

RK 804X/RK 805X/RK 806X/RK 807X Multifunction digital controller for electric ovens

ENGLISH

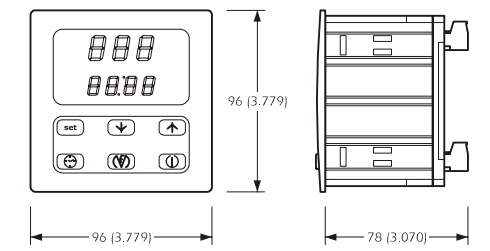
1 GETTING STARTED

1.1 Important
Read these instructions carefully before installing and using the instrument; do not forget following all additional information for installation and electrical connection.

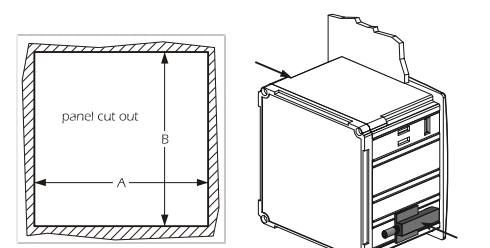
Keep these instructions close to the instrument for future consultations.

1.2 Installing the instrument

Panel mounting, with screw brackets.



Dimensions in mm (in).

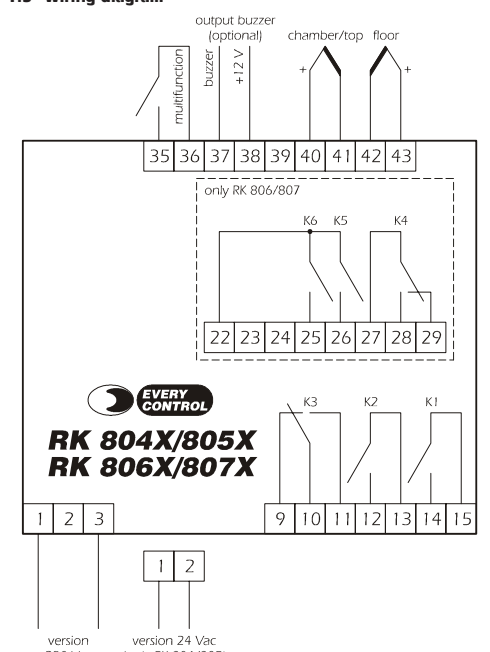


DIMENS.	MINIMUM	TYPICAL	MAXIMUM
A	92.0 (3.622)	92.0 (3.622)	92.8 (3.653)
B	92.0 (3.622)	92.0 (3.622)	92.8 (3.653)

Additional information for installation:

- the maximum panel thickness must be 4 mm (0.157 in)
- position the brackets as indicated; moderate the clamping torque, in order not to damage box and screw brackets
- working conditions (ambient temperature, humidity, etc.) must be between the limits indicated in the technical data
- install the instrument in locations with suitable ventilation, in order to avoid the overheating of the instrument
- do not install the instrument close to heating sources (resistances, hot air ducts, etc.), locations subject to direct sunlight, rain, humidity, dust, mechanical vibrations or bumps, devices provided with big magnets (big speakers, etc.)
- according to safety norms, the protection against electrical parts must be ensured by a correct installation of the instrument; the parts that ensure the protection must be installed so that you can not remove them if not by using a tool.

1.3 Wiring diagram



Additional information for electrical connection:

- do not operate on the terminal blocks with electrical or pneumatic screwdriver
- if the instrument has been moved from a cold to a warm location, the humidity will condense on the inside; wait about an hour before applying power to the instrument
- test the working power supply voltage, working electrical frequency and working electrical power of the instrument; they must correspond with the local power supply

- disconnect the local power supply before servicing the instrument
- give the probes a protection able to protect them against contacts with metal parts or use insulated probes
- do not use the instrument as safety device
- do not try repairing the instrument yourself; for repairs, always use the sales network

for any further information concerning the instrument, please consult Evco.

