1472H506 Ed.03 GB

-100ºC to +1000ºC 2 relay multi-sensor type electronic thermostats, formatted for 70.5 x 28.5 mm panel cut-out.

Devices designed to display, control and regulate heating or cooling generators, with input for NTC, PTC(KTY), Pt 100, J Thermocouple and K Thermocouple type sensors. Both outputs with changeover relays can be configured for two independent stages, 2 related stages, neutral zone, or also as 1 stage + alarm.

The complete technical information of the devices that appear in these basic instructions is available in Data Sheet **1472H526** in our web **www.ako.com**.

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1- VERSIONS AND REFERENCES

MODEL	RELAYS	POWER SUPPLY, 50/60 Hz
AKO-14725	8 A, 250 V, cos φ=1, SPDT	120 V~ +8% -12%
AKO-14726	8 A, 250 V, cos φ=1, SPDT	230 V~ ±10%

2- TECHNICAL DATA

Temperature range according to type of sensor supplied by AKO:
NTC (ntc). . . . . -50.0 ºC to 105 ºC (-58.0 ºF to 221 ºF)
PTC (PtC) KTY type . . . . . -50.0 ºC to 150 ºC (-58.0 ºF to 302 ºF)
Pt 100 (Pt1) . . . . . -100 ºC to 440 ºC (-148 ºF to 824 ºF)
J Thermocouple (JtC) . . . . . 0 ºC to 600 ºC (32 ºF to 999 ºF)
K Thermocouple (HtC) . . . . . 0 ºC to 999 ºC (32 ºF to 999 ºF)
Resolution, Set Point and differential (NTC, PTC, Pt 100): . . . . . 0.1 ºC
Resolution, Set Point and differential (J or K thermocouple): . . . . . 1 ºC
Thermometric accuracy (NTC, PTC, Pt 100): . . . . . ± 1 ºC
Thermometric accuracy (J or K thermocouple): . . . . . ± 2 ºC
Maximum input power: . . . . . 3 VA
Working ambient temperature: . . . . . 5 ºC to 50 ºC
Storage ambient temperature: . . . . . -30 ºC to 70 ºC
Control device classification: Independent mounting, of Type 1.B action automatic operation characteristic, to be used in a clean situation, class A logical medium (software).
Double insulation between the power supply, secondary circuit and relay output.
Allocated pulse voltage: . . . . . 800 V
Pressure ball test temperature:
Accessible parts: . . . . . 75 ºC
Parts that position active elements: . . . . . 125 ºC
Voltage and current declared by the EMC tests: . . . . . 207 V, 9 mA

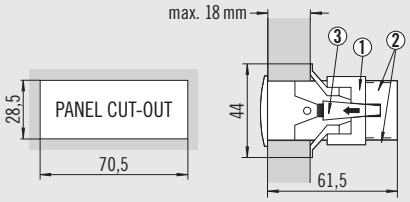
3- INSTALLATION

The controller must be installed in a place protected from vibrations, water and corrosive gases, and where ambient temperature does not surpass the value specified in the technical data.

In order for the controllers to have IP65 protection, the gasket must be properly installed between the apparatus and the perimeter of the panel cut-out where it is to be fitted.

In order to give a correct reading, the sensor must be installed in a place without heat influences other than the temperature that is to be measured or controlled.

3.1 Fastening units for panel mounting:



To fix the unit, place the fasteners **1** over the sliders **2** as shown in the figure. Move the fasteners in the direction of the arrow. By pressing tab **3** fasteners may be moved in the opposite direction of the arrow.

3.2 Connection:

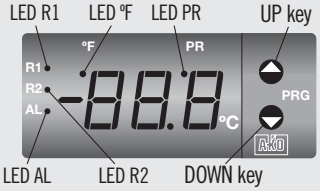
See diagram on the unit rating plate.

The sensor and its lead must **NEVER** be installed in ducting together with power, control or power supply wiring.

The power supply circuit must be connected with a minimum 2 A, 230 V switch located close to the unit. Power supply cables must be H05VV-F 2x0,5 mm² or H05V-K 1x0,5 mm² .

Section of connecting wires for relays contacts must range from 1 mm² to 2.5 mm².

4- FRONT PANEL FUNCTIONS



UP key

Press once to cancel the alarms, but they remain displayed (optional by parameter **AtA**). When pressed for at least 5 seconds, the **SP1** Set Point temperature of Relay **R1** is displayed. In programming, it increases the displayed value.

DOWN key

Press once to cancel the alarms, but they remain displayed (optional by parameter **AtA**). When pressed for at least 5 seconds, the **SP2** Set Point temperature of Relay **R2** is displayed. In programming, it decreases the displayed value.

