

Temperature Controllers



ESM-3710

ESM-3710

Digital ON / OFF Temperature Controller

- Heating / Cooling Applications
- Economical
- Easy to Use
- 3 Digits display
- PTC input or
J Type Thermocouple Input or
K Type Thermocouple Input or
2-wire PT-100 Input
- ON / OFF Temperature Control
- Selectable Heating or Cooling function
- Adjustable temperature offset value
- Limited Set value
- Relay or SSR Driver output
- Operation selection of compressor operates continuously, stops or operates periodically in case of probe defect
- Compressor Protection Times

SPECIFICATIONS

INPUT

PTC : PTC1000 (1000Ω@25°C)
 Thermocouple (TC) : J, K (IEC 584.1) (ITS90)
 Thermoresistance (RTD) : 2-wire PT 100 (IEC 751)(ITS90)

Measurement Range : It is in ordering information
 Accuracy : ±1% of scale
 Cold Junction Compensation : Automatically
 ±0.1°C/1°C
 Sensor Break Protection:Upscale
 Sampling Cycle :3 samples per second

CONTROL

Control Form : ON/OFF
 ON/OFF hysteresis : It can be configured by the user

OUTPUTS

Control Output:
 Relay (16A@250V~) or SSR Driver output (Maximum
 20mA@12V=)

DISPLAY

Process Display :
 ESM-3710 : 14 mm Red 3 digis LED display

LED Indicators :

SV(Green), OUT(Red), P(Red)

POWER SUPPLY

Supply Voltage :
 230 V ~ (±15%) 50/60 Hz - 1.5VA
 115 V ~ (±15%) 50/60 Hz - 1.5VA
 24 V ~ (±15%) 50/60 Hz - 1.5VA
 12 V ~ (±15%) 50/60 Hz - 1.5VA
 12 V ~ (±15%) 50/60 Hz - 1.5VA (with 230V~
 external transformer)
 (Supply voltage must be determined in order)

ENVIRONMENTAL RATINGS and PHYSICAL SPECIFICATIONS

Operating Temperature: 0...50°C
 Humidity : 0-90%RH (none condensing)
 Protection Class: IP65 at front, IP20 at rear

Weight:

ESM-3710 : 200 gr.

Dimension:

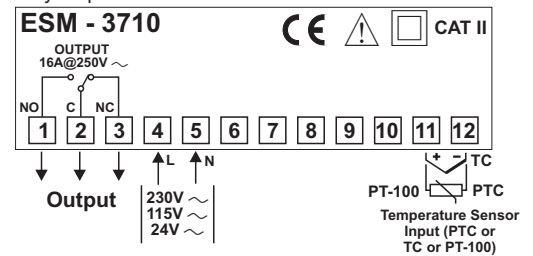
ESM-3710 : 77 x 35mm, Depth:60 mm

Panel Cut-Out:

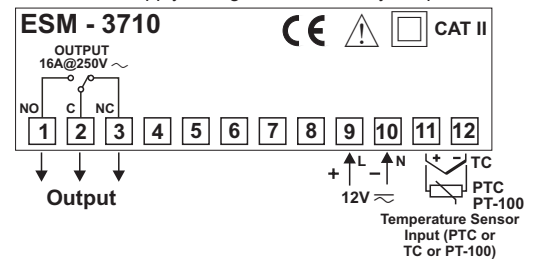
ESM-3710 : 71 x 29mm

Electrical Wiring

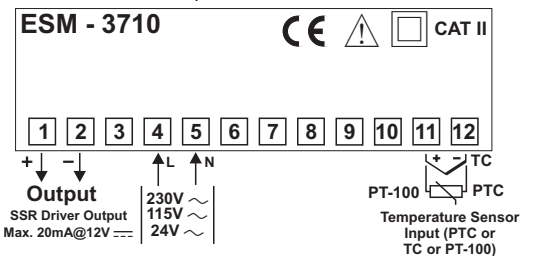
For 230V ~, 115V ~, 24V ~ supply voltages and with Relay output



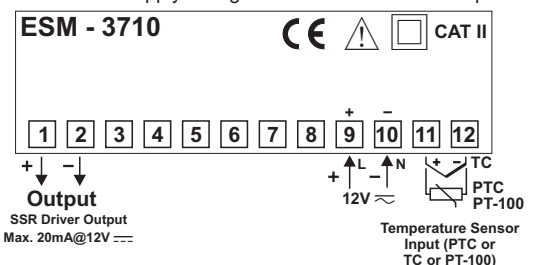
For 12V ~ supply voltage and with Relay Output



For 230V ~, 115V ~, 24V ~ supply voltages and with SSR Driver Output



For 12V ~ supply voltage and with SSR Driver Output



Parameters

Entering to Programming Mode :

When **SET** button is pressed for 5 seconds continuously, Prog Led which implements that programming mode is entered, flashes. Hst screen is shown. Hst is the first parameter in programming mode. When **SET** button is released, the parameter that is wanted to be changed can be selected by pressing **SET** button again. Parameter value can be observed by pressing **▲** button. When parameter value is shown, it can be changed with **▲** or **▼** Buttons and it can be saved to memory by pressing **SET** button.

