

# Cooking Controllers



## ESM-9944 ESM-9945 Cooking Controllers

- J type thermocouple, K type thermocouple, PT-100 2-wire or 3-wire temperature input ( Must be determined in order ),
- On/Off or Proportional control form selection,
- Working time selection in minutes or seconds,
- Hysteresis adjustment,
- Voiced warning via internal buzzer,
- Cover switch input,
- Steam output (ESM- 9945)

- APPLICATION FIELDS**
- Bakery Applications,
  - Fermentation Cabinets,
  - Ceramics and Glass ovens,
  - Grain drier cabinet,
  - Industrial fryer,
  - Incubators

### SPECIFICATIONS INPUT

Thermocouple (TC) : J, K (IEC 584.1) (ITS90)  
 Thermoresistance (RTD) : 2 or 3 wire PT 100 (IEC 751) (ITS90)  
 Measurement Range : It is in ordering information  
 Accuracy :  $\pm 1\%$  of full scale  
 Cold Junction Compensation : Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Sensor Break Protection: Upscale  
 Sampling Cycle: 3 samples per second

### CONTROL

Control Form : ON/OFF & PROPORTIONAL  
**OUTPUTS**

**Temperature Control Output :**  
 Relay (7A@250V $\sim$  @ resistive load) or optional SSR Driver Output (Maximum 20mA @12V  $\text{---}$  )  
**Time Output:**  
 Relay (7A@250V $\sim$  @ resistive load) or optional SSR Driver Output (Maximum 20mA @12V  $\text{---}$  )  
**Steam Output(ESM-9945):**  
 Relay (7A@250V $\sim$  @ resistive load) or optional SSR Driver Output (Maximum 20mA @12V  $\text{---}$  )

Besides these, there is an internal buzzer for voiced warning.

### DISPLAY

**Temperature Value Display :**  
 14 mm red 3 digit LED Display  
**Temperature Set Value Display :**  
 8 mm green 3 digit LED Display  
**Time Value Display :**  
 14 mm red 2 digit LED Display  
**Time Set Value Display :**  
 8 mm green 2 digit LED Display

### LED Display :

OUT1: Red,  
 OUT2: Red,  
 TIME: Red,  
 STEAM: Red (ESM-9945),  
 MIN: Green,  
 SEC: Green

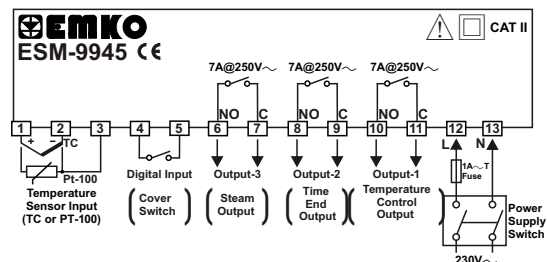
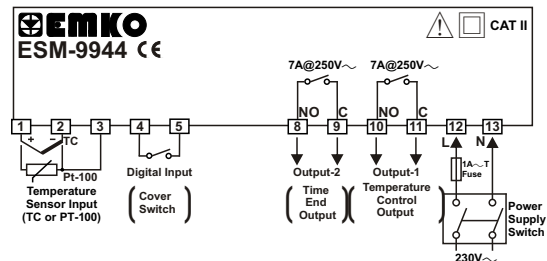
### SUPPLY VOLTAGE

230 V  $\sim$  (  $\pm 15\%$  ) 50/60 Hz - 3VA ,  
 115 V  $\sim$  (  $\pm 15\%$  ) 50/60 Hz - 3VA ,  
 24 V  $\sim$  (  $\pm 15\%$  ) 50/60 Hz - 3VA  
 (Must be determined in order).

