Surface thermometer and thermostat

Devices designed to display, control and regulate cooling generators (manual or automatic programmable defrosting by stopping the compressor) or heating generators.

1- Versions and References

<table>
<thead>
<tr>
<th>MODEL</th>
<th>FUNCTION</th>
<th>RELAY</th>
<th>POWER SUPPLY, 50/60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKO-14602</td>
<td>Thermometer</td>
<td>-</td>
<td>230 V ± 10%</td>
</tr>
<tr>
<td>AKO-14610</td>
<td>Thermostat</td>
<td>16 (4) A, 250 V cos φ=1,5SPST</td>
<td>230 V ± 10%</td>
</tr>
<tr>
<td>AKO-14612</td>
<td>Thermostat</td>
<td>16 (4) A, 250 V cos φ=1,5SPST</td>
<td>120 V ± 8%-12%</td>
</tr>
</tbody>
</table>

2- Technical Data

Temperature range according to type of sensor configured:

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTC</td>
<td>-50.0 °C to 99.9 °C (-58.0 °F to 211 °F)</td>
</tr>
<tr>
<td>PTC</td>
<td>-50.0 °C to 150 °C (-58.0 °F to 302 °F)</td>
</tr>
</tbody>
</table>

Resolution, Set Point and differential: 0.1 or 1 °C/°F configurable by parameter P7

Input for probe:

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTC</td>
<td>± 0.2 °C</td>
</tr>
<tr>
<td>PTC</td>
<td>± 0.25 °C</td>
</tr>
</tbody>
</table>

Thermometric accuracy: ± 1 °C

Probe tolerance at 25 °C:

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTC</td>
<td>± 0.2 °C</td>
</tr>
<tr>
<td>PTC</td>
<td>± 0.25 °C</td>
</tr>
</tbody>
</table>

Maximum input power: 3 VA

Working ambient temperature: 5 °C to 50 °C

Storage ambient temperature: -30 °C to 70 °C

Control device classification:

Indoor 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

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

Allocated pulse temperature: 2500 V

Pressure ball test temperature:

<table>
<thead>
<tr>
<th>Parts active elements</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible parts</td>
<td>75 °C</td>
</tr>
</tbody>
</table>

Voltage and current declared by the EMC tests:

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKO-14602</td>
<td>207 V, 15 mA</td>
</tr>
<tr>
<td>AKO-14610</td>
<td>207 V, 17 mA</td>
</tr>
<tr>
<td>AKO-14612</td>
<td>105 V, 30 mA</td>
</tr>
</tbody>
</table>

Current of radio jamming suppression test: 270 mA

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 down lightly to open the cover.

Suitable fixing screw-holes for universal flush-mounting wall box.

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

4- Front panel functions

LED Compressor

Permanent: Relay (compressor) energised if control operates in cold.

Flashing: Because of the temperature detected by Sensor, the COOL relay should be energised, but is not due to a programmed parameter.

LED Heat

Permanent: Relay energised if control operates in heat.

Flashing: Because of the temperature detected by Sensor, the relay should be energised, but is not due to a programmed parameter.

LED Defrost

Permanent: Indicates defrost in operation LED °C

Permanent: Degrees °C indicator.

Flashing: Programming phase.

LED °F

Permanent: Degrees °F indicator.

Flashing: Programming phase.

UP key

- In programming, it makes the displayed value increase.
- When pressed for at least 5 seconds, a manual defrost is started with programmed duration.

DOWN key

- In programming, it makes the displayed value reduce

RIGHT key

- In programming, it makes the level value increase.
- Exit programming level.
- SET key

In programming, accept the programmed new value.

When pressed for at least 5 seconds, the SP Set Point temperature is displayed.

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 key for at least 5 seconds to DISPLAY SET POINT. 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 key to ACCEPT THE NEW SET POINT. The display returns to the CURRENT TEMPERATURE display status and LED °C or °F stops flashing.
- Press the key to exit the temperature set point without modifying the value.

When PA is displayed, PASSWORD programmed in L5 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 key to ACCEPT PASSWORD. The CURRENT SET POINT value will be displayed and it can be already modified.

Section of connecting wires for relays contacts should be 2,5 mm².
5.2 Parameters configuration

Level 1 Menus
Press simultaneously + keys for at least 10 seconds. LED °C or °F will be flashing, we are in the programming LEVEL 1 MENUS and the first menu “rE” 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 1 MENUS.
- Press key, 0 will be displayed to ENTER PASSWORD.
- Press or keys to CHANGE NUMBER and DISPLAY PASSWORD programmed.
- Press key to ACCEPT PASSWORD. The first menu “rE” will be displayed.

Level 2 Parameters
- In the desired menu of LEVEL 1 MENUS, press key. 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 key, the controller returns to the LEVEL 1 MENUS.

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 parameter’s values.

Level 3 Values
- To DISPLAY the CURRENT VALUE of any parameter, select the required one and press key. Once it is displayed, you can CHANGE VALUE, pressing or key.
- Press key to ACCEPT THE NEW. The programming returns to LEVEL 2 PARAMETERS.
- Pressing key, the controller returns to the LEVEL 2 PARAMETERS.

Remark: When time 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.

6- Description of parameters and messages
Values in the Def. column are factory-set

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 the other identical powered controllers.

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 or PTC 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-15586).