1544H002 Ed.01 GB

CE ON/OFF Controller's size 48x48 mm

Controller designed to display and control heating or cooling generators, with input for Pt100, Thermocouple J or Thermocouple K type sensors. Relay outputs may be used for control and/or alarm. It also has a logic output/input for control/alarm.

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1- VERSIONS AND REFERENCES

MODEL	SUPPLLY
AKO-15440 AKO-15490	20 to 48 V ≃ 100 to 240 V ~ 50/60 Hz

2- TECHNICAL DATA

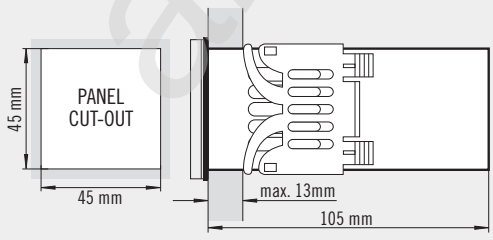
Range according to type of sensor configured:
Pt100 ..... –99,9 °C to 850,0 °C (-148 °F to 1562 °F)
J Thermocouple ..... –99,9 °C to 800,0 °C (-148 °F to 1472 °F)
K Thermocouple ..... –99,9 °C to 1370,0 °C (-148 °F to 2498 °F)
Set Point range ..... –99,9 to 2500 (°C / °F)
Resolution, Set Point and differential ..... 0,1 or 1 (°C / °F) configurable by parameter rES
Accurancy ..... ± 0,25% (Pt100, TcJ, TcK)
R1 relay: CONTROL or ALARM 2 (configurable by param. Clo): SPST-NO, 6A, 250V, cosφ=1
R2 relay: ALARM 1 ..... SPDT, 5A, 250V, cosφ=1
Maximum input power ..... 3 VA
Working ambient temperature ..... 0 °C to 55 °C
Storage ambient temperature ..... –30 °C to 70 °C
Installation category ..... II under EN 61010-1 Standard
Pollution degree ..... II under EN 61010-1 Standard
Double insulation between the power supply, the secondary circuit and the relay output.

3- INSTALLATION

The controller should 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 IP55 protection, the gasket should 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 probe should be installed in a place without heat influences other than the temperature that is to be measured or controlled.

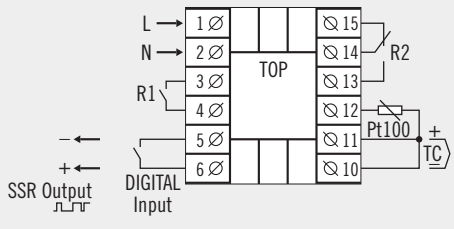
3.1 Fastening:

To fix the unit, place the fasteners in the top and the lower parts and press them to enter in the controller lateral sliders. Move the fasteners in direction to the panel until the controller is fixed.

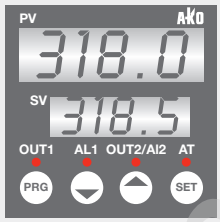


3.2 Connection:

The probe and its lead should NEVER be installed in ducting along with power, control or power supply wiring.
The power supply circuit should be connected with a minimum 2 A, 230 V, switch located close to the unit. Power supply cables should be H05VV-F 2x0.5 mm² or H05V-K 2x0.5 mm². Section of connecting wires for relays contacts should range from 1 mm² to 2.5 mm².



4- FRONT PANEL FUNCTIONS



LED OUT1:
CONTROL indicator activated.

LED AL1: indicator enabled. Flashing: Alarm 1 detected, relay deactivated but signalling maintained.

LED OUT2/AL2:
Alarm 2 indicator enabled. Flashing with Alarm 2: Alarm2 detected, relay deactivated but signalling maintained.

PRG Key (PRG)
Accepts the alarms and disconnects alarm outputs. When pressed for at least 3 seconds, the **SP** SET POINT temperature value is displayed. When pressed for 10 seconds display the first level of menu SPCF of parameters. Exit programming level.

DOWN Key
Accepts the alarms and disconnects alarm outputs. In programming, it makes the displayed value reduce.

UP Key
Accepts the alarms and disconnects alarm outputs. In programming, it makes the displayed value increase.

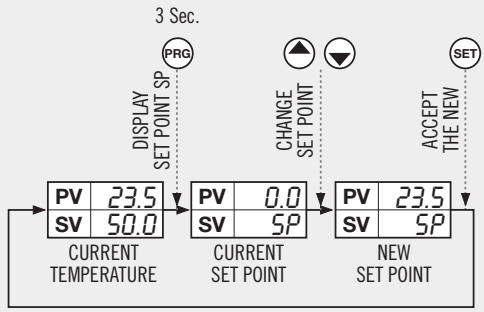
SET Key (SET)
Accepts the alarms and disconnects alarm outputs. In programming, accept the programmed new value.

