

EK 354A

**ON-OFF digital controller for electrical bread
ovens**

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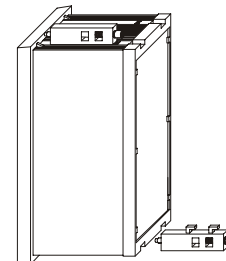
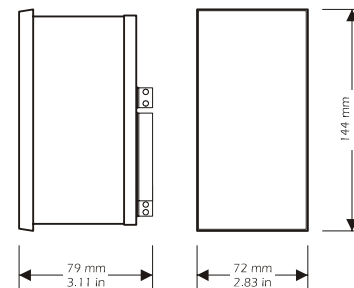
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ENGLISH

1 PREPARATIONS

1.1 How to install the instrument

Panel mounting, panel cut out 67 x 138 mm (2.63 x 5.43 in),
with screw brackets (supplied by the builder).



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installation with screw brackets; moderate the clamping torque, in order not to damage box and screw brackets.

2 OPERATION

2.1 How to turn the instrument ON/OFF

- press  for 2 s 

During the normal operation the instrument shows the temperature the chamber probe is reading (in the display at the top), the percentage of power supplied to the top heating group (in the LED bar at the top), the percentage of power supplied to the floor heating group (in the LED bar at the bottom) and the cooking timer length (in the display at the bottom).

2.2 How to silence the buzzer

- press 


2.3 How to turn the steam generator ON/OFF

- press 

2.4 Steam injection

To inject steam:

- press 

The steam will be injected if the steam generator is turned ON, for the time you have set with parameter tb1 or as long as you release button 

2.5 How to turn the extractor ON/OFF

- press 

2.6 How to activate/deactivate function Economy

- press 

During this function the time the top output is turned ON is “ $\{[(\text{time you have set with parameter } c1) / 2] / 10\} \times (\text{number of bars turned ON in the LED bar at the top})$ ” ; the time the floor output is turned ON is “ $\{[(\text{time you have set with parameter } c1) / 2] / 10\} \times (\text{number of bars turned ON in the LED bar at the bottom})$ ” .

During this function the outputs are alternatively activated.

2.7 How to turn the chamber light ON/OFF

- press 

3 TIMER FOR DELAYED STARTING

3.1 How to set the timer for delayed starting

To modify the timer for delayed starting:

- be sure the instrument is turned OFF

- press 

- press or within 4 s ⁽¹⁾
- press

To activate the timer:

- be sure the instrument is turned OFF

- press for 2 s

As soon as the time you have set with the procedure passes, the device will automatically turn ON ⁽²⁾ ⁽³⁾.

- (1) you can set the timer for delayed starting between 1 and 99 min
- (2) the instrument stores the course of the time every 30 min
- (3) the first time the instrument stores the course of the value (after a lack of power supply) will take place after 15 min the power supply has recovered, in order to ensure the course storing even if the lacks take place over and over again.

4 COOKING TIMER

4.1 How to set the cooking timer

To modify the cooking timer:

- be sure the instrument is turned ON

- press
- press or within 4 s ⁽⁴⁾
- press

To activate/deactivate the timer:

- be sure the instrument is turned ON

- press for 2 s

As soon as the time you have set with the procedure passes, the buzzer will be activated for the time you have set with param. c4.

- (4) you can set the cooking timer between 1 and 99 min.

5 WORKING SETPOINT

5.1 How to set the working setpoint

- press
- press or within 4 s ⁽⁵⁾
- press

- (5) you can set the working setpoint between the limits you have set with parameters rA1 and rA2.

6 PERCENTAGE OF POWER SUPPLIED TO THE HEATING GROUPS

6.1 How to set the percentage of power supplied to the heating groups

To modify the value of the percentage of power supplied to the top heating group:

- press

- press or within 4 s ⁽⁶⁾
- press

The time the top output is turned ON is " $\{ \{ \{ \text{time you have set with parameter c1} / 10 \} \times (\text{number of bars turned ON in the LED bar at the top}) \} \} \}$ " ⁽⁷⁾.

To modify the value of the percentage of power supplied to the floor heating group:

- press during the modification of the percentage of power supplied to the top heating group

- press or within 4 s ⁽⁶⁾
- press

The time the floor output is turned ON is " $\{ \{ \{ \text{time you have set with parameter c1} / 10 \} \times (\text{number of bars turned ON in the LED bar at the bottom}) \} \} \}$ " ⁽⁷⁾.

- (6) if parameter c0 has value 1, the modification of the percentage of power supplied to a heating group will automatically provoke the supply of the maximum power to the other one and vice versa; if parameter c0 has value 2, the modification of the percentage of power supplied to a heating group will automatically provoke an adjustment of the other one such as to guarantee that the sum of bars turned ON will always be 10

- (7) the outputs are turned ON as much as possible alternatively.

