

Digital Temperature Controller



ESM-3712-HC (SET + ALARM)

Digital ON / OFF Temperature Controller

- Heating / Cooling Applications
- Economic
- Easy to Use
- 3 Digits display
- PTC input or NTC input or J Type Thermocouple input or K Type Thermocouple input or 2-wire PT-100 input or 2-wire PT-1000 input (It must be determined in order)
- Temperature control output and alarm output
- Process and alarm set values boundaries
- Selectable heating or cooling function
- Adjustable temperature offset value
- Relay or SSR driver output
- Operation selection of compressor operates continuously, stops or operates periodically in case of probe defect
- Compressor protection times
- Password protection for programming section

SPECIFICATIONS

INPUT

PTC : PTC (1000 @25°C)

NTC : NTC (10 k @25°C)

Thermocouple (TC) : J, K (IEC 584.1) (ITS90)

Thermoresistance (RTD) : 2-wire PT 100, PT 1000 (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

Process Output :

Relay (10A@250V~ at resistive load) or

SSR Driver Output (Maximum 12mA@5V---)

Alarm Output :

Relay (5A@250V~ at resistive load) or

SSR Driver Output (Maximum 12mA@5V---)

DISPLAY

Process Display :

ESM-3712-HC : 14 mm Red 3 digits LED Display

LED Indicators :

SV(Green), Process Output (Red), P(Red), Alarm Output(Red)

POWER SUPPLY

Supply Voltage :

100-240 V ~ (-%15; +%10) 50/60 Hz -2 VA

24 V ~ (-%15; +%10) 50/60 Hz -2 VA

(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-3712-HC : 200 gr

Dimension :

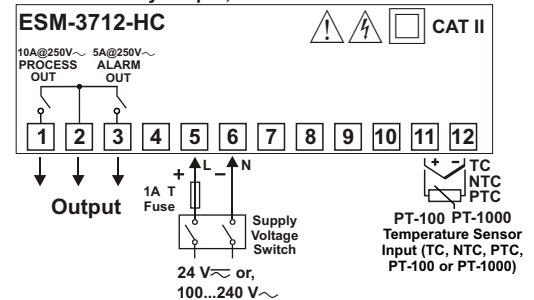
ESM-3712-HC : 77 x 35 mm, Depth : 62.5 mm

Panel Cut-Out :

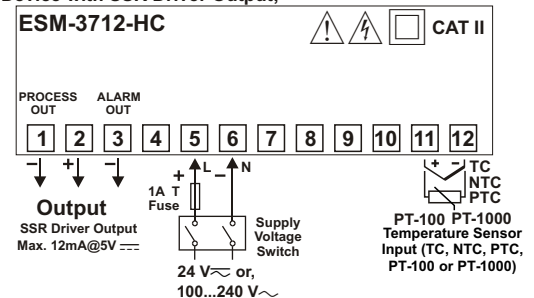
ESM-3712-HC : 71 x 29 mm

Electrical Wiring

Device with Relay Output;



Device with SSR Driver Output;



