

Instruction Manual

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



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

SUPPLY VOLTAGE
 230 V V (%±15) 50/60 Hz - 3VA ,
 115 V V (%±15) 50/60 Hz - 3VA ,
 24 V V (%±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.
Dimensions: 96 x 96 mm, Depth:96 mm
Panel Cutout: 92 x 92 mm

SPECIFICATIONS INPUT
Thermocouple (TC) : J, K (IEC 584.1) (ITS90)
Thermoresistance (RTD) : 2 or 3 wire PT 100 (IEC

Measurement Range : It is in ordering information

Cold Junction Compensation : Automatically ±0.1°C/1°C
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

CONTROL
Control Form : ON/OFF & PROPORTIONAL
OUTPUTS
Temperature Control Output :
 Relay (7A@250VV @ resistive load) or optional SSR Driver Output (Maximum 20mA, 12V Z)

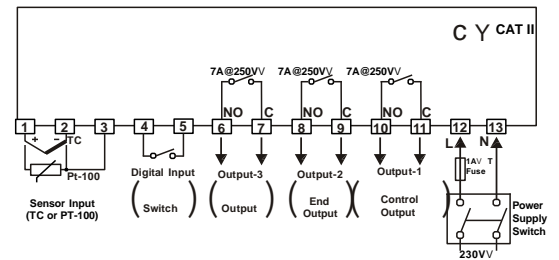
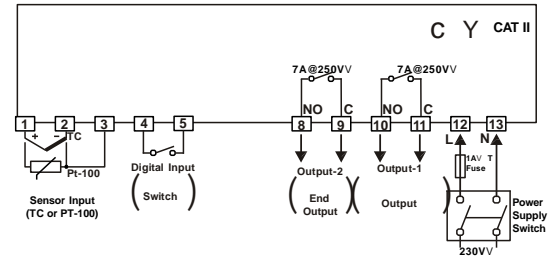
Relay (7A@250VV @ resistive load) or optional SSR Driver Output (Maximum 20mA, 12V Z)
Steam Output(ESM-9945):
 Relay (7A@250VV @ resistive load) or optional SSR Driver Output (Maximum 20mA, 12V Z)

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



ELECTRICAL WIRING

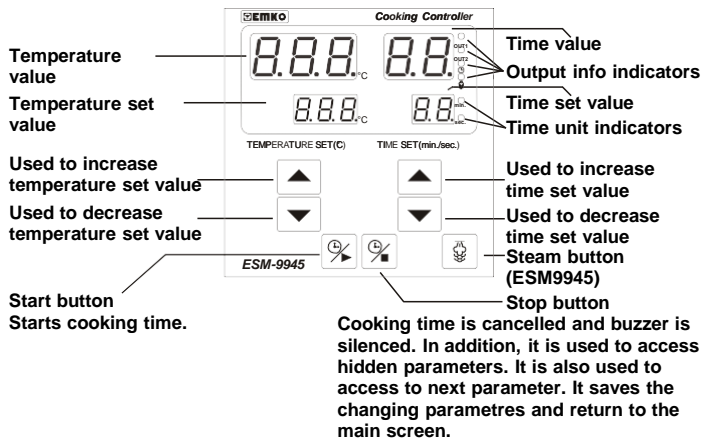


DIP- SWITCH ADJUSTMENTS

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

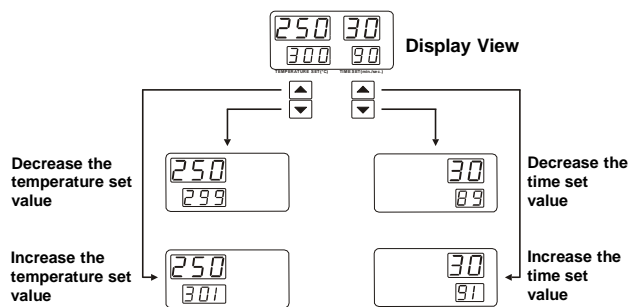
S2	HYSTERESIS SELECTION		
	INPUT TYPE	SCALE	HYSTERESIS
ON	PH100	0- 400°C	1°C
OFF	PT100	0- 400°C	4°C
ON	J, Fe CuNi	0- 800°C	2°C
OFF	J, Fe CuNi	0- 800°C	4°C
ON	K, NiCr Ni	0- 999°C	2°C
OFF	K, NiCr Ni	0- 999°C	4°C

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



CHANGING THE SET VALUES

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



HIDDEN PARAMETERS

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.