7 CONFIGURATION PARAMETERS

7.1 How to set configuration parameters

Configuration parameters are arranged on two levels.

To gain access the first level:

- press and for 4 s : the instrument will show **PR**

To select a parameter:

- press or

To modify the value of the parameter:

- press and or

To gain access the second level:

- gain access the first level

- press or to select **PR**
- press and or to select "**-19**"
- press and for 4 s : the instrument will show **PR**

LABEL	MIN.	MAX.	U.M.	DEF.	RESERVED
L1	—	—	—	—	reserved
L2	—	—	—	—	reserved
L3	—	—	—	—	reserved
L4	—	—	—	—	reserved

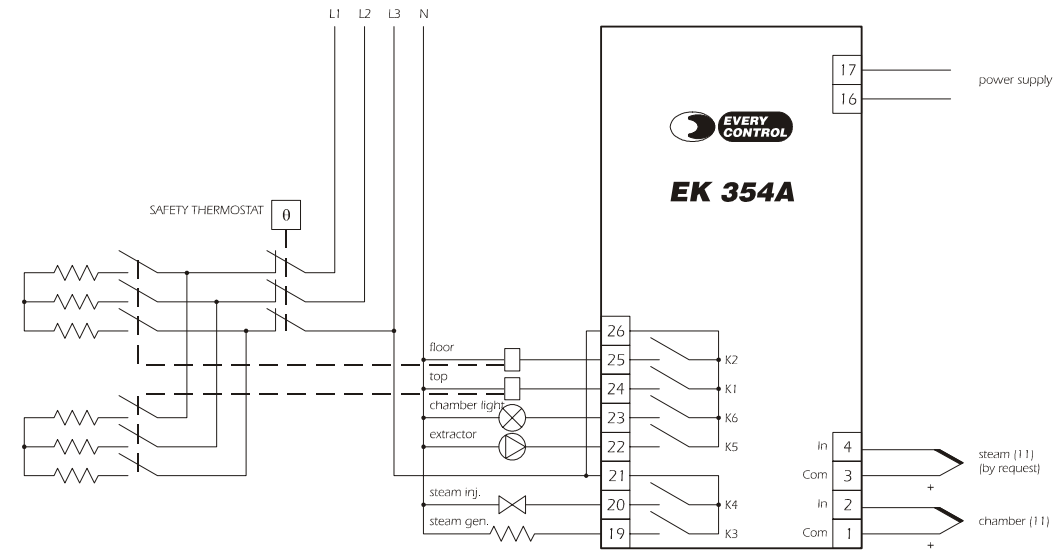
- (8) the unit of measure depends on parameter /8

- (9) the steam injection will not be allowed as long as the steam temperature gets again the temperature you have set with parameter rb1; to show the steam temperature, press ; if LED steam generator is lit, the steam generator will be turned ON and the steam injection will be allowed; if LED steam generator flashes, the steam generator will be turned ON but the steam injection will not be allowed (because the steam temperature is between rb1 and rb1 - rbE)

- (10) ds = 0.1 seconds.

12 ELECTRICAL CONNECTION

12.1 Electrical connection



- (11) provide the probes with a protection able to protect them against contacts with metal parts or use insulated probes.


LABEL	MIN.	MAX.	U.M.	DEF	STEAM INJECTION
tb0	1	255	s	1	minimum time between two steam injections in succession
tb1	1	255	ds ⁽¹⁰⁾	10	minimum length of the steam injection

LABEL	MIN.	MAX.	U.M.	DEF	FIRST ALARM
AA0	1	99	°C/°F ⁽⁸⁾	2	hysteresis (differential, it is relative to AA1, it is important if AA4 ≠ 1)
AA1	-99	999	°C/°F ⁽⁸⁾	0	first temperature alarm threshold (it is important if AA4 ≠ 1); look at AA4 as well
AA3	0	999	min	0	first temperature alarm exclusion time since you turn the instrument ON (it is important if AA4 ≠ 1)
AA4	1	7	—	1	kind of temperature alarm (1 = it will never be activated, 2 = absolute lower temperature alarm, 3 = absolute upper temperature alarm, 4 = lower temperature alarm relative to the working setpoint, 5 = upper temperature alarm relative to the working setpoint, 6 = lower temperature alarm relative to the working setpoint with automatic calculation and enabling, 7 = upper temperature alarm relative to the working setpoint with automatic calculation and enabling)