Note-1 : If no operation is performed in programming mode for 20 seconds, device returns to operation screen automatically.

HST Hysteresis parameter for Output
0 to 20°C for PTC (-50°C, 150°C),
0 to 100°C for TC Type devices,
0 to 100°C for PT-100 (-50°C, 400°C) ,
0.0 to 10.0°C for PT-100 (-19.9°C, 99.9°C)

SUL Set Value Minimum Parameter
Set value can not be defined less than this value.
It can be adjusted from minimum value of device's scale to set value maximum parameter.

SUH Set Value Maximum Parameter
Set value can not be defined greater than this value.
It can be adjusted from set value minimum parameter to maximum value of device's scale

OFL Display Offset Parameter
-20 to 20°C for PTC (-50°C, 150°C),
-100 to 100°C for TC Type devices,
-100 to 100°C for PT-100 (-50°C, 400°C),
-10.0 to 10.0°C for PT-100 (-19.9°C, 99.9°C)

HCS Operating Type Selection Parameter
000 Heating
001 Cooling

The parameters listed below can be accessed if operating type is selected cooling. If operating type is selected heating, device returns to beginning of the parameter list.

POS Switch On Delay after Power On
When power is first applied to the device, compressor is on when this time delay is expired.
It can be adjusted from 0 to 20 minutes

SPD Compressor Stop/Start Time Delay Parameter
When compressor is inactive, this time delay must be expired for activation of the compressor.
It can be adjusted from 0 to 20 minutes

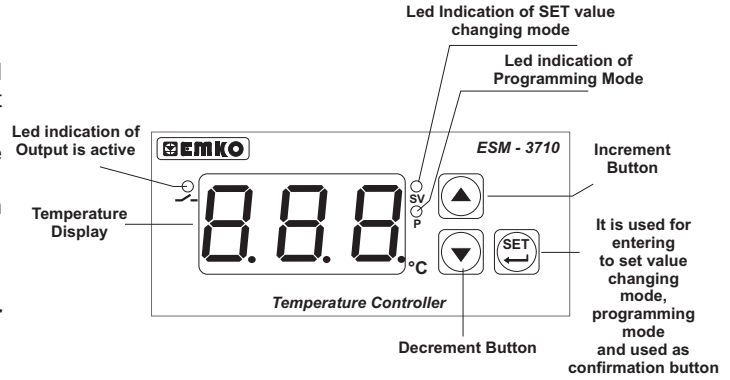
STD Compressor Start/Start Time Delay Parameter
This time delay must be expired between two activation of the compressor.
It can be adjusted from 0 to 20 minutes

PDF Probe Defect Parameter.
000 Compressor is OFF in case of probe defect
001 Compressor is ON in case of probe defect
002 Compressor operates periodically according to P.on and P.of time periods in case of probe defect.

P.on Compressor is active during this time period in case of probe defect.
It can be adjusted from 0 to 99 minutes

P.of Compressor is inactive during this time period in case of probe defect.
It can be adjusted from 0 to 99 minutes

Front Panel



SET Set Value Parameter

It is accessible with **SET** button that is on front panel. When **SET** Button is pressed, SV Led becomes active. Set value can be adjusted from Set value minimum to Set value maximum with **▲** and **▼** buttons. Set value minimum and set value maximum parameters can be accessed by entering to programming mode. When **SET** button is pressed again, Set value is saved and operation screen is shown. SV Led lights off.

Note-1 : If no operation is performed in programming mode for 20 seconds, device returns to operation screen automatically.

Ordering Information

ESM-3710 (77x35 DIN Size)	A	BC	D	E	/	FG	HI	/	U	V	W	Z
			0		/	00	00	/	1		0	0

A	Supply Voltage
3	24V ~ (± 15%) 50/60Hz
4	115V ~ (± 15%) 50/60Hz
5	230V ~ (± 15%) 50/60Hz
6	12V ~ (± 15%) 50/60Hz
7	12V ~ (± 15%) 50/60Hz (with 230V~ external transformer)

BC	Input Type	Scale(°C)
12	PTC (Note-1)	-50°C 150°C
05	J ,Fe CuNi IEC584.1(ITS90)	0°C 800°C
10	K ,NiCr Ni IEC584.1(ITS90)	0°C 999°C
11	PT 100 , IEC751(ITS90)	-50°C 400°C
09	PT 100 , IEC751(ITS90)	-19.9°C 99.9°C

Note-1 : When input type selection is PTC (BC = 12), PTC Temperature sensor is given with the device. So PTC sensor type (V) must be determined in ordering information

E	Output-1
1	Relay Output (16A@250V ~ , 1 NO + 1NC)
2	SSR Driver Output (Maximum 20mA@ 12V ==)

V	Temperature Sensor that is given with ESM-3710
0	None
1	PTC-M6L50.K1.5 (PTC Air probe with 1.5mt silicon cable)
2	PTCS-M6L30.K1.5 (PTC liquid probe with 1.5mt silicon cable)
9	Customer