



The AK510 model is a temperature control unit for hot runner injection moulding systems with a big number of zones. The unit is based on the AK70 model and a 15" Touchscreen.

General description

The AK510 concentrates all the temperature controls at the front of the cabinet and the power modules at the back of the unit. It can be fitted with up to 96 control zones. All these controllers are connected to each other with a MODBUS/RTU communication network. This network is in turn connected to a user terminal with touchscreen, which works under Windows XT Embedded environment.

The unit has a safety system which, when it detects a neutral failure of the power supply, generates a warning alarm and cuts off the power outputs for the controllers. With this system, any damage to the unit and the modules is prevented.

Specifications

Power supply

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

Dimensions

1510 x 430 x 470 (wheels excluded)

Thermocouple inputs

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

Output power

As standard, the model AK510 allows to configure up to 4 different output power options: 2000, 3500, 5000 y 7000 W that can be combined grouped in modules of 2 zones.

Control output

Through multipole connector, 4000mm cable length as standard

Alarm

The temperature alarms show up in the screen by means of an indicator. In addition, the enclosure includes a light indicator for Neutral failure event and a light indicator for temperature alarm.

Operator Interface

Menu based, 17" colour Touchpanel

Room conditions

Working: 0..50°C

Storage: -10..60°C

Humidity: 0..95 % HR non condensing.

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

Control

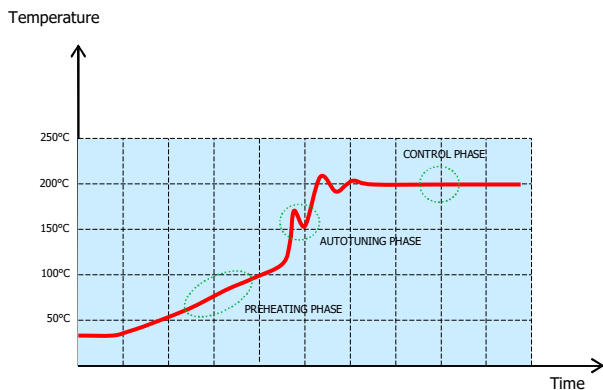
PID control

The temperature control is performed by the AK70 module 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

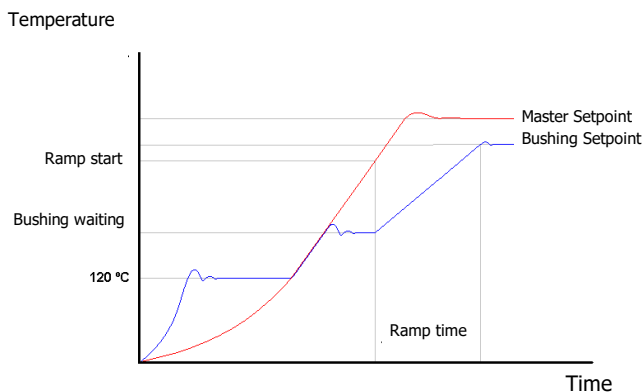
The AK70 model has an advanced automatic pre-heating algorithm whose aim is the elimination of the humidity absorbed by the heating elements. The controller doses the output power in order to slowly increase the process temperature without harming the heating element.



Preheating with Master Control

This function 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.

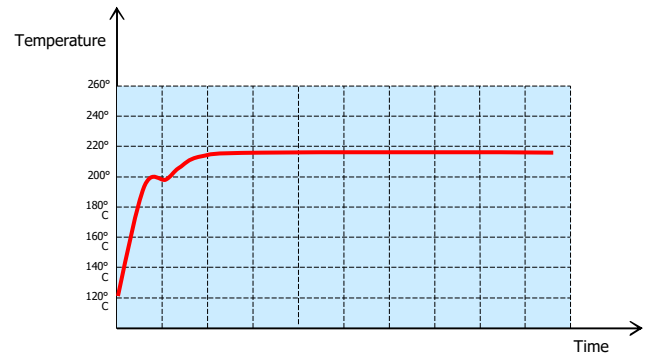


Autotuning

The autotuning function is very useful to determine which Pb, Ti and Td values are the best to achieve the optimum process stability.