LABEL	MIN.	MAX.	U.M.	DEF	SECOND ALARM
Ab0	1	99	°C/°F ⁽⁸⁾	2	hysteresis (differential, it is relative to Ab1, it is important if Ab4 ≠ 1)
Ab1	-99	999	°C/°F ⁽⁸⁾	0	second temperature alarm threshold (it is important if Ab4 ≠ 1); look at Ab4 as well
Ab3	0	999	min	0	second temperature alarm exclusion time since you turn the instrument ON (it is important if Ab4 ≠ 1)
Ab4	1	7	—	1	kind of temperature alarm (1 = it will never be activated, 2 = absolute lower temperature alarm, 3 = absolute upper temperature alarm, 4 = lower temperature alarm relative to the working setpoint, 5 = upper temperature alarm relative to the working setpoint, 6 = lower temperature alarm relative to the working setpoint with automatic calculation and enabling, 7 = upper temperature alarm relative to the working setpoint with automatic calculation and enabling)









LABEL	MIN.	MAX.	U.M.	DEF	POWER/COOKING TIMER
c0	0	2	—	0	connection between the percentages of power supplied to the heating groups (0 = no connection, 1 = the modification of the percentage of power supplied to a heating group will automatically provoke the supply of the maximum power to the other one and vice versa, 2 = the modification of the percentage of power supplied to a heating group will automatically provoke an adjustment of the other one such as to guarantee that the sum of bars turned ON will always be 10)
c1	1	999	s	80	cycle time to turn ON the top output and the floor output during the normal operation
c4	-1	120	s	5	time the buzzer is activated at the end of the cooking timer (-1 = the buzzer has to be silenced by hand)


To quit the procedure:

- press  and  for 4 s  or do not operate for about 60 s.

8 SIGNALS

8.1 Signals

LED	MEANING
	LED regulator if it is lit, the temperature the chamber probe is reading is below the working setpoint
	LED top and floor if they are lit, the top output and the floor output will be turned ON
	LED steam generator if it is lit, the steam generator will be turned ON
	LED steam injector if it is lit, the steam injection will be running
	LED extractor if it is lit, the extractor will be turned ON
	LED economy if it is lit, function Economy will be activated
	LED chamber light if it is lit, the chamber light will be lit
°C	LED Celsius degree if it is lit, the unit of measure of the temperature showed by the instrument will be Celsius degree
°F	LED Fahrenheit degree if it is lit, the unit of measure of the temperature showed by the instrument will be Fahrenheit degree
h	LED hour if it is lit, the unit of measure of the time showed by the instrument will be hour
min	LED minute if it is lit, the unit of measure of the time showed by the instrument will be minute
start	LED timer if it flashes, the count of the timer for delayed starting (or the count of the cooking timer) will be running
	LED ON STAND-BY if it is lit, the instrument will be in the STAND-BY mode (turned OFF)

INDICAT.	MEANING
	the instrument has finished counting the cooking timer

9 ALARMS

9.1 Alarms

CODE	REASONS	REMEDIES	EFFECTS
E2	there is a corruption of the configuration data in the memory of the instrument	turn OFF the power supply of the instrument: unless the alarm disappears, you will have to change the instrument	<ul style="list-style-type: none"> the access to the setting procedures will not be allowed all outputs will be turned OFF
E0	<ul style="list-style-type: none"> the kind of chamber probe you have connected is not right the chamber probe plays up the connection instrument-chamber probe is wrong the temperature the chamber probe is reading is outside the limits allowed by the working range of the instrument 	<ul style="list-style-type: none"> look at parameter /0 test the integrity of the probe test connection instrument-probe test the temperature close to the probe 	<ul style="list-style-type: none"> the top output will be turned OFF the floor output will be turned OFF
E1	<ul style="list-style-type: none"> the kind of steam probe you have connected is not right the steam probe plays up the connection instrument-steam probe is wrong 	<ul style="list-style-type: none"> look at parameter /0 test the integrity of the probe test connection instrument-probe test the temperature close to the probe 	<ul style="list-style-type: none"> the steam generator will be turned OFF the steam injection will not be allowed

	<ul style="list-style-type: none"> the temperature the steam probe is reading is outside the limits allowed by the working range of the instrument 		
E0C cold joint alarm	there is a defect in the cold joint of the instrument	turn OFF the power supply of the instrument: unless the alarm disappears, you will have to change the instrument	<ul style="list-style-type: none"> the top output will be turned OFF the floor output will be turned OFF if the instrument has been preset for steam temperature regulation, the steam generator will be turned OFF and the steam injection will not be allowed
AL1 first temperature alarm	the temperature the chamber probe is reading is outside the limit you have set with parameter AA1	test the temperature close to the probe (look at parameters AA0, AA1 and AA4)	no effect
AL2 second temperature alarm	the temperature the chamber probe is reading is outside the limit you have set with parameter Ab1	test the temperature close to the probe (look at parameters Ab0, Ab1 and Ab4)	no effect

The indications showed by the instrument flashes, except the indications **"E1"**, **"AL1"** and **"AL2"** (they are alternated with the temperature the chamber probe is reading) and the buzzer utters an intermittent beep.