Parameters

- HSE** **Hysteresis Parameter For Output**
0 to 100 °C for TC Type Devices,
0 to 100 °C for PT-100 and PT-1000 (-50°C, 400°C),
0.0 to 10.0 °C for PT-100 and PT-1000 (-19.9°C, 99.9°C),
0 to 20 °C for PTC (-50°C, 150°C) and NTC (-50°C, 100°C),
0.0 to 10.0 °C for PTC and NTC (-19.9°C, 99.9°C)
- SUL** **Set Value Minimum Parameter**
Set value can not be defined less than this value.
This parameter value 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.
This parameter value can be adjusted from set value minimum parameter to maximum value of device's scale.
- OFT** **Display Offset Parameter**
-100 to 100 °C for TC Type Devices,
-100 to 100 °C for PT-100 and PT-1000 (-50°C, 400°C),
-10.0 to 10.0 °C for PT-100 and PT-1000 (-19.9°C, 99.9°C),
-20 to 20 °C for PTC (-50°C, 150°C) and NTC (-50°C, 100°C),
-10.0 to 10.0 °C for PTC and NTC (-19.9°C, 99.9°C)
- ALS** **Alarm Type Selection Parameter**
- | | |
|---|-----------------------|
| 0 | Process High Alarm |
| 1 | Process Low Alarm |
| 3 | Deviation High Alarm |
| 4 | Deviation Low Alarm |
| 5 | Deviation Band Alarm |
| 6 | Deviation Range Alarm |
| 7 | Sensor Failure Alarm |
- ALL** **Alarm Set Value Low Limit Parameter**
Alarm set value can not be lower than this value.
This parameter value can be adjusted from, minimum process set value parameter to alarm set value high limit parameter value.
- AUL** **Alarm Set Value High Limit Parameter**
Alarm set value can not be greater than this value.
This parameter value can be adjusted from alarm set value low limit parameter value to maximum process set value parameter
- RON** **Alarm On Delay Time Parameter**
It can be adjusted from 0 to 99 minutes.
- ROF** **Alarm Off Delay Time Parameter**
It can be adjusted from 0 to 99 minutes.
When this parameter is 99, if increment button is pressed, **LCH** is observed and alarm latching output is selected. To make the alarm latching output passive, decrement button must be pressed in main operation screen.
- APD** **Alarm Delay Parameter After Power On**
This parameter defines the delay for the alarm is being active after power on. It can be adjusted from 0 to 99 minutes.
- ALS** **Alarm Set Value Parameter**
Alarm output is controlled according to this value.
For alarm type selection parameter **ALS** = 1 or 2, this parameter value is can be adjusted from alarm set value low limit **AUL** parameter to alarm set value high limit **AUL** parameter, for alarm type selection parameter **ALS** = 3,4,5 or 6 this parameter value is can be adjusted from 0 to alarm set value high limit **AUL** Parameter.
- ALH** **Alarm Hysteresis Parameter**
Alarm hysteresis value. This parameter is can be adjusted 0 to %50 of the device scale
- 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.**
- HCS** **Operating Type Selection Parameter**
- | | |
|---|---------|
| 0 | Heating |
| 1 | Cooling |
- 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
- P.DF** **Probe Defect Parameter**
- | | |
|---|---|
| 0 | Compressor is "OFF" in case of probe defect |
| 1 | Compressor is "ON" in case of probe defect |
| 2 | 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
- PAS** **Programming Mode Accessing Password**
It is used for accessing to the programming mode. It can be adjusted from 0 to 999. If it is selected 0, password is not entered for accessing to the parameters.

Ordering Information

ESM-3712-HC (77x35 DIN Size)	A	BC	D	E	/	FG	HI	/	U	V	W	Z
			0		/	00		/	1		0	0

A	Supply Voltage
1	100...240V ~ (- %15;+%10) 50/60Hz
2	24V~(-%15;+%10) 50/60Hz 24V===(-%15;+%10)
9	Customer

BC	Input Type	Scale(°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
12	PTC (Note-1)	-50°C 150°C
15	PTC (Note-1)	-19.9°C 99.9°C
14	PT 1000, IEC751(ITS90)	-50°C 400°C
13	PT 1000, IEC751(ITS90)	-19.9°C 99.9°C
18	NTC (Note-1)	-50°C 100°C
19	NTC (Note-1)	-19.9°C 99.9°C

Note-1 : If input type is selected PTC or NTC (BC = 12, 15, 18, 19), Temperature sensor is given with the device. For this reason, If input type is selected as PTC, sensor type (V = 0,1 or 2) or If input type is selected as NTC, sensor type (V = 0,3 or 4) must be declared in ordering information.

E	FG	Outputs
1	01	Process Out Relay Output (10A@250V~ at resistive load, 1NO) Alarm Out Relay Output (5A@250V~ at resistive load, 1NO)
2	02	Process Out SSR Driver Output (Max. 12mA@ 5V ---) Alarm Out SSR Driver Output (Max. 12mA@ 5V ---)

V	Temp. Sensor which is given with ESM 3712 HC
0	None
1	PTC-M6L40.K1.5 (PTC Air Probe with 1.5 m silicon cable)
2	PTCS-M6L30.K1.5.1/8" (PTC Liquid Probe with 1.5 m silicon cable)
3	NTC-M5L20.K1.5 (NTC Probe, thermoplastic moulded with 1.5 m cable for cooling application)
4	NTC-M6L50.K1.5 (NTC Probe, stainless steel housing with 1.5 m cable for cooling application)
9	Customer