LED R1: Relay 1 indicator enabled
LED R2: Relay 2 indicator enabled
LED PR: Flashing, programming phase
LED AL: Alarm indicator enabled
LED ºF: Degrees ºF indicator

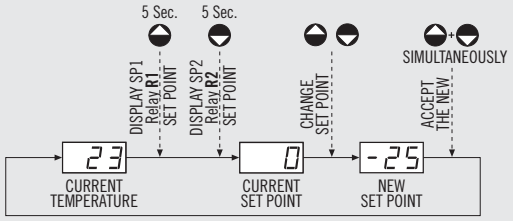
5- ADJUSTMENT AND CONFIGURATION

It must only be programmed or modified by personnel who are fully conversant with the equipment operation and possibilities.

5.1 Set Point temperature.

The factory SET POINT default value is 0 ºC.

- Press ◒ key for at least 5 seconds to DISPLAY SET POINT in Relay R1 or ◓ key for Relay R2. It displays the CURRENT SET POINT value and LED "**PR**" starts flashing.
- Press ◒ or ◓ keys to CHANGE SET POINT to the required value.
- Press ◒ + ◓ keys simultaneously to ACCEPT THE NEW SET POINT. The display returns to the CURRENT TEMPERATURE display status and LED "**PR**" stops flashing.



5.2 Parameter configuration

Level 1 Menus

- Press ◒ + ◓ keys simultaneously for at least 10 seconds. The LED "**PR**" will start flashing, LEVEL 1 MENUS programming has been accessed and the first menu "**Po1**" is displayed.
- Press ◒ key to access the next menu and ◓ key to return to the previous one.
- Pressing ◒ + ◓ keys simultaneously in the last menu EP, the controller returns to the CURRENT TEMPERATURE display status and LED "**PR**" will stop flashing.

When **PA** is displayed, the PASSWORD programmed in the **PAr** menu **PAS** parameter must be entered to access LEVEL 1 MENUS programming.

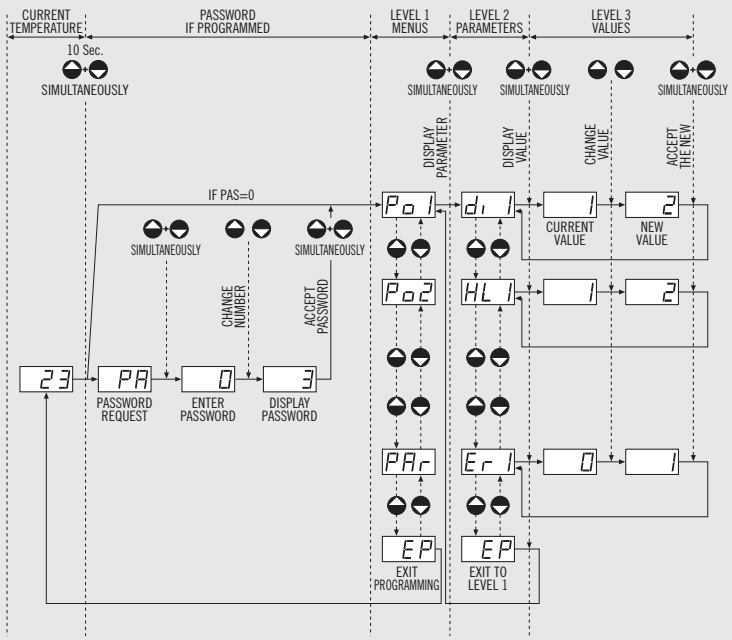
- Press ◒ + ◓ keys simultaneously. 0 will be displayed to ENTER PASSWORD.
- Press ◒ or ◓ keys to CHANGE NUMBER and DISPLAY PASSWORD programmed.
- Press ◒ + ◓ keys simultaneously to ACCEPT PASSWORD. The first menu "**Po1**" will be displayed.

Level 2 Parameters

- In the desired menu of LEVEL 1 MENUS, press keys ◒ + ◓ simultaneously. LEVEL 2 PARAMETERS programming is accessed. The first parameter of the selected menu is displayed on the screen.
- Press ◒ key to access the next parameter and ◓ key to return to the previous one.
- Pressing ◒ + ◓ keys simultaneously in the last parameter EP, the controller returns to LEVEL 1 MENUS.

Level 3 Values

- To DISPLAY CURRENT VALUE of any parameter, select the required one and press ◒ + ◓ keys simultaneously. Once it is displayed, you can CHANGE VALUE pressing ◒ or ◓ key.
- Press ◒ + ◓ keys simultaneously to ACCEPT THE NEW VALUE. The programming returns to LEVEL 2 PARAMETERS.



NOTE: If no key is pressed for 25 seconds in either of the previous steps, the controller will automatically return to the CURRENT TEMPERATURE display status without modifying any of the parameter values.