10 TECHNICAL DATA

10.1 Technical data

Box: self-extinguishing grey.

Size: 72 x 144 x 79 mm (2.83 x 5.66 x 3.11 in).

Installation: panel mounting, panel cut out 67 x 138 mm (2.63 x 5.43 in), with screw brackets (supplied by the builder).

Frontal protection: IP 54.

Connections: extractable terminal blocks with pitch 7.5 mm (0.29 in) for cables up

to 2.5 mm² (0.38 sq in, power supply and outputs) and with pitch 5 mm (0.19 in) for cables up to 2.5 mm² (0.38 sq in, input).

Ambient temperature: from 0 to 55 °C (32 to 131 °F; 10 ... 90% of relative humidity without condensate).

Power supply: 230 Vac, 50/60 Hz, 4 VA (standard) or 115 Vac, 50/60 Hz, 4 VA (by request).

Alarm buzzer: included.

Measure inputs: 1 (chamber probe) for "J" or "K" thermocouples; steam probe by request (for steam temperature regulation).

Working range: from 0 to 700 °C (32 to 999 °F) for "J" thermocouple, from 0 to 999 °C (32 to 999 °F) for "K" thermocouple.

Setpoint range: from 0 to 999 °C (0 to 999 °F).

Range of the timer for delayed starting: from 1 to 99 h.

Range of the cooking timer: from 1 to 99 min.

Resolution: 1 °F with unit of measure in Fahrenheit, 1 °C with unit of measure in Celsius.

Display: one red LED 3-digit displays 13.2 mm (0.51 in) high, one red LED 2-digit display 13.2 mm (0.51 in) high, two LED bars (10 red LED), output status indicators, indicators of the unit of measure of the temperature showed by the instrument.

Outputs: 6 relays: one 8 A @ 250 Vac relay for top heating group control (NO), one 8 A @ 250 Vac relay for floor heating group control (NO), one 10 A @ 250 Vac relay for steam generator control (NO), one 8 A @ 250 Vac relay for steam injection control (NO), one 8 A @ 250 Vac relay for extractor control (NO), one 8 A @ 250 Vac relay for chamber light control (NO); the maximum current allowed on terminal 21 and 26 is 10 A.

11 WORKING SETPOINT AND CONFIGURATION PARAMETERS

11.1 Working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINT
rA1	rA2	°C/°F ⁽⁸⁾	0	working setpoint	

11.2 First level parameters

LABEL	MIN.	MAX.	U.M.	DEF.	PASSWORD
PA	-90	100	—	0	password

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
/1	-10	10	°C/°F ⁽⁸⁾	0	chamber probe calibration

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
rA0	-15	-1	°C/°F ⁽⁸⁾	-2	hysteresis (differential, it is relative to the working setpoint)

LABEL	MIN.	MAX.	U.M.	DEF.	STEAM (by request)
rb0	-15	-1	°C/°F ⁽⁸⁾	-2	hysteresis (differential, it is relative to rb1)

11.3 Second level parameters

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
/0	10	11	—	10	kind of probe (10 = "J" Tc, 11 = "K" Tc)
/1	-10	10	°C/°F ⁽⁸⁾	0	chamber probe calibration
/2	0	6	—	3	probe reading speed (0 = fast, ..., 6 = slow)
/4	0	1	—	0	display of non meaningful zeros (1 = YES)
/8	0	1	—	1	unit of measure temperature (0 = Fahrenheit degree, 1 = Celsius degree)

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
rA0	-15	-1	°C/°F ⁽⁸⁾	-2	hysteresis (differential, it is relative to the working setpoint)
rA1	0	rA2	°C/°F ⁽⁸⁾	0	minimum value you can assign to the working setpoint
rA2	rA1	999	°C/°F ⁽⁸⁾	300	maximum value you can assign to the working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	STEAM (by request)
rb0	-15	-1	°C/°F ⁽⁸⁾	-2	hysteresis (differential, it is relative to rb1)
rb1	0	999	°C/°F ⁽⁸⁾	0	steam setpoint
rbA	—	—	°C/°F ⁽⁸⁾	—	steam temperature showing
rbE	-99	-1	°C/°F ⁽⁸⁾	-50	temperature below which the steam injection will not be allowed (it is relative to rb1) ⁽⁹⁾