5- ADJUSTMENT AND CONFIGURATION

It should 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 0,0 °C.
- Press **PRG** key for at least 3 seconds to DISPLAY SET POINT SP. It displays the CURRENT SET POINT value.
- Press ▼ or ▼ keys to CHANGE SET POINT into the required value.
- Press **SET** key to ACCEPT THE NEW SET POINT. The display returns to the CURRENT TEMPERATURE display status.



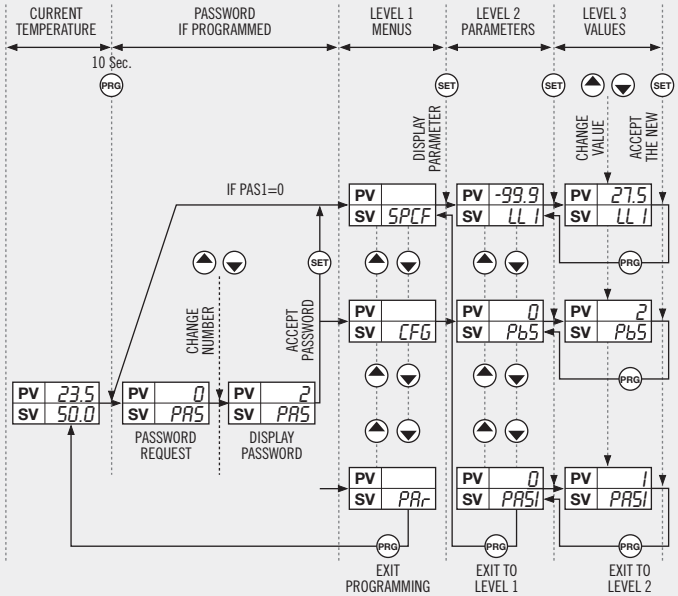
5.2 Parameters configuration:

Level 1 Menus
- Press **PRG** key for at least 10 seconds. We are in the programming LEVEL 1 MENUS and the first menu "**SPCF**" is displayed.
- Press ▼ key to access the next menu and ▼ key to return to the previous one.
- Press **PRG** key, the controller returns to the CURRENT TEMPERATURE display status.

When **PAS** is displayed, PASSWORD programmed in **PAS1** parameter of **PAr** menu should be entered to access programming LEVEL 1 MENUS.
- Press ▼ or ▼ keys to CHANGE NUMBER and DISPLAY PASSWORD programmed.
- Press **SET** key to ACCEPT PASSWORD. The first menu "**SPCF**" will be displayed.

Level 2 Parameters
- In the desired menu of LEVEL 1 MENUS, press key **SET**. 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.
- Press **PRG** key, returns to the LEVEL 1 MENUS.

Level 3 Values
- Press **SET** key to enter and modify the desired parameter.
- Press ▼ or ▼ keys to CHANGE VALUE.
- Press **SET** key, ACCEPT THE NEW VALUE and it returns to LEVEL 2 PARAMETERS.
- Press **PRG** key, it returns at LEVEL 2 PARAMETERS without modify value.



REMARK: 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 parameters values.

6- MENUS, PARAMETERS AND MESSAGES

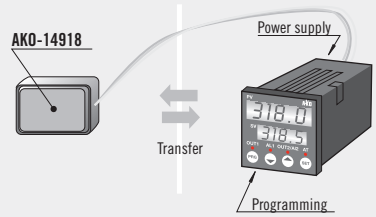
Values in the **Def.** column are factory-set.