1.4 Users for relays K1, K2 and K3

INST. CODE	RELAY K1	RELAY K2	RELAY K3
1	top output	floor output	airhole output
2	top output	floor output	chamber light output
3	top output	floor output	output for steam injection

1.5 Users for relays K4, K5 and K6 (only RK 806X/807X)

INST. CODE	RELAY K4	RELAY K5	RELAY K6
1	alarm output	output for cooking timer	output for acoustic signalings
2	alarm output	output for cooking timer	output for acoustic signalings
3	alarm output	output for cooking timer	output for acoustic signalings

2 CONFIGURING THE INSTRUMENT

2.1 Preliminary information

You can configure the instrument to work with one probe (hereinafter called "instrument with one probe", chamber probe) or with two probes (hereinafter called "instrument with two probes", top probe and floor probe); you can also choose the users for relays K1, K2 and K3 (among three combinations, look at paragraph 1.4).

RK 806X/807X have got three further relays (look at paragraph 1.5).

2.2 Available configurations

PROBE NUMBER	INSTRUMENT CODE	OUTPUTS FOR RK 804X/805X	FURTHER OUTPUTS FOR RK 806X/807X
1 (chamber)	1	top, floor and airhole	alarm, timer and acoustic signalings
2 (top and floor)	1	top, floor and airhole	alarm, timer and acoustic signalings
1 (chamber)	2	top, floor and chamber light	alarm, timer and acoustic signalings
2 (top and floor)	2	top, floor and chamber light	alarm, timer and acoustic signalings
1 (chamber)	3	top, floor and steam injection	alarm, timer and acoustic signalings
2 (top and floor)	3	top, floor and steam injection	alarm, timer and acoustic signalings

Further features for RK 804X/806X:

- cooking timer, independent management of powers supplied to the top and to the floor (only in the instrument with one probe), function Quick heating (only in the instrument with one probe), independent management of top and floor temperatures (only in the instrument with two probes).

Further features for RK 805X/807X (in addition to the ones for RK 804X/806X):

- real time clock and function Programmed starting.

2.3 Selecting the configuration

To gain access the procedure:

- switch off the power supply of the instrument
- restore the power supply

press 3 times in 4 s since the power supply has been restored: the instrument will show "SEL" flashing in the display at the top and an indication on the probe number in the display at the bottom.

INDICAT.	MEANING
1 Pb	Instrument with one probe (chamber probe)
2 Pb	Instrument with two probes (top probe and floor probe)

Otherwise:

- press 1 s to turn the instrument off
- press and 4 s: the instrument will show the instrument code in the display at the top and an indication on the probe number in the display at the bottom.

press or to select "PA"
press or in 15 s to set "743"
press and 4 s: the instrument will show "SEL" flashing in the display at the top and an indication on the probe number in the display at the bottom.

To modify the probe number:

- press 1 s.

To modify the instrument code:

- press or in 15 s
- press or in 15 s

To quit the procedure:

- press 1 s or switch off the power supply of the instrument.

If you modify the probe number or the instrument code, the instrument will not lose the value of configuration parameters.

2.4 Restoring default configuration parameters

- gain access the procedure to select the configuration
- press the instrument will show "dEF" flashing in the display at the top
- press or in 15 s to set "149"
- press the instrument will show "SEL" flashing and the buzzer will utter a short beep.

To quit the procedure:

- press 1 s or switch off the power supply of the instrument.

3 USER INTERFACE

3.1 Preliminary information

If the instrument is turned on, the display at the top will show:

- the chamber temperature or the working setpoint value (in the instrument with one probe)
- the top temperature or the top setpoint value or the floor temperature or the floor setpoint value (in the instrument with two probes).

If the instrument is turned on, the display at the bottom will show:

- the count of the cooking timer (if the timer will be running) or the real time (only RK 805X/807X; the display will be switched off for RK 804X/806X).

If the instrument is turned off, the display at the top will be switched off.

If the instrument is turned off, the display at the bottom will show:

- the real time (only RK 805X/807X; look at parameter c7 as well; the display will be switched off for RK 804X/806X).

3.2 Turning the instrument on/off

- press 1 s.

To turn off means turning the instrument off via software (the instrument is connected with the power supply).

3.3 How to know which the quantity showed by the instrument in the display at the top is

- press and the instrument will show 2 s an indication in the display at the bottom.

