differential of R1 and SP (Hysteresis) | (°C/°F) | -50 | 1 | 50 |
| C2 | | Upper lock of the Set Point (Relay R1) (it cannot be set above this value) | (°C/°F) | C3 | B | B |
| C3 | | Lower lock of the Set Point (Relay R1) (it cannot be set under this value) | (°C/°F) | A | A | C2 |
| C6 | | State of relay R1 with damaged probe 0=OFF; 1=ON; 2=Average according to last 24h prior to probe error; 3=ON-OFF according to prog. C7 and C8 (In heat mode always OFF) | | 0 | 0 | 3 |
| C7 | | Time of relay R1 in ON in the event of damaged probe (If C7=0 and C8=0, the relay will always be OFF disconnected) | (min.) | 0 | 10 | 120 |
| C8 | | Time of relay R1 in OFF in the event of damaged probe (If C8=0 and C7=0, the relay will always be ON connected) | (min.) | 0 | 5 | 120 |
| C12 | | Variation of Set Point (Relay 1) per digital input (0= deactivated) | If P35=2 (°C/°F) If P35=4 | C3-SP C3 | 0 | C2-SP C2 |
| C16 | | Duration of the variation Set Point (Relay R1) per digital input (if P35 = 2) | (min.) | 0 | 0 | 254 |
| C17 | | ON-OFF delay time for R1 (from the last disconnection) | (min.) | 0 | 0 | 120 |
| C18 | | ON-OFF delay time for R1 (from the last connection) | (min.) | 0 | 0 | 120 |
| EP | | Output to level 1 | | | | |
| rE2 Level 2 Control relay R2 | | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| SP2 | | Relay R2 temperature setting (Set Point) | (°C/°F) | A | 0 | B |
| C51 | | Differential of R2 and SP2 (Hysteresis) | (°C/°F) | -50 | 1 | 50 |
| C52 | | Upper lock of the Set Point (Relay R2) (it cannot be set above this value) | (°C/°F) | C53 | B | B |
| C53 | | Lower lock of the Set Point (Relay R2) (it cannot be set under this value) | (°C/°F) | A | A | C52 |
| C56 | | State of relay R2 with damaged probe 0=OFF; 1=ON; 2=Average according to last 24h prior to probe error; 3=ON-OFF according to prog. C57 and C58 (In heat mode always OFF) | | 0 | 0 | 3 |
| C57 | | Time of relay R2 in ON in the event of damaged probe (If C57=0 and C58=0, the relay will always be OFF disconnected) | (min.) | 0 | 10 | 120 |
| C58 | | Time of relay R2 in OFF in the event of damaged probe (If C58=0 and C57=0, the relay will always be ON connected) | (min.) | 0 | 5 | 120 |
| C62 | | Variation of Set Point 2 (Relay 2) per digital input (0= deactivated) (if P31=2, not applicable) | (°C/°F) | C53 -SP2 | 0 | C52 -SP2 |
| C66 | | Duration of the variation Set Point 2 (Relay R2) per digital input (if P35 = 2) | (min.) | 0 | 0 | 254 |
| C67 | | ON-OFF delay time for R2 (from the last disconnection) | (min.) | 0 | 0 | 120 |
| C68 | | ON-OFF delay time for R2 (from the last connection) | (min.) | 0 | 0 | 120 |
| EP | | Output to level 1 | | | | |
| dEF Level 2 DEFROST Function (R1) | | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| d0 | | Frequency of disconnection of relay R1 (Time between 2 starts) | (h.) | 0 | 6 | 120 |
| d1 | | Disconnection period of relay R1 (0= deactivated) | (min.) | 0 | 0 | 120 |
| EP | | Output to level 1 | | | | |

