The AK300 model is a low cost temperature control unit for hot runner injection moulding systems. The unit is based on the AK70 controller and a 5,7” colour touch-screen as operator interface.

The AK300 is the result of years of experience in the injection moulding applications. Based on the AK70, it has the advance of the proven pre-heat and control algorithm. The number of zones and the power of each zone can be combined from 1000W to 5500W to match your requirements. The user interface is an “easy to understand” colour touchscreen very simple to configure.

The electric actuator is a well cooled solid state relay with a PWM output specifically designed by SENSO for the temperature control of hot runner systems and to assure a proper and efficient dehumidifying process.

NO SPARE FUSES NEEDED. The front switch breaker eliminates the need of spare fuses which simplifies the system maintenance.

Specifications

Power supply
400 Vca + N + E 50/60Hz with 4 meter supply cables and plug.

Thermocouple input
Standard: J : 0..600° C (Fe-CuNi , IEC584)
Cold junction compensation accuracy: better than 0,5° C after 30 minutes.
Measurement units: °C or F
Measurement Accuracy: better than+/- 0,25% FSV

Control output
Through multipole connector, 4000mm cable length as standard

Alarms
The model AK300 includes a security device that switches off the output power to prevent damages in the heaters when an overtemperature is detected.

Operator Interface
Menu based, 640x480 dots colour Touchscreen

Room conditions
Working: 0..50°C
Storage: -10..60°C
Humidity: 0.95 % HR non condensing.

Dimensions
430 x 140 x 280 mm

CE conformity (in industrial and commercial environment)
Safety: EN61010
Immunity EMI: EN50082-1
EN61000-4-2, electrostatic discharges
EN61000-4-3, radiated fields
EN61000-4-4, burst
EN61000-4-5, surge
EN61000-4-6, injected currents
EN61000-4-8, magnetic field
EN61000-4-11, PQT
EMI emission: EN50081-1
EN55022-b, conducted
EN55022-b, radiated

Individual protection switch
Beside the general switch in the back of the controller, the system has a protection breaker switch at the front which eliminates the need of spare fuses. This clever design simplifies the maintenance procedures. This can be very useful -during the set up of the mould and the control system- for the detection of eventual wiring mistakes.

Auto / Manual
Switching to manual mode can be very helpful when the thermocouple is broken. Also during the mould setup, switching to manual can help in checking the wiring.

Control
PID control
The temperature control is performed by the AK70 controller through DC pulses which are only 10 ms in duration.
This ensures that during the preheating phase only half periods are applied to the load. On the PID control mode, the controller output is the result of the three control actions added: Proportional, Integral and Derivative. The controller output will vary from 0 to 100% as a result of this combination.

Preheating

Preheating for injection moulding systems

The AK70 which is the control module for the AK300 has an advanced and well proven automatic pre-heating algorithm whose aim is the elimination of the humidity absorbed by the heating elements. The controller doses the output power in order to slowly increase the process temperature without harming the heating element.

Relay Feedback autotuning

This type of autotuning has the advantage that is performed on the set point thus can be activated at any time.

However, to perform the autotuning, the controller will create some overshoots and this might not be acceptable by the process.

Preheating with Master Control

This functions allows the activation of a special preheating mode. Usually, the fast zones (bushings) reach the working temperature much faster than the slow zones (manifold).

This special preheating mode allows the user to define a manifold zone as a preheating master for the bushing zones in such a way that the temperature in the bushing zones never go above the temperature in the manifold zones. In this way all the temperatures reach the working temperature almost at the same time.

Consumption measurement

As an option, the AK300 can include current measurement modules for detecting current errors in the heating elements such as heater burnout, or heater overcurrent by means of current transformers.

The collected information can be given in current (A) or in power (W).

Energy control

More and more, energy saving is important in the efficiency of the processes. With the energy measurement, it is possible not only control the absorbed power but also the consumed energy along the time.

Control panel

All the interaction between the operator and the AK300 is done through the Touchscreen. By means of the functions, the user can change the alarms configuration, enable/disable zones, save/load working configurations, etc...

Among the most advanced features, the user can link a zone with the thermocouple input broken to an equivalent zone in such a way that the output of this controller actuates also in the one with the defective thermocouple.

Other functions, as the Master Preheating, Password protection, global parameter change in a selected number of zones, programming of a security temperature, etc... make the AK300 an advanced equipment for the temperature control of thermoplastic injection moulding systems.

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The AK300 interface software is user friendly and intuitive. The text and graphic information is presented in a pleasant looking way thus allowing the user to learn very quickly the operation of the software.

**USB Port - Software**

The USB port at the front panel can be used for two different purposes.

**File management**

In the controller memory different mould and processes data can be stored. This information can be exported to an USB memory stick to be uploaded to another controller.

**Software update**

Our engineering team works continuously to keep up to date the software and all the different options. In addition to that, some customers ask for special and specific applications.

By means of the USB port, the software can be updated any-time.

**Ordering code**

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<th>Number of zones</th>
<th>Power per zone</th>
<th>Options</th>
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<td>0: none</td>
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<td></td>
<td></td>
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<td>1: Current</td>
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</tr>
<tr>
<td></td>
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<td>9: combination</td>
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</tr>
</tbody>
</table>

Example: AK300-12-3-0

AK300, 12 zones of 3500W without current measurement

**Where to find us?**

**Few words about us**

SENSO, Milpunts S.L. is a company based in Mataró at 30 Km. north of the Barcelona area.

Our activity is electronic instrumentation and sensors for temperature measurement and control. Our 60% of turnover is on the plastic injection moulding industry. In this field we have the knowledge to design and manufacture hot runner systems, hot halves, of course hot runner temperature controllers but we also offer a full maintenance service for the electrical side of the mould: mould cleaning, rewiring, spare parts replacement etc...

You will find us at:

http://www.senso.es