INDICAT.	MEANING
tE	Chamber temperature (instrument with one probe)
SP	Working setpoint value (instrument with one probe)
tE1	Top temperature (instrument with two probes)
SP1	Top setpoint value (instrument with two probes)
tE2	Floor temperature (instrument with two probes)
SP2	Floor setpoint value (instrument with two probes)

3.4 Selecting the quantity to show in the display at the top during the normal operation

- make sure the instrument is turned on
- press and 2 s. Afterwards the instrument will show 2 s one of the indications indicated in paragraph 3.3 in the display at the bottom.

3.4 Showing the temperatures read by the probes immediately

- make sure the instrument is turned on
- press during the procedure or do not operate 15 s.

During the procedure the instrument will show one of the indications indicated in paragraph 3.3 in the display at the bottom.

3.6 Silencing the alarms

- press a button.

This will also deactivate the output for acoustic signalings (if present).

3.7 Turning the airhole on/off by hand (if present)

- make sure the instrument is turned on
- press look at parameters c5 and c6 as well.

3.8 Turning the chamber light on/off (if present)

- make sure the instrument is turned on
- press

3.9 Activating/interrupting function Quick heating (if present)

- make sure the instrument is turned on
- press 1 s (look at parameter c3 as well).

During this function the instrument supplies the maximum power both to the top and to the floor.

4 REAL TIME CLOCK (ONLY RK 805X/807X)

4.1 Setting the clock

To gain access the procedure:

- press 1 s: the instrument will show "rtc" in the display at the top and the real time (hours:minutes) in the display at the bottom (the left part of the display will flash).

To modify the hours:

- press or in 15 s.

To modify the minutes:

- press during the modification of the hours, then ...
- press or in 15 s.

To quit the procedure:

- press during the modification of the minutes or do not operate 15 s.

5 PROGRAMMED STARTING (ONLY RK 805X/807X)

5.1 Setting the starting time

To gain access the procedure:

- make sure the instrument is turned on
- press the instrument will show "tin" in the display at the top and the cooking timer value (hours:minutes) in the display at the bottom (the left part of the display will flash)
- press in 15 s: the instrument will show "dEL" in the display at the top and the starting time (hours:minutes) in the display at the bottom (the left part of the display will flash).

To modify the hours:

- press or in 15 s.

To modify the minutes:

- press during the modification of the hours, then ...
- press or in 15 s.

To modify the number of days the instrument must put back the starting:

- press during the modification of the minutes: the instrument will show "Int" in the display at the top and the number of days in the display at the bottom
- press or in 15 s (1).

To quit the procedure:

- press during the modification of the days or do not operate 15 s.

- (1) for example: if it is 08:00, set 0 as number of days to turn the instrument on automatically at 20:00 of the same day; if it is 20:00, set 1 as number of days to turn the instrument on automatically at 08:00 of the following day (you can set the number of days between 0 and 6).

5.2 Activating function Programmed starting

- make sure the instrument is turned on
- press and 1 s: this will turn the instrument off.

At the time you have set with the procedure indicated in paragraph 5.1, the instrument will automatically start working; to turn the instrument on automatically also the following days, repeat the procedure.

5.3 Interrupting function Programmed starting

- make sure the instrument is turned off
- press and 1 s.

6 COOKING TIMER

6.1 Setting the cooking timer

To gain access the procedure:

- make sure the instrument is turned on
- press the instrument will show "tin" in the display at the top and the cooking timer value (hours:minutes) in the display at the bottom (the left part of the display will flash).

To modify the hours:

- press or in 15 s (2) (3).

To modify the minutes:

- press during the modification of the hours, then ...
- press or in 15 s (2) (3).

To quit the procedure:

- press during the modification of the minutes or do not operate 15 s.

During the count of the cooking timer the instrument activates the output for cooking timer.

- (2) you can set the cooking timer between 00:00 and 24:00 h:min
- (3) you can modify the cooking timer value also if the count is running; if you set 00:00, the instrument will interrupt the function and the buzzer will utter an intermittent beep 3 s.