Level 1	Menus and Description				
SPCF	**Level 2**	**Set Point parameters**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	LL1	Set Point lower limit (It cannot be set below this value)	(ºC/ºF)	-99,9	99,9	HL1
	HL1	Set Point upper limit (It cannot be set above this value)	(ºC/ºF)	LL1	999.9	2500
	CAn	Sensor calibration (Offset)	(ºC/ºF)	-20,0	0,0	20,0
CFG	**Level 2**	**Configuration parameters**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	PbS	Sensor type selection (0=Pt100) (1=TcJ) (2=TcK)		0	0	2
	HC1	Type of operation in CONTROL (0= Direct, cold) (1= Reverse, Heat)		0	1	1
	rES	Temperature display mode (0= Integers in ºC) (1= One decimal in ºC) (2= Integers in ºF) (3= One decimal in ºF)		0	1	3
	Er1	CONTROL status with faulty sensor (0= OFF) (1= ON)		0	0	1
onoF	**Level 2**	**ON/OFF configuration parameters**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	diF1	CONTROL Differential (Hysteresis)	(ºC/ºF)	-50,0	1,0	50,0
	ton1	Minimum CONTROL time in ON	(sec.)	0	0	250
	toF1	Minimum CONTROL time in OFF	(sec.)	0	0	250
inPt	**Level 2**	**Digital INPUT/OUTPUT (I/O, 5-, 6+) and Relays R1, R2 configuration**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	Clo	Digital Input / Output and R1, R2 relays (0= Digital Output SSR CONTROL, R1=ALARM 2, R2=ALARM 1) (1= Digital Input, R1=CONTROL, R2=ALARM 1)		0	0	1
	CdIn	Digital Input Configuration if Clo=1 (0= External alarm) (1= Variation in adjust. point) (2= Start-up/Stop)		0	0	2
	IPo	Digital input status inversion (0= Closed contact) (1= Open contact)		0	0	1
	IdY	Digital input enabling delay	(sec.)	0	0	250
	USI1	Set point SP variation if CdIn=1	(ºC/ºF)	-99,9	0,0	2500
ALr1	**Level 2**	**Alarm 1 parameters**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	tAL1	Alarm 1 type (0= Max.) (1= Min.) (2= Max. + Min.)		0	0	2
	AHt1	Maximum for Alarm 1	(ºC/ºF)	-99,9	999,9	2500
	ALt1	Minimum for Alarm 1	(ºC/ºF)	-99,9	-99,9	2500
	ACo1	Alarm 1 configuration (0= Absolute) (1= Related to set point SP)	(ºC/ºF)	0	0	1
	Adl1	Alarm 1 differential	(ºC/ºF)	1,0	1,0	20,0
	AdE1	Alarm 1 delay from the moment at which it should enabled	(min.)	0	0	250
	Ado1	Alarm 1 delay at start-up	(min.)	0	0	250
ALr2	**Level 2**	**Alarm 2 parameters (If Clo=0, R1= Alarm 2)**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	tAL2	Alarm 2 type (0= Max.) (1= Min.) (2= Max. + Min.)		0	0	2
	AHt2	Maximum for Alarm 2	(ºC/ºF)	-99,9	999,9	2500
	ALt2	Minimum for Alarm 2	(ºC/ºF)	-99,9	-99,9	2500
	ACo2	Alarm 2 configuration (0= Absolute) (1= Related to set point SP)	(ºC/ºF)	0	0	1
	Adl2	Alarm 2 differential	(ºC/ºF)	1,0	1,0	20,0
	AdE2	Alarm 2 delay from the moment at which it should enabled	(min.)	0	0	250
	Ado2	Alarm 2 delay at start-up	(min.)	0	0	250
PAr	**Level 2**	**General parameters**			
	Level 3	**Description**	**Values**	**Min.**	**Def.**	**Max.**
	PdE	Initial parameters (1= YES, configure to "Def" and exit programming)		0	0	1
	Ptr	Parameters transfer (0= Disabled) (1= Send) (2= Receive)		0	0	2
	PAS1	Password to parameters and information		0	2	999

MESSAGS	
AH1	**Flashing with temperature**. Sensor temperature exceeds the parameter programmed in **AHt1**
AH2	**Flashing with temperature**. Sensor temperature exceeds the parameter programmed in **AHt2**
AL1	**Flashing with temperature**. Sensor temperature is lower than the parameter programmed in **ALt1**
AL2	**Flashing with temperature**. Sensor temperature is lower than the parameter programmed in **ALt2**
EAL	**Flashing with temperature**. Active digital input
StoP	Stopped controller if CdIn=2 and digital input enabled
E1	Sensor failure (Open circuit, crossed, temperature out of range)
EE	EEPROM memory failure
rA	RAM memory failure
PAS	Password request to enter programming parameters

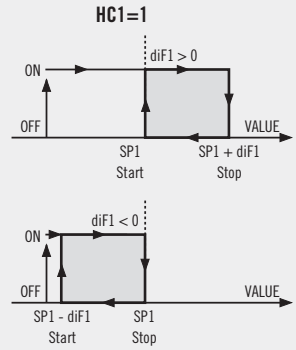
7- PARAMETERS TRANSFER

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.

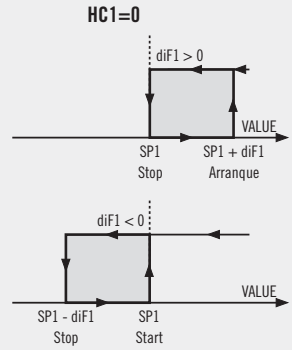


8- CONTROL 1, CONTROL 2 AND ALARMS OPERATION

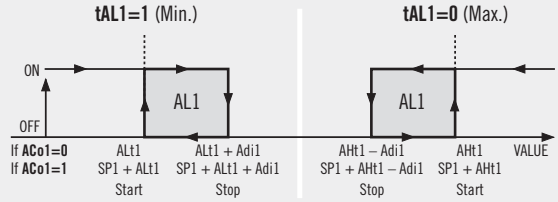
REVERSE operation



DIRECT operation

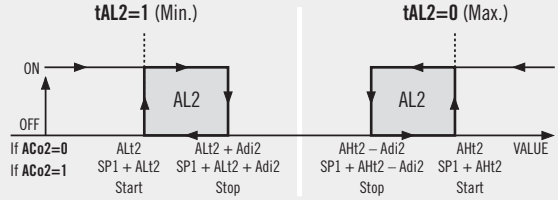


Alarm 1 Operation



ACo1 is the Alarm 1 configuration parameter

Alarm 2 Operation



ACo2 is the Alarm 2 configuration parameter

9- MAINTENANCE

Clean the controller surface with a soft cloth and 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 probes supplied by **AKO** should be used.

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