



The AK60 is a temperature controller for hot runner injection moulding applications. Its configuration is based on removeable modules, the MD60H. As an option, a touch panel can be mounted to simplify the configuration tasks.

This makes this controller an excellent features/investment ratio.

General description

The AK60 is the result of years of experience in the injection moulding applications. It's configuration is based on removeable modules with specific control algorithms for such applications. The number of zones is configured by combining 6 or 8 zones cabinets. The output power is up to 3500W.

Optionally, a 5.7" touch screen interface can be mounted to do the configuration much more simple.

NO SPARE FUSES NEEDED. The front switch breaker eliminates the need of spare fuses which simplifies the system maintenance reducing themachine downtime periods and increasing the productivity of the overall system..

Such a configuration is really innovative and unique in the market.

Specifications

Power supply

400 Vac + N + PE 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.

Measuring units: °C or F

Measurement Accuracy: better than +/- 0,25% FSV

Control output

Through multipole connector, 4000mm cable length as standard

Alarms

The model AK60 includes a security device that switches off the output power to prevent damages in the heaters when an overtemperature is detected.

Operator Interface

Each module is configured individually. However, when the touch panel is equipped, it is possible to configure all the zones simultaneously and safe file configurations.

Room conditions

Working: 0..50°C

Storage: -10..60°C

Humidity: 0..95 % HR non condensing.

Dimensions

3..6 zones: 134x398x320 mm

7..8 zones: 134x520x320mm

9..12 zones: 268x398x320 mm

13..16 zones: 268x520x320mm

17..18 zones: 402x398x320 mm

19..24 zones: 402x520x320mm

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

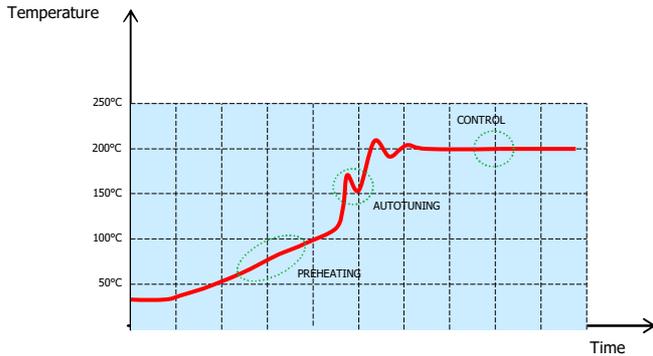
The temperature control is performed by the advanced algorithm through DC pulses which are only 10 ms in duration.

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: Proporcional, Integral and Derivative. The controller output will vary from 0 to 100% as a result of this combination.

Preheating

Preheating for injection moulding systems

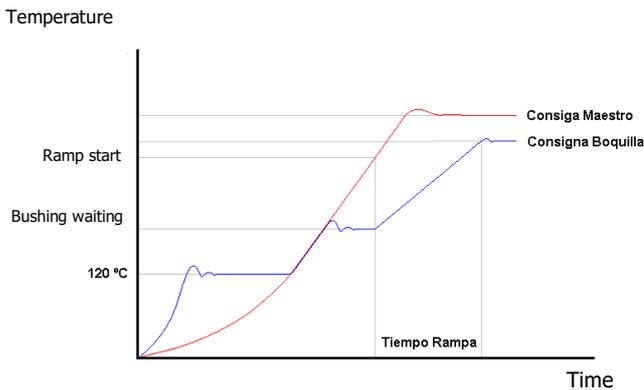
The **MD60** module for the **AK60** has an advanced and well proven automatic pre-heating algorithm whose aim is the elimination of the humidity absorbed by the heating elements. The controller doses the output power in order to slowly increase the process temperature without harming the heating element.



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 that 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.