6.2 Activating the cooking timer

- make sure the instrument is turned on
- press and 1 s.

6.3 Interrupting the cooking timer

- make sure the instrument is turned on
- press and 1 s.

7 SETPOINT (WORKING TEMPERATURE)

7.1 Setting the working setpoint (instrument with one probe)/the top setpoint (instrument with two probes)

- make sure the instrument is turned on
- press
- press or in 15 s (look at parameters r1A and r2A as well) (4).

To quit the procedure:

- do not operate 15 s.
- (4) during the modification the instrument will show "SP" (instrument with one probe) or "SP1" (instrument with two probes) in the display at the bottom.

7.2 Setting the floor setpoint (instrument with two probes)

- press during the modification of the top setpoint, then ...
- press or in 15 s (look at parameters r1b and r2b as well) (5).

To quit the procedure:

- do not operate 15 s.
- (5) during the modification the instrument will show "SP2" in the display at the bottom.

8 PERCENTAGE OF POWER SUPPLIED TO THE TOP AND TO THE FLOOR (INSTRUMENT WITH ONE PROBE)

8.1 Setting the percentage of power supplied to the top

- press during the modification of the working setpoint, then ...
- press or in 15 s (look at parameter c0 as well) (6).

To quit the procedure:

- do not operate 15 s.

(6) during the modification the instrument will show "Po1" in the display at the bottom; in the course of the cycle time you have set with parameter c1, the instrument will turn on the top output "(parameter c1/100) x the percentage you have set" (as far as possible, the instrument will avoid the overlapping of the times the top output and the floor output will be turned on).

8.2 Setting the percentage of power supplied to the floor

- press during the modification of the percentage of power supplied to the top, then ...
- press or in 15 s (look at parameter c0 as well) (7).

To quit the procedure:

- do not operate 15 s.

(7) during the modification the instrument will show "Po2" in the display at the bottom; in the course of the cycle time you have set with parameter c1, the instrument will turn on the floor output "(parameter c1/100) x the percentage you have set" (as far as possible, the instrument will avoid the overlapping of the times the top output and the floor output will be turned on).

9 STEAM INJECTION (IF PRESENT)

9.1 Preliminary information

If parameter t0 has value 0, pressing button the instrument will turn the injector on the time you will have set with parameter t2 or as long as you will keep pressed the button; parameter t1 will set the minimum time between two injections in succession.

If parameter t0 has value 1, the instrument will automatically turn the injector on the time you will have set with parameter t2 and will turn the injector off the time you will have set with parameter t1; injection must have been enabled pressing button .

9.2 Setting parameter t2

- press during the modification of the percentage of power supplied to the floor (instrument with one probe) or during the modification of the floor setpoint (instrument with two probes), then ...
- press or in 15 s (8).

To quit the procedure:

- do not operate 15 s.

(8) during the modification the instrument will show "tOn" in the display at the bottom; you can set parameter t2 between 1 and 250 ds.

9.3 Setting parameter t1

- press during the modification of parameter t2, then ...
- press or in 15 s (9).

To quit the procedure:

- press during the modification of parameter t1 or do not operate 15 s.

(9) during the modification the instrument will show "tOFF" in the display at the bottom; you can set parameter t1 between 0 and 250 s.

10 CONFIGURATION PARAMETERS

10.1 Setting configuration parameters

To gain access the procedure:

- make sure the instrument is turned off
- press and 4 s: the instrument will show the instrument code in the display at the top an indication on the probe number in the display at the bottom

To select a parameter:

- press

14 TECHNICAL DATA

14.1 Technical data

Box: self-extinguishing grey.

Size: 96 x 96 x 78 mm (3.779 x 3.779 x 3.070 in).

Installation: panel mounting, panel cut out 92 x 92 mm (3.622 x 3.622 in), with screw brackets (supplied with the instrument).

Frontal protection: IP 65.

Connections: extractable terminal blocks with pitch 5 mm (0.196 in, power supply, inputs and outputs).

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

Power supply: 230 Vac (standard, terminals 1 and 3) or 24 Vac (by request, terminals 1 and 2), 50/60 Hz, 2 VA for RK 804X/805X; 230 Vac, 50/60 Hz, 4 VA for RK 806X/807X.

