



OPERATING INSTRUCTIONS

Please read these operating instructions carefully and in full to

- acquaint yourself with the full range of features offered by this program controller
- acquaint yourself with all operation steps
- prevent operating errors



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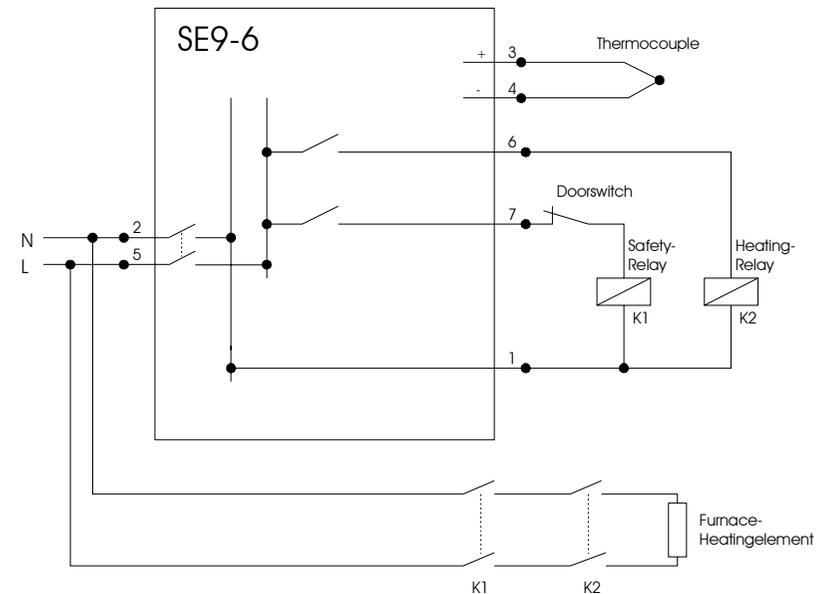
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6.2 Connecting of the controller

Wire Nr.	Harting 7D Pin-Nr.	Name
+ red (orange) -white (white)	3 4	Wire of thermocouple Type S
1	5	Input L1
2	2	Input N
3	6	Output Heating-Relay
4	1	Output N
7	7	Output Safety-Relay

Table: Connecting of the controller



6.0 Technical Data

6.1 Data

Power	200 - 250Volt 50 / 60Hz
Fuse	32 mA
Consumption	2 VA
Output	2 Contacts 230 V max. 4 A
Input	Thermoelement Type S Pt10Rh / Pt
Accurate	1 °C
Resolution	0,3 % , +/- 1 Digit
Measures	200 * 100 * 45 mm
Weight	0,6 kg
Ambient temperature	0 - 50 °C

Table: Technical Data of the SE 9-6

1. Introduction

The controller SE 9-6 enables you to exactly control your furnace. Three of the nine available programmes are already pre-set for the most common uses. You can always alter and save any of these programmes to fit your individual needs.

The controller is fixed to the side of the furnace by a mount that is delivered along with the controller. You can easily take the controller out of the mount to set up a programme and put it back after the programme has been started.

Important Note:

- Do not put the controller on the top of the furnace during the firing process.
- Do not alter the length of the cable connecting the controller to the furnace in any way.

All of our controllers are checked and tested intensively in our company. But if there is a malfunction, please try to find out the problem using chapter 5 of this manual. If the problem can not be solved this way, please contact your local distributor.

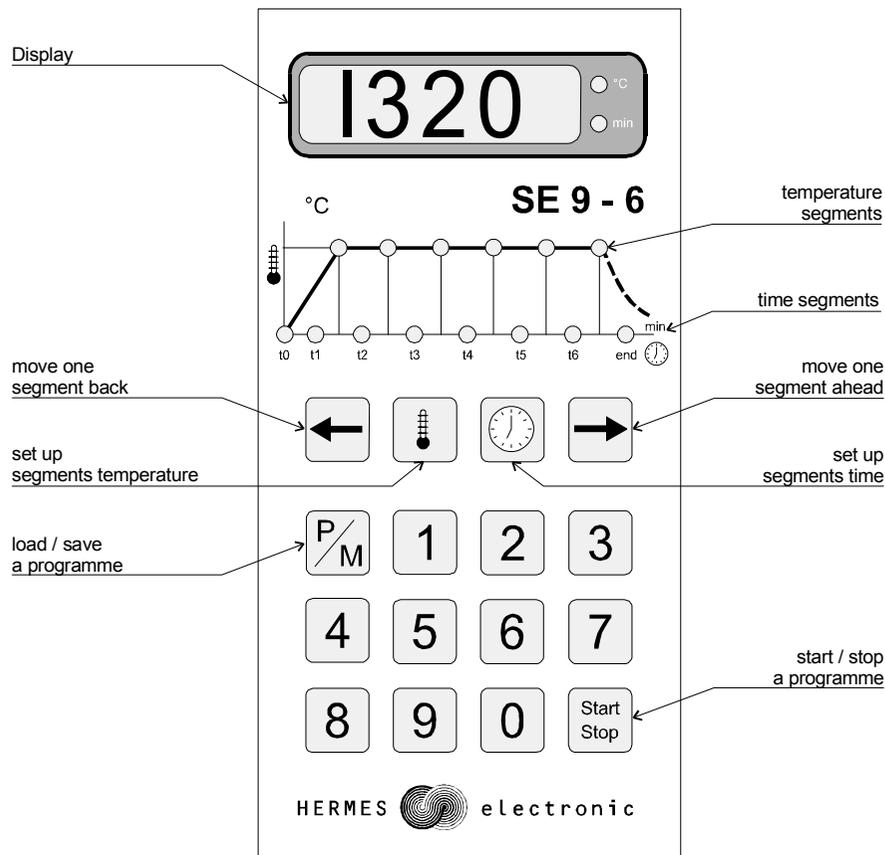
2. The first start

The controller is connected to the furnace by the controllers cable with a connector. This connector fits only in one position, and therefore can not be hooked up wrong.