6- MENUS, PARAMETERS AND MESSAGES

Values in the **Def.** column are factory-set.

In programming, it must be taken into consideration that the parameters and values displayed depend on the option selected in the **CFo** configuration menu **o2C** parameter.

Level 1	Menus and Description					
Po1	**Level 2**	**R1 Relay Parameter Output**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	di1	R1 and SP1 Differential (Hysteresis)	(ºC/ºF)	-50	1	50
	HL1	Set Point upper limit SP1 of R1 (It cannot be set above this value)	(ºC/ºF)	LL1	999	999
	LL1	Set Point lower limit SP1 of R1 (It cannot be set below this value)	(ºC/ºF)	-99	-99	HL1
	HC1	Type of operation R1: (0=Cold) (1=Heat)		0	1	1
	Er1	R1 relay status with faulty sensor: 0=OFF 1=ON		0	0	1
	EP	Exit to Level 1				
Po2	**Level 2**	**R2 Relay Parameter Output**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	di2	R2 and SP2 Differential (Hysteresis)	(ºC/ºF)	-50	1	50
	HL2	Set Point upper limit SP2 of R2 (It cannot be set above this value)	(ºC/ºF)	LL2	999	999
	LL2	Set Point lower limit SP2 of R2 (It cannot be set below this value)	(ºC/ºF)	-99	-99	HL2
	HC2	Type of operation R2: (0=Cold) (1=Heat)		0	1	1
	Er2	R2 relay status with faulty sensor: 0=OFF 1=ON		0	0	1
	EP	Exit to Level 1				
CFo	**Level 2**	**Configuration Parameters**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	o2C	R2 Relay output ratio type: (1=Two independent stages) (3=Neutral Zone) (2=Two related stages) (4=1 Stage + alarm)			1	1	4
	PbS	Sensor type selection (Pt1, HtC, JtC, ntc, PtC)				Pt1	
	CAn	Sensor calibration (Offset)	(ºC/ºF)	-20	0	20
	rES	Temperature display mode: (0=Integers in ºC) (1=A decimal in ºC) except in thermocouples			0	0	1
	CFd	Temperature display mode in ºC or ºF: (0=ºC) (1=ºF)			0	0	1
	toF	Delay time for the relays to switch ON	(sec.)		0	0	250
	ton	Delay time for the relays to switch OFF	(sec.)		0	0	250
	EP	Exit to Level 1					
ALA	**Level 2**	**Alarm Parameters**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	ACo	Alarm configuration: (0=Absolute) (1=Related to set point SP1 of R1)		0	0	1	
	ALt	Minimum alarm: (Limited by AHt)	(ºC/ºF)	-99	-99	AHt
	AHt	Maximum alarm: (Limited by ALt)	(ºC/ºF)	ALt	999	999
	Adi	Alarm differential	(ºC/ºF)	1	1	20
	AdE	Alarm delay from the moment at which they must be enabled	(min)	0	0	250
	Ado	Alarm delay at start-up	(min)	0	0	250
	Arc	Polarity configuration of the alarm relay: (0=In the event of an alarm, relay ON) (1=In the event of an alarm, relay OFF)			0	0	1
	AtA	Optional cancellation of output alarms by pressing once a key: (0 = Allows to cancel the output alarms) (1 = Not allows to cancel the output alarms)			0	0	1
	EP	Exit to Level 1					
InP	**Level 2**	**Digital Input Parameters**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	ICF	Digital input configuration: (0=Disabled) (1=External alarm) (2=R1 Relay set point SP1 variation) (3=Inversion type of operation HC1)			0	0	3
	IPo	Digital output status inversion: (0=Closed Contact) (1=Open Contact)			0	0	1
	IdY	Digital input enabling delay	(min)		0	0	120
	USI	R1 Relay set point SP1 variation if ICF=2	(ºC/ºF)	-99	0	999
	tSI	USI variation length	(min)		0	0	254
	EP	Exit to Level 1					
PAr	**Level 2**	**General Parameters**				
		Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	CYt	R1 Relay output switching off frequency	(h)		0	6	120
	oFt	R1 Relay output switching off time	(min)		0	0	120
	PdE	Initial parameters: (1=YES, configure to "Def" and exit programming)			0	0	1
	Ptr	Transfer parameters: (0=Disabled) (1=Send) (2=Receive)			0	0	2
	PAS	Password to parameters and information			0	0	250
	CAd	Address for units with communication			0	0	250
	PU	Programme version (Information)					
	EP	Exit to Level 1					
EP	Exit programming						

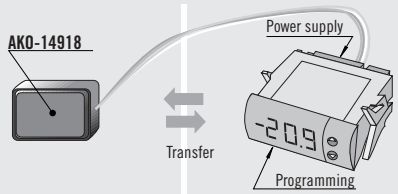
MESSAGES	
AH	The Sensor temperature exceeds the parameter programmed in AHt
AL	The Sensor temperature is lower than the parameter programmed in ALt
EAL	Active digital input
E1	Sensor failure (Open circuit, crossed, out-of-scale temperature)
- - -	Temperature > 999 ºF/ºC
EE	Memory failure
PA	Password request to access programming parameters

NOTE: When the time and alarm parameters are modified, the new values are applied when the current cycle is completed. In order for it to have an immediate effect, switch the controller off and then on again.