HIDDEN PARAMETERS DEFINITION and FLOWCHARTS

orb Proportional Band Parameter :
Range : 1- 100 %

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

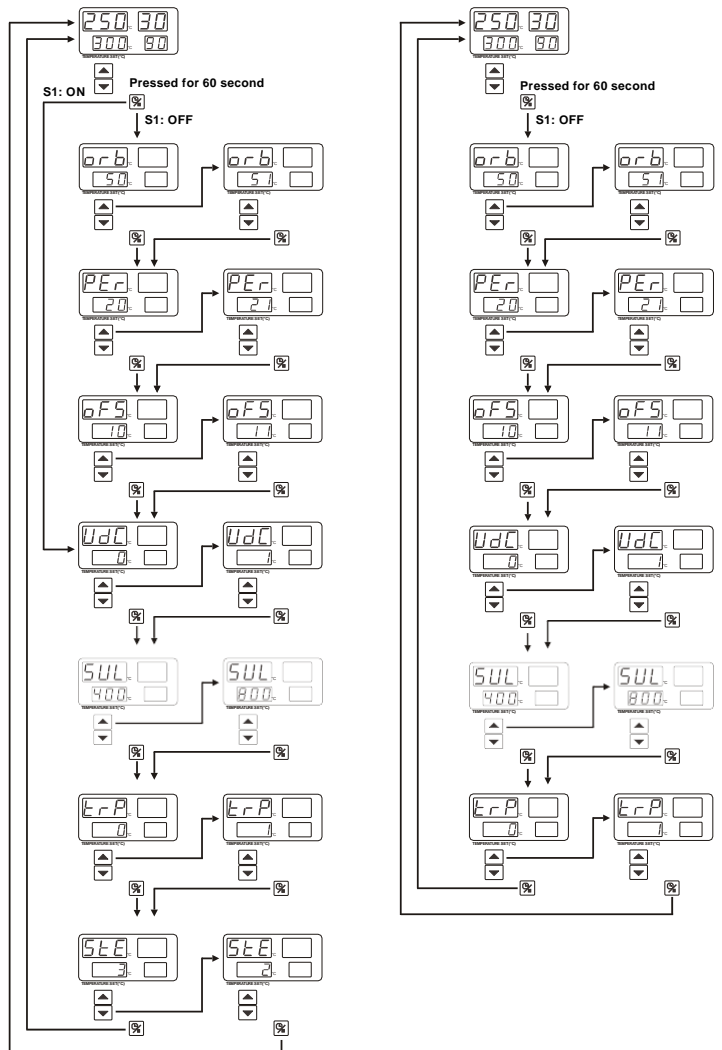
oFS Set Value Offset Parameter :
Range : 0- +. 19 °C

UdC Timer count direction Parameter:
Range : 0- 1. If the parameter is 1 then timer counts up-to-down. If the parameter is 0 then timer count down-to-up.

SUL Set value Up Limit Parameter:
Range : 0- Scala (Changes with input type).

ErP Timer Relay Position Parameter:
Range : 0-1
If the parameter is 1, then Timer relay become active position with the time start and becomes passive at the end of the time. If the parameter is 0, then time relay becomes active at the end of the time.

SEB 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.



A Supply Voltage	
3	24V V (± 15%) 50/60Hz
4	115V V (± 15%) 50/60Hz
5	230V V (± 15%) 50/60Hz
9	Customer

BC Input Type		Scale(°C)	
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

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

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

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