Clock data maintenance without power supply: 24 hours, on condition that the instrument has been turned on 2 min at least (only RK 805X/807X).

Alarm buzzer: included.

Measure inputs: 1 (chamber probe) both for "J" and "K" thermocouples (instrument with one probe); 2 (top probe and floor probe) both for "J" and "K" thermocouples (instrument with two probes).

Digital inputs: 1 multifunction both for NO contact and NC contact (free of voltage, 5 V 1 mA).

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).

Cooking timer range: from 00:00 to 24:00 h:min.

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

Display: one red LED 3-digit display 13.2 mm (0.519 in) high, one green LED 4-digit display 10 mm (0.393 in) high, top and floor output status indicators, temperature unit of measure indicators, instrument mode indicator.

Outputs for RK 804X/805X: 3 relays: one 8 A @ 250 Vac relay for top management (NO), one 8 A @ 250 Vac relay for floor management (NO) and one 8 A @ 250 Vac relay which activity depends on the instrument code (change-over contact).

INST. CODE	USER FOR RELAY K3 AND ITS ACTIVITY
1	Airhole, the relay: <ul style="list-style-type: none">is closed/open by hand (look at paragraph 3.6)is automatically closed/open according to parameters c5 and c6
2	Chamber light; the relay is closed/open by hand (look at paragraph 3.7)
3	Steam injection; the relay is closed/open according to parameter t0

Further outputs for RK 806X/807X: 3 relays: one 8 A @ 250 Vac relay (K4, change-over contact), one 8 A @ 250 Vac relay (K5, NO) and one 8 A @ 250 Vac relay (K6, NO); the maximum current allowed on terminal 26 is 10 A.

RELAY	USER AND ITS ACTIVITY
K4	Alarm (the relay is closed during the alarm "Temperature outside safety limits")
K5	Timer (the relay is closed during the count of the cooking timer)
K6	Acoustic signalings (the relay is closed when there are 10 s to go before the end of the cooking timer the time you have set with parameter c4 and is closed during some alarm conditions)

15 SETPOINT AND CONFIGURATION PARAMETERS

15.1 Setpoint

	MIN.	MAX.	U.M.	DEF.	SETPOINT
r1A	r2A	°C/°F (11)	150	working setpoint/top setpoint	
r1b	r2b	°C/°F (11)	150	floor setpoint (visible only in the instrument with two probes)	

15.2 Configuration parameters

PARAM.	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
P0	0	1	---	0	kind of probe (0 = Tc "J", 1 = Tc "K")
P1A	-25/-50	25/50	°C/°F (11)	0	chamber probe/top probe calibration
P1b	-25/-50	25/50	°C/°F (11)	0	floor probe calibration (visible only in the instrument with two probes)
P8	0	1	---	0	temperature unit of measure (0 = Celsius degree, 1 = Fahrenheit degree)

PARAM.	MIN.	MAX.	U.M.	DEF.	CHAMBER/TOP REGULATOR
r0A	1	99	°C/°F (11)	5	hysteresis (differential, relative to the working setpoint/top setpoint)
r1A	0	r2A	°C/°F (11)	50	minimum working setpoint/top setpoint programmable
r2A	r1A	999	°C/°F (11)	350	maximum working setpoint/top setpoint programmable
r7A	0	1	---	0	connection between the top output status and the cooking timer (0 = no connection, 1 = unless the count of the cooking timer is running, the instrument will turn off the top output)
r8A	0	240	min	240	maximum length of a lack of power supply (that has arisen during the count of the cooking timer) in order that the count is not interrupted even if the instrument is not supplied (visible only in RK 805X/807X)



PARAM.	MIN.	MAX.	U.M.	DEF.	FLOOR REGULATOR (VISIBLE ONLY IN THE INSTRUMENT WITH TWO PROBES)
r0b	1	99	°C/°F (11)	5	hysteresis (differential, relative to the floor setpoint)
r1b	0	r2b	°C/°F (11)	50	minimum floor setpoint programmable
r2b	r1b	999	°C/°F (11)	350	maximum floor setpoint programmable
r7b	0	1	---	0	connection between the floor output status and the cooking timer (0 = no connection, 1 = unless the count of the cooking timer is running, the instrument will turn off the floor output)