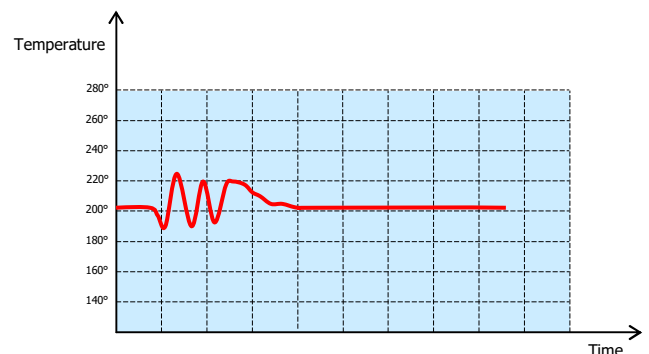
Step Response autotuning

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 Pb, Ti and Td 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.



Control panel

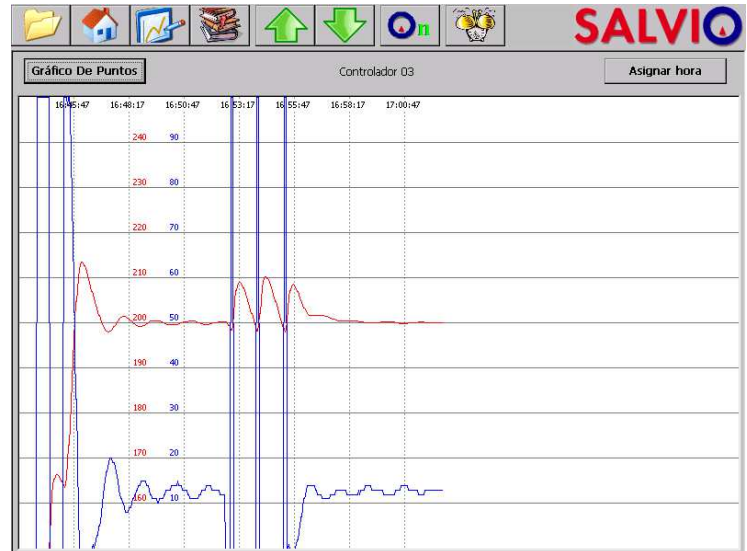
Software

All the interaction between the operator and the AK510 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 AK510 an advanced equipment for the temperature control of thermoplastic injection moulding systems.



Ordering code

Model	Number of zones (2 digits)	Power per zone
AK510	XX (49-96)	1: 2000 W
		2: 3500 W
		3: 5000 W
		4: 7000 W
		9: Other
AK510	64	9

Example: **AK510-649/26x2000/6x5000**
(AK510 64 zones with 26x2000W and 6x5000 W)

Where to find us ?

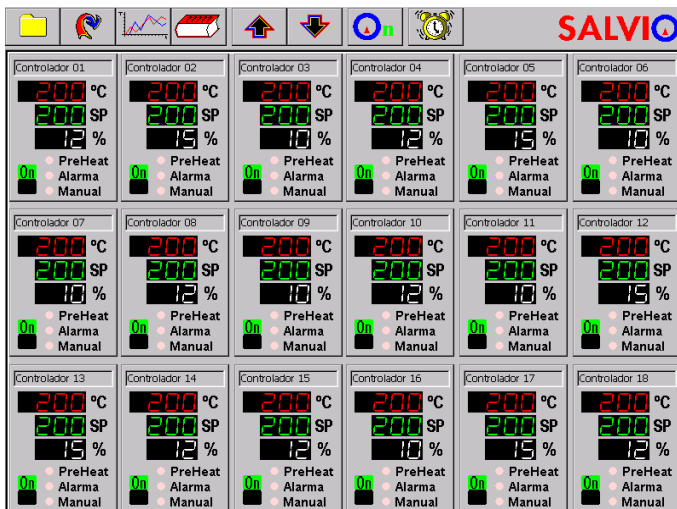
Few words about us

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>



The AK510 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.

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