Surface differential controller, 230 V, 2 relays

Thermostat designed to display, control and regulate thermal solar energy applications in domestic hot water facilities.

1- Versions and references

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2- Technical data

Temperature range according to type of sensor configured:

- 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, Set Point and differential: 0.1 °C, 1 °C

Voltage and current declared by the EMC tests: 207 V, 21 mA

Pressure ball test temperature: 2500 V

Double insulation between the power supply, the secondary circuit and the relay output.

Maximum input power: 5 VA

Control device classification:
Independent mounting, with characteristic of automatic operation Type 1.B action, to be used in a clean situation, logical medium (software) class A and continuous operation.

Degree of contamination 2 on UNE-EN 60730-1

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 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:

Press gently to open the cover

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 0.75 mm² or 1.5 mm².

Section of connecting wires for relays contacts should be 2.5 mm².

4- Front panel functions

- **LED (Pump R1)**
  - **Permanent**: Pump Relay 1 energised.
  - **LED (Fan R2 if PO=0)**
  - **Permanent**: Fan Relay 2 energised.

- **LED (Support Resistances R2 if PO=1)**
  - **Permanent**: Support Resistances Relay 2 energised.

- **LED Alarm (adj)**
  - **Permanent**: Alarm indicator enabled.
  - **Flashing**: Alarm detected, but display maintained.

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 SOLAR SET POINT default value is 2.0 °C.

- Press **SET** key for at least 5 seconds to DISPLAY SOLAR SET POINT. The display shows SP1 for five seconds. It displays the CURRENT SET POINT value and LED °C or °F starts flashing.
- 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 and LED °C or °F stops flashing.

When pressed it displays the help message SP1 corresponding to the function performed by the key.

- When pressed for at least 5 seconds, the Solar Set Point temperature (SP1) is displayed.

5.2 Parameters configurations

**Level 1 Menus**

- When the keys ~ or ↑ are pressed simultaneously for at least 10 seconds, the display shows Pro for 10 seconds. LED °C or °F will be flashing, we are in the programming Level 1 MENUS and the first menu *1* is displayed.
- Press ~ key to access the next menu and ↑ key to return to previous one.
- Pressing **key**, the controller returns to the CURRENT TEMPERATURE display status and LED °C or °F will stop flashing.

When **PA** is displayed, PASSWORD programmed in LS parameter of **tid** menu should be entered to access the CURRENT SET POINT.
- Press **key**. 0 will be displayed to ENTER PASSWORD.
- Press **~** or **↑** keys to CHANGE NUMBER and **DISPLAY** PASSWORD programmed.
- Press **SET** key to ACCEPT PASSWORD. The CURRENT SET POINT value will be displayed and it can be already modified.

- **Level 2 Menus**
  - When the keys ~, + or ↑ are pressed simultaneously for at least 10 seconds, the display shows PRO for 10 seconds. LED °C or °F will be flashing, we are in the programming Level 2 MENUS and the first menu **2** is displayed.
  - Press ~ key to access the next menu and ↑ key to return to previous one.
  - Pressing **key**, the controller returns to the CURRENT TEMPERATURE display status and LED °C or °F will stop flashing.
  - When **PA** is displayed, PASSWORD programmed in LS of **tid** menu should be entered to access programming Level 2 MENUS.
  - Press **key**. 0 will be displayed to ENTER PASSWORD.
  - Press + or ↑ keys to CHANGE NUMBER and **DISPLAY** PASSWORD programmed.
  - Press **SET** key to ACCEPT PASSWORD. The first menu **1** will be displayed.
7- Parameters transfer

Portable server
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.

Storage dump or fast copy of the parameters entered in the portable server to the controller: Press the key while the controller is being connected to the power supply until the display shows CPY, indicating that the transfer was made correctly. Disconnect the controller and reconnect it to the power supply.

Storage dump can also be done from parameter L6=2.

8- Maintenance

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

9- 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 NTC type probes supplied by AKO should be used.

Between -40°C and +20°C, when the NTC probe is extended up to 1.000 m with minimum 0.5 mm2 cable, deviation will be less than 0.25°C (Probe extension cable ref. AKO-14918).

10- Operation and control of relays R1 and R2