### ENVIRONMENTAL RATINGS and PHYSICAL SPECIFICATIONS

Operating Temperature : 0...50°C  
 Humidity : %0-90RH (none condensing)  
 Protection Class : IP65 at front, IP20 at rear  
 Weight : 360 gr.  
 Diemensions: 96 x 96 mm, Depth:96 mm  
 Panel Cutout: 92 x 92 mm

### ELECTRICAL WIRING



### DIP - SWITCH ADJUSTMENTS

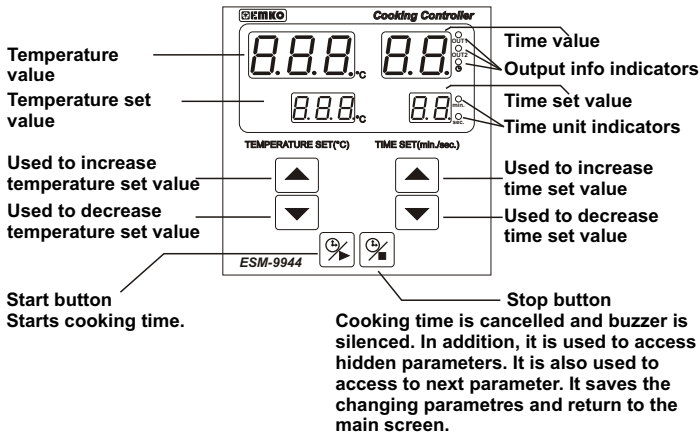
S1	CONTROL FORM	ON/OFF	S4	RELAY ON DURATION
ON	ON- OFF		ON	10 sec
OFF	PROPORTIONAL		OFF	CONTINUOUSLY

S2	HYSTERESIS SELECTION		
	INPUT TYPE	SCALE	HYSTERESIS
ON	PH100	0- 400°C	1°C
OFF	Pt100	0- 400°C	4°C
ON	J, Fe CuNi	0- 800°C	2°C
OFF	J, Fe CuNi	0- 800°C	4°C
ON	K, NiCr Ni	0- 999°C	2°C
OFF	K, NiCr Ni	0- 999°C	4°C

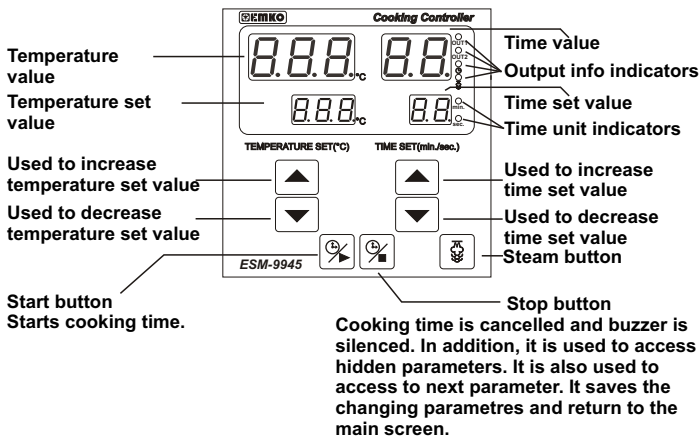
S3	TIME UNIT SELECTION
ON	SECOND (1- 99 sec)
OFF	MINUTE (1- 99 min)



## FRONT PANEL ESM-9944

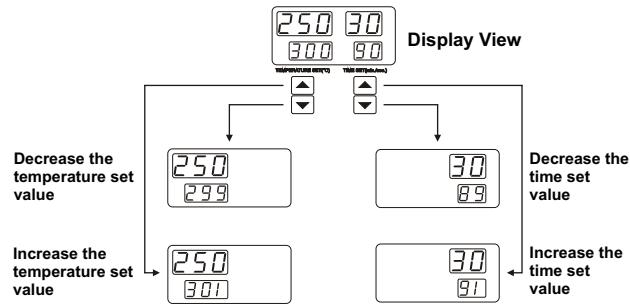


## FRONT PANEL ESM9945



## CHANGING THE SET VALUES

In anytime, temperature and time set values can be changed by pressing related increase or decrease buttons.



## HIDDEN PARAMETERS

### ESM-9944:

If the control form is proportional, it is possible to access the hidden parameters. In the proportional form, if the stop button is pressed during 60 seconds the hidden parameters will be accessed.

The stop button is pressed for saving current parameter and passing to next parameter. When in the last parameter and the stop button is pressed then user leave the parameter screen and the main screen is appeared.