At the bottom of the controller is the main power switch. When you switch on the controller, the current furnace temperature will be displayed. The controller is now ready to be programmed.

3. Working with the SE 9-6

3.1 Control elements and displays



Picture: The SE 9-6

5.0 Error Messages

The controller will permanently supervise all important processes. In case of a malfunction, the controller will abort the firing process and display one of the following error messages:

Display: F1

When the furnace is heated with maximum power output, the temperature has to increase at least 1°C in 20 min. If this is not the case, F1 will be displayed.

Possible reason:

- Heating elements are too old or defective.
- On a 3 phase system: one phase missing (check house-fuse).
- Thermocouple short cut.
- Door contact switch not closed.

Display: F2

This error message will be shown whenever the furnace heats for more than 18 hours with maximum power.

Possible reason:

- Heating elements are too old or defective.
- On a 3 phase system: one phase missing (check house-fuse).

Display: F3

If the measured temperature is too high, F3 will be displayed.

Possible reason:

- Thermocouple defective.
- wiring of the thermocouple defective.

Display: F4

If the measured temperature has a negative value, F4 will be displayed:

Possible reason:

- Thermocouple is connected wrong.
- Wiring for the thermocouple is connected wrong.

Display: F5 or F6

F5 or F6 will be displayed whenever the controller has detected an internal error.

Possible reason:

- The controller is defective. To check this, switch off and on the controller. If the error occurs please call your distributor.

Display: F7

F7 will be displayed if the temperature of the furnace is above 20°C over the programmed temperature.

Possible reason:

- Power-Relay of the furnace is defective.

3.3.1 Meaning of the LED's

The blinking of the LED's will have following meanings:

- t0:** *delay time*
The firing process will be delayed after pushing the  button by the set amount of time.
Note: The delay time can not be saved to an programme.
- t1 – t6:** *heat-up, soak, cool-off times*
Here you can enter heat-up, soak and cool-off times
Note: When entering a cool-off time, you can not cool-off the furnace faster than it's natural cooling.
- end:** *end*
This LED shows that the firing process has been finished and the heating has been switched off. The furnace will now cool off.

The LED's above the time LED's show the currently set temperature of the segment.

4.0 The firing process

After choosing a programme (see chapter 3.1), and pressing the  button, the firing process will be started. In case that you have entered a delay time, the delay time will be displayed and counted backwards after starting the programme. As soon as the time reaches zero, the actual firing process will be started. The delay time is especially useful for furnaces that use night power which is cheaper.

The controller will start to carefully heat up the furnace in segment 't1' to the temperature of the first segment. As soon as the temperature has been reached, the controller will start with the next segment. After the controller has finished all the segments, the 'end'-LED will light up and display, during the cooling-off process.

3.2 Choosing and starting saved programmes

The SE 9-6 has 9 programmes that can be individually altered and saved.

Stating a saved programme

Push the  button to call up the programme mode. The display will show 'P=' . Use the keypad to choose your desired programme. Then push the  button to start firing, using the previously chosen programme.

For example:

To choose and start programme number 3, push the following button:



If you push the button again, the programme will be stopped.

3.2.1 Factory set programmes

The programmes 1-3 are pre-set by the factory, and work for the most common uses. These programmes can be changed as well.

Programme	Number	t1	Temp 1	t2	Temp 2
Schrühen 1	1	0 min	600 °C	480 min	900 °C
Schrühen 2	2	0 min	600 °C	240 min	900 °C
Glasur	3	0 min	250 °C	120 min	1050 °C

Table: Factory set programmes

3.3 Changing the programmes

To change the controllers programmes, first choose a programme as described earlier in chapter 3.2.

Entering the Time Segments

Push the  button once. The LED 't1' will start blinking. You are now in the altering mode for 'time'. You can now change the value that is displayed using the keypad. Use the buttons  and  to move back and forth through the time segments scale.

Entering the Temperatures

Push the  button once. The first temperature LED will start blinking. You are now in the altering mode for temperature. You can change the value that is displayed using the keypad. Use the buttons  and  to back or forth through the temperature segments scale.

When finished setting up   the programme, you can start it any time by pressing  the button. During the time firing process, the time segments will be counted backwards. In case you would like to restart your programme, you can either reload it in case you have it stored, to set the time segments back to their original time, or you can re-enter the time segments.

Clearing a Programme

You can set all current time and temperature data to zero by choosing the programme number '0' (see chapter 3.2). This is useful if you want to set up a completely new programme.

Note. Saved programmes will not be affected by this.

Saving a programme

You can save up to 9 programmes for your most common uses. To save a programme, follow these instructions:

First set up a programme like you wish. Then push the  button twice. The display will now show 'S='. Now enter your desired programme number and then push the  button. The programme will now be saved.

Example:

We now want to enter and save programme number 4 with the following specifications:

Programme	Number	t1	Temp 1	t2	Temp 2
MyProg	4	30 min	250 °C	60 min	1100 °C

To do this, follow these instructions:

1. Clear the old programme:

 >  > 

2. Enter the time segments:

 >  >  >  >  >  > 

3. Enter the temperature segments:

 >  >  >  >  >
 >  >  >  > 

4. Save the programme:

 >  >  > 