

**Hardware Protection**

Item	Error code	Description	Type	Cause	When the protection works	an accurate description
1	No code	Protection against excessive housing temperature (> 80 °C)	hardware	poor ventilation, ventilation fans damaged, covered vents	always	the thermostat at the bottom of the housing, turns the power to the oven off when the temp. rises above (80 °C).

**Software Protection****Note:**

The first digit is the heater number : 1 = front, 2 = rear;

The second digit of the code is the error number:

(Example: E11- pretends to the Front heater - means that the Front thermocouple have failed (open circuit);

E21- pretends to the Rear heater - means that the Rear thermocouple have failed (open circuit).

Item	Error code - description	Description	Type	Possible cause	When	an accurate description
1	E11-Front thermocouple failed (open circuit)	thermocouple has open circuit.	Software Protection	The thermocouple is not connected; the thermocouple is faulty; an error in the controller in the track of the A/D converter	Always	Thermocouple readings exceed 1500 °C.
	E21-Rear thermocouple failed (open circuit)					
2	E12-Front thermocouple failed (short circuit)	Short circuit in the thermocouple circuit.	Software Protection	Shorted thermocouple; error in the controller in the track of the A/D converter	When oven is heating	If in 15 seconds after delivery of power to the heater of more than 25% the thermocouple temperature is less than 50° C and the difference between reference temperature between the sensor on the PCB and a thermocouple is less than 1°C.
	E22-Rear thermocouple failed (short circuit)					
3	E13-Front heater malfunction	No heating.	Software Protection	SSR defective (open); Faulty heater (open circuit); faulty controller	When oven is heating	If in 30 seconds after delivery of power to the heater of more than 25% the thermocouple temperature is less than 40° C and the difference between reference temperature between the sensor on the PCB and a thermocouple is less than 1°C.
	E13-Rear heater malfunction					
4	E14-Front heater malfunction (SSR is damaged)	Thermal runaway in the chamber.	Software Protection	SSR defective (short circuit); faulty controller,	When the oven is turned on and is on stanby or in the cooling mode	If after 10 seconds of switching to the standby mode or Cool the temperature will rise.
	E24-Rear heater malfunction (SSR is damaged)					
5	E15-Front heater malfunction (overheat)	An excessive increase in temperature in the chamber (>470 °C)	Software Protection	SSR defective (short circuit);	Always	
	E25-Rear heater malfunction (overheat)					

6	E16-Obj. thermocouple fail (open circuit)	Obj. thermocouple has open circuit.	Software Protection	The thermocouple is not connected; the thermocouple is faulty; an error in the controller in the track of the A/D converter	When oven is heating in external TC mode	Thermocouple readings exceed 1500 °C.
	E26-Obj. thermocouple fail (open circuit)					
7	E17-Object temperature rise too slow	Too slow temperature rise on the measured object.	Software Protection	The thermocouple is not connected or connected with reversed + and -; the thermocouple is faulty; an error in the controller in the track of the A/D converter	When oven is heating in external TC mode	At the temperature difference between the heater and the object more than 100 ° C, the object temperature does not grow quickly enough.
	E27-Object temperature rise too slow					

**Attention:**

**Each type of error, turns off the power to the heaters. (Disconnects the relays activating heaters).**

**In order to restore the normal operation, the oven must be switched off and switched on again.**