To change parameter set value, temperature set increase or temperature set decrease buttons are used.

### ESM-9945:

If the control form is proportional, it is possible to access all the hidden parameters.

If the control form is on/off, only STE parameter is accessible. After pressing 60 seconds to the stop button, the hidden parameters will be accessed.

The stop button is pressed for saving current parameter and passing to next parameter. When in the last parameter and the stop button is pressed, then user leave the parameter screen and the main screen is appeared.

To change parameter set value, temperature set increase or temperature set decrease buttons are used.

## HIDDEN PARAMETERS DEFINITION and FLOWCHARTS

**orb** Proportional Band Parameter :  
Range : 1- 100 %

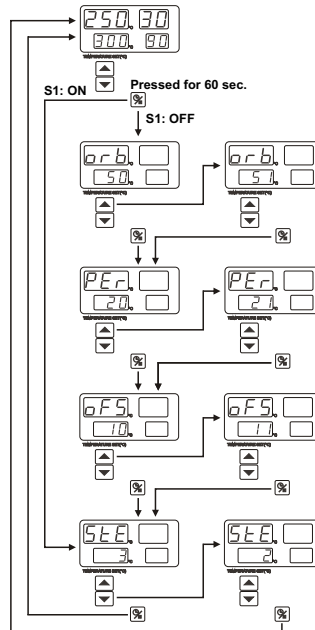
**PER** Control Output Period Parameter :  
Range : 1- 50 sec.

**oFS** Set Value Offset Parameter :  
Range : 0- ±19 °C

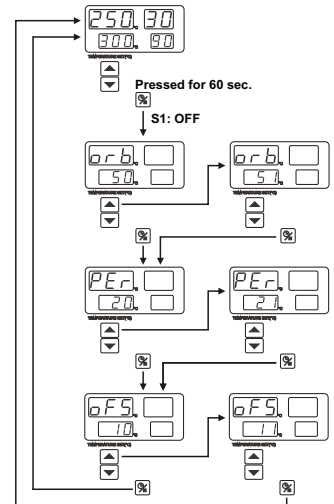
**SEE** Steam Duration Parameter (ESM-9945):  
Range : 0- 99 sec.

If the Steam Duration Parameter is selected as zero then the steam output will be on during the Steam button is pressed. If the parameter value is different from zero, after pressing the steam button, output will be on during the Steam Duration Parameter value. If Steam button is pressed when steam output is on, steam output will be off.

### ESM-9945:



### ESM-9944:



## ORDERING INFORMATION

<b>ESM-9944</b> (96x96 DIN 1/4)	A	BC	D	E	/	FG	HI	/	U	V	W	Z
		0	/			00	/	1	0	0	0	

<b>ESM-9945</b> (96x96 DIN 1/4)	A	BC	D	E	/	FG	HI	/	U	V	W	Z
		0	/				/	1	0	0	0	

<b>A</b>	<b>Supply Voltage</b>
3	24V ~ ( ± 15% ) 50/60Hz
4	115V ~ ( ± 15% ) 50/60Hz
5	230V ~ ( ± 15% ) 50/60Hz
9	Müşteriye Özel

<b>BC</b>	<b>Input Type</b>	<b>Scale(°C)</b>
03	PT 100 , IEC751(ITS90)	0°C 400°C
05	J ,Fe CuNi IEC584.1(ITS90)	0°C 800°C
10	K ,NiCr Ni IEC584.1(ITS90)	0°C 999°C

<b>E</b>	<b>Output-1 Temperature Control Output</b>
1	Relay Output (7A@250V ~ @ resistive load, 1 NO)
2	SSR Driver Output ( Maximum 20mA@ 12V ---)

<b>FG</b>	<b>Output-2 Time Output</b>
01	Relay Output (7A@250V ~ @ resistive load, 1 NO)
02	SSR Driver Output ( Maximum 20mA@ 12V ---)

<b>HI</b>	<b>Output-3 Steam Output (ESM-9945)</b>
01	Relay Output (7A@250V ~ @ resistive load, 1 NO)
02	SSR Driver Output ( Maximum 20mA@ 12V ---)