PARAM.	MIN.	MAX.	U.M.	DEF.	CHAMBER/TOP TEMPERATURE ALARM
A1A	0	999	°C/°F (11)	300	chamber/top temperature above which the instrument activates the alarm (it is important if A4A = 1) (12)
A4A	0	1	---	1	enabling the alarm (1 = YES)

PARAM.	MIN.	MAX.	U.M.	DEF.	FLOOR TEMPERATURE ALARM (VISIBLE ONLY IN THE INSTRUMENT WITH TWO PROBES)
A1b	0	999	°C/°F (11)	300	floor temperature above which the instrument activates the alarm (it is important if A4b = 1) (12)
A4b	0	1	---	1	enabling the alarm (1 = YES)


PARAM.	MIN.	MAX.	U.M.	DEF.	POWER/COOKING TIMER
c0	0	2	---	0	connection between the percentages of power supplied to the top and to the floor (0 = no connection, 1 = if you modify the percentage of power supplied to one output, the instrument will automatically supply the maximum power to the other one, 2 = if you modify the percentage of power supplied to one output, the instrument will automatically adjust the percentage of power supplied to the other one in order that the sum of the percentages will always be 100 %) (visible only in the instrument with one probe)
c1	1	999	s	80	cycle time to turn on the top output and the floor output (visible only in the instrument with one probe)
c3	-99	0	°C/°F (11)	-10	temperature above which the instrument suspends function Quick heating automatically (it is relative to the working setpoint) (visible only in the instrument with one probe) (13)
c4	-1	120	s	15	time the buzzer and the output for acoustic signalings (if present) are activated at the end of the cooking timer (-1 = the buzzer must be silenced by hand and the output will keep being activated) (14)
c5	0	60	min	20	time between the instrument turns the airhole on automatically and the end of the cooking timer (visible only if the instrument code is 1); look at c6 as well
c6	0	60	min	20	time the instrument turns the airhole on automatically (visible only if the instrument code is 1); look at c5 as well
c7	0	1	---	0	visualization of the real time in the display at the bottom when the instrument is turned off (1 = YES) (visible only in RK 805X/807X)

PARAM.	MIN.	MAX.	U.M.	DEF.	DIGITAL INPUTS
i0	0	1	---	0	kind of contact of the multifunction input (it is important if i1 ≠ 0; 0 = NO, 1 = NC)
i1	0	2	---	0	action given by the activation of the multifunction input (0 = no action, 1 = the cooking timer will be activated/interrupted, 2 = the buzzer will be silenced and the output for acoustic signalings will be deactivated)

PARAM.	MIN.	MAX.	U.M.	DEF.	STEAM INJECTION (VISIBLE ONLY IF THE INSTRUMENT CODE IS 3)
t0	0	1	---	0	steam injection operation (0 = if you press button  the instrument will turn the injector on the time you will have set with parameter t2 or as long as you will keep pressed the button; parameter t1 will set the minimum time between two injections in succession, 1 = the instrument will automatically turn the injector on the time you will have set with parameter t2 and will turn the injector off the time you will have set with parameter t1; injection must have been enabled pressing button ).
t1	0	250	s	1	if t0 = 0, minimum time between two injections in succession; if t0 = 1, time the instrument turns the injector off; look at t2 as well
t2	1	250	ds (15)	10	if t0 = 0, minimum time the instrument turns the injector on; if t0 = 1, time the instrument turns the injector on; look at t1 as well

(11) the unit of measure depends on parameter P8

(12) hysteresis is 10 °C/18 °F

(13) the instrument will automatically suspend the function when the chamber temperature will rise above "working setpoint - parameter c3"; every time the temperature falls below "working setpoint - c3", the function will automatically be restored (to interrupt it, press  1 s)

(14) the instrument will active the output when there will be 10 s to go before the end of the cooking timer the time you have set with parameter c4

(15) ds = 0.1 seconds.