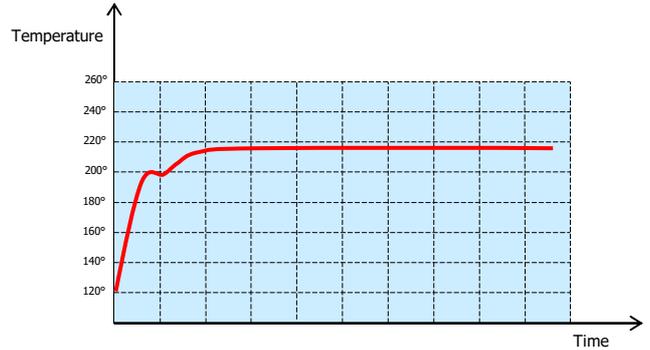
Autotuning

The AK60 has two different autotuning algorithms which can be choosed as the best for each application.

Step Response autotuning

It is performed when the process is below the set point value and can only be activated when the process is under the 50% of this set point.

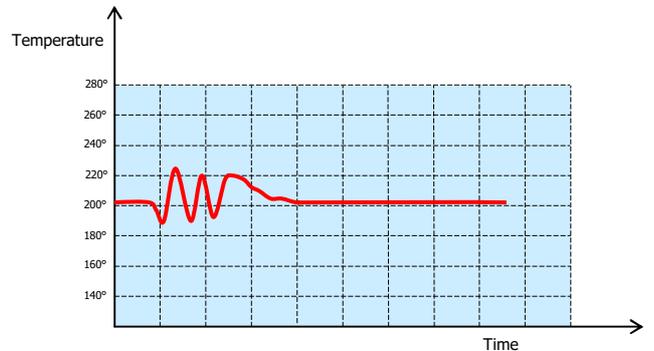
This tuning consist on increasing the process value with an output of 100% and when it reaches the 80% of the set point, the output falls down to 0%. Then the controller, will calculate the optimum P_b , T_i and T_d parameters, the PID parameters by measuring the overshoot and the response time.



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.



Consumption measurement

As an option, the AK60 can include the current measurement feature for detecting current errors in the heating elements such as heater burnout, or heater overcurrent by means of an individual current transformer.

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

Energy control

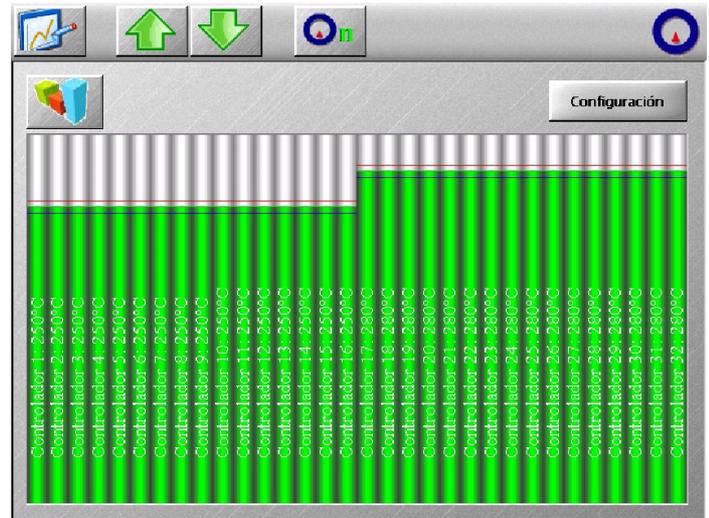
More and more, energy saving is important in the efficiency of the processes. With the energy measurement, it is possible not only control the absorbed power but also the consumed energy along the time.

Control panel

All the interaction between the operator and the AK60 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.



The AK60 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 back of the creen 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 anytime.

Ordering code

Model	Number of zones	External Alarm	Current measurement	Touch Panel
AK60	03 to 24	0: No 1: Yes	0: No 1: Yes	0: No 1: Yes
AK60	12	1	1	1

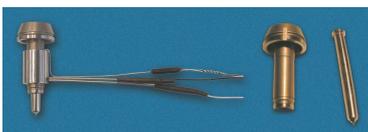
Model	External Alarm	Current Measurement	Comms to touch screen
MD60	0: No 1: Yes	0: No 1: Yes	0: No 1: Yes
MD60	1	1	1

Example: **AK60-08-111** **MD60-111**

8 zones system with an external alarm output, current measurement and configuration touch screen.

MD60 with external alarm output, current measurement and touch panel communications.

Other products and services



Where to find us ?

Few words about us

SENSO 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>

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