| Level 1 Menus and description | | | | | | |
|--|--------------------------------|---|---------|------|------|------|
| AL | Level 2 ALARM control (Visual) | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| | | Configuration of the temperature alarms 0=Relative to the SP of R1; 1=Absolute | | 0 | 0 | 1 |
| A0 | | Configuration of the temperature alarms 0=Relative to the SP of R1; 1=Absolute | | 0 | 0 | 1 |
| A1 | | Alarm for maximum (it should be higher than the SP) | (°C/°F) | A2 | 999 | B |
| A2 | | Alarm for minimum (it should be lower than the SP) | (°C/°F) | A | -99 | A1 |
| A3 | | Delay of temperature alarms in the start-up | (min.) | 0 | 0 | 250 |
| A5 | | Delay of temperature alarms from when the A1 or A2 value is reached. | (min.) | 0 | 0 | 250 |
| A6 | | Delay of the external alarm on receiving a signal in digital input (P35=1) | (min.) | 0 | 0 | 120 |
| A9 | | Polarity alarm relay (if P31=4) 0= Relay ON in alarm (OFF without alarm) 1= Relay OFF in alarm (ON without alarm) | | 0 | 0 | 1 |
| A10 | | Differential temperature alarms (A1 and A2) | (°C/°F) | 1 | 1 | 20.0 |
| A16 | | Disconnection of the alarm relay after pressing the ESC key 0= Yes; 1= No | | 0 | 0 | 1 |
| EP | | Output to level 1 | | | | |
| CnF Level 2 General status | | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| P0 | | Type of R1 operation 0=Direct, Cold; 1=Reverse, Heat (If P31≠3) | | 0 | 1 | 1 |
| P1 | | Delay of all functions on receiving power supply | (min.) | 0 | 0 | 255 |
| P2 | | Access code (password) function 0=Inactive; 1=Access to parameters locked; 2=Keypad locked | | 0 | 0 | 2 |
| P3 | | Return to initial parameters (press SET to activate) | | 1 | 1 | 1 |
| P5 | | Address (Only units with built-in communication) | | 0 | 1 | 255 |
| P7 | | Temperature display mode 0=Integers in °C 1=A decimal in °C* 2=Integers in °F 3=A decimal in °F* | | 0 | 1 | 3 |
| P9 | | Selection of type of probe 0=NTC; 1=PTC; 2=Pt100; 3=TI; 4=TK; 5=4-20 mA | | 0 | 2 | 5 |
| P12 | | Polarity digital input 0= Activates on closing contact 1= Activates on opening contact | | 0 | 0 | 1 |
| P30 | | Type of R2 operation 0=Direct, Cold; 1=Reverse, Heat (If P31=1) | | 0 | 1 | 1 |
| P31 | | Type of relation between R1 and R2 1= 2 separate stages 2= 2 related stages 3= Neutral zone 4= One stage + alarm | | 1 | 1 | 4 |
| P32 | | Maximum scale value (If 4-20 mA) | | -999 | 100 | 999 |
| P33 | | Minimum scale value (If 4-20 mA) | | -999 | 0 | 999 |
| P34 | | Scale locked with probe 4-20 mA 0= Without lock 1= Locked according to P32 and P33 | | 0 | 0 | 1 |
| P35 | | Configuration digital input 0= Deactivated 1= External alarm 2= Variation of SP and SP2(SP+C12, SP2+C62) 3= Reversal of type of operation of R1 4= Changing the SP (SP=C12) | | 0 | 0 | 4 |
| EP | | Output to level 1 | | | | |
| tid Level 2 Access control and Information | | | | | | |
| | Level 3 | Description | Values | Min. | Def. | Max. |
| L5 | | Access code (Password) | | 0 | - | 99 |
| PU | | Programme version (Information) | | - | - | - |
| Pr | | Programme revision (Information) | | - | - | - |
| EP | | Output to level 1 | | | | |
| EP | | Exit programming | | | | |

A: Minimum value according to probe used (See table 1); B: Maximum value according to probe used (See table 1)
* Option not available if the probe is a thermocouple
Note: If the probe is 4-20 mA, the values may not refer to temperatures.

| MESSAGES | |
|----------|--|
| L5 | Access code (Password) request |
| E1 | Probe 1 broken (Open, crossed circuit or probe out of range) |
| EE | Memory fault |
| AH | Flashing: Maximum temperature alarm (A1) |
| AL | Flashing: Minimum temperature alarm (A2) |
| AE | External alarm activated (Only if parameter P10 or P11=2) |
| --- | Measured value above 999 |

Table 1: Max. and min. values according to type of probe

| Type of probe | Minimum value | Maximum value |
|----------------|---------------|---------------|
| NTC | -50 | 100 |
| PTC | -50 | 150 |
| Pt100 | -100 | 440 |
| Thermocouple J | 0 | 600 |
| Thermocouple K | 0 | 999 |
| 4-20 mA | -999 | 999 |

7- Operating modes