7- PARAMETER TRANSFER

AKO-14918 portable server, with no power supply, in which parameters programmed in a powered controller can be copied by transfer. Parameters can be transferred again from the server to other identical powered controllers

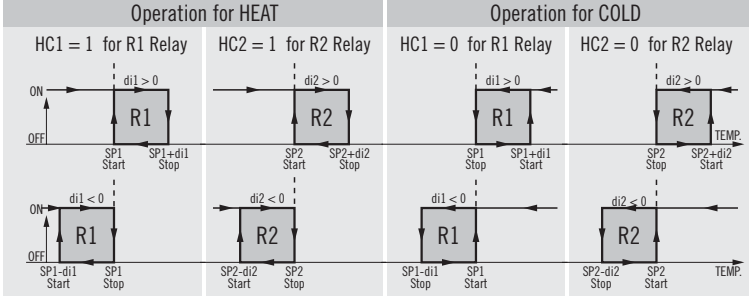
To transfer parameters, other servers are available for controllers that must be programmed identically in high quantity without power supply.



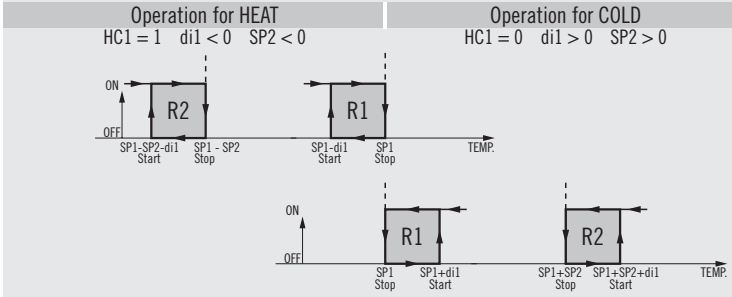
8- R1 AND R2 RELAY OPERATION AND CONTROL

SP1 = R1 Relay set point SP2 = R2 Relay set point

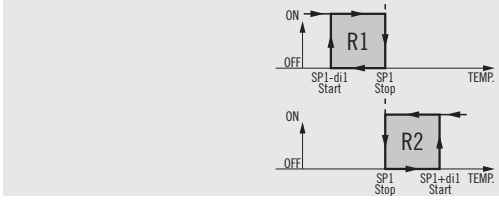
o2C = 1 Two independent stage



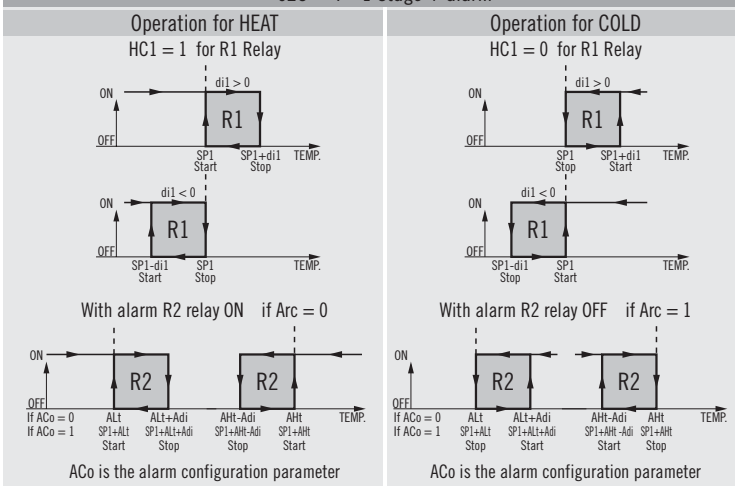
o2C = 2 Two related stages



o2C = 3 Neutral Zone



o2C = 4 1 Stage + alarm



ACo is the alarm configuration parameter

ACo is the alarm configuration parameter

9- MAINTENANCE

Clean the controller surface with a soft cloth, soap and water. Do not use abrasive detergents, petrol, alcohol or solvents.

10- WARNINGS

The use of the unit without observing the manufacturer's instructions may alter its safety qualification.

To ensure correct operation of the apparatus, only sensors supplied by AKO must be used.

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