

# Process Controllers



## ESM-4435

### Universal Input PID Process Controller

- 4 digits process (PV) and 4 digits process set (SV) display
- Universal process input (TC, RTD, mV, V, mA)
- Dual or multi point calibration for Voltage / Current input
- Configurable ON/OFF, P, PI, PD ve PID control forms
- Auto-tune and Self-tune PID
- Manual/Automatic mode selection for control outputs
- Bumpless transfer
- Programmable heating, cooling and alarm functions for control outputs

ESM series process controllers are designed for measuring and controlling temperature and any process value. They can be used in many applications with their universal process input, control outputs, selectable alarm functions.

They are mainly used in glass, plastic, petro-chemistry, textile, automotive and machine production industries. Sensitive and developed controlling is done with its selectable ON-OFF, P, PI, PD, PID, AutoTune and Self Tune PID properties.

### SPECIFICATIONS PROCESS INPUT

**Universal Input:** TC, RTD, Voltage/Current  
**Thermocouple (TC):** L(DIN 43710), J, K, R, S, T, B, E and N (IEC584.1)(ITS90), C (ITS90)  
**Thermoresistance (RTD):** PT-100 (IEC751)(ITS90)  
**Input:** mV, V, mA

**Measurement Range :** Please refer to Table-1 for selection of input type and scale

**Accuracy:** ± 0.25% of full scale for thermocouple, thermoresistance, mV, V

± 0.70% of full scale for mA input

**Cold Junction Compensation:** Automatically ±0.1°C/1°C

**Line Compensation:** Maximum 10 Ohm

**Sensor break protection:** Upscale

**Sampling Cycle:** 3 samples per second

**Input Filter:** 0.0 to 900.0 seconds

### CONTROL

**Control Form:** ON/OFF, P, PI, PD or PID (Control form can be programmed by the user)

### OUTPUT

**Process Output :** Relay output 5A@250V~ (at resistive load) or Current Output 0/4 to 20mA; 0/2 to 10V

**Standard Relay Outputs(Alarm) :** Two relays. Their rating is 5A@250V~ (at resistive load)

### DISPLAY

**Process Display:**

ESM-4435 : 10.1 mm Red 4 Digits LED Display

### Set Value Display :

ESM-4435 : 8 mm Green 4 Digits LED Display

**LEDS :** AT(Auto Tune), M (Manual Mode), A (Automatic Mode), PSET / ASET1 / ASET2 (Control or Alarm Set) Leds, PO, AO1, AO2 (Control or Alarm Status) °C / °F / V Leds

### SUPPLY VOLTAGE

100-240 V ~ 50/60 Hz (-15%;+10%) -6VA Universal  
 48V ~ (-15% ; +10%) -6W Optional  
 24V ~ 50/60 Hz (-15% ; +10%) -6VA Optional  
 24V ~ (-15% ; +10%) -6W Optional  
 (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-4435 : 170 gr.

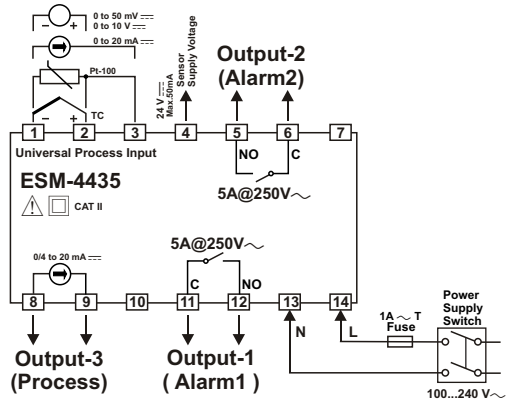
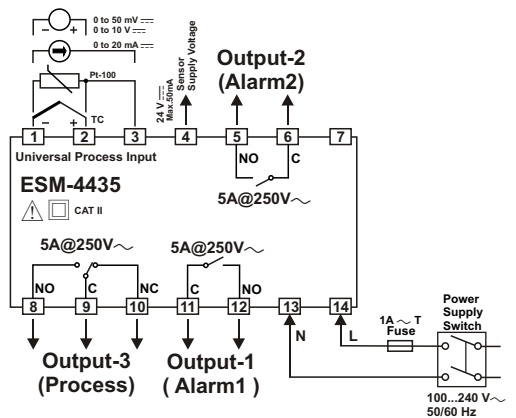
**Dimensions:**

ESM-4435 : (48 x 48mm, Depth:87.5 mm)

**Panel Cut-Out:**

ESM-4435 : (46 x 46mm)

## ELECTRICAL WIRING



## ORDERING INFORMATION

ESM-4435 (48x48 DIN 1/16)	A	BC	D	E	/	FG	HI	/	U	V	W	Z
			0	1	/	01		/	0	0	0	0

A	Supply Voltage
1	100-240V ~ (-15%;+10%) 50/60Hz
2	24V ~ (-15%;+10%) 50/60Hz    24V === (-15%;+10%)
9	48V === (-15%;+10%)

BC	Input Type	Scale
20	Configurable(Table-1)	Table-1

D	Serial Communication
0	None

E	Output-1 (Alarm1)
1	Relay Output (5A@250V~ at resistive load)

FG	Output-2 (Alarm2)
01	Relay Output (5A@250V~ at resistive load)

HI	Output-3 (Process)
01	Relay Output (5A@250V~ at resistive load)
04	Current Output(0/4 to 20 mA===);(0/2 to 10V===)

Table-1

BC	Input Type(TC)	Scale(°C)	Scale(°F)
21	L ,Fe Const DIN43710	-100°C,850°C	-148°F ,1562°F
22	L ,Fe Const DIN43710	-100.0°C,850.0°C	-148.0°F,999.9°F
23	J ,Fe CuNi IEC584.1(ITS90)	-200°C,900°C	-328°F,1652°F
24	J ,Fe CuNi IEC584.1(ITS90)	-199.9°C,900.0°C	-199.9°F,999.9°F
25	K ,NiCr Ni IEC584.1(ITS90)	-200°C,1300°C	-328°F,2372°F
26	K ,NiCr Ni IEC584.1(ITS90)	-199.9°C,999.9°C	-199.9°F,999.9°F
27	R ,Pt13%Rh Pt IEC584.1(ITS90)	0°C,1700°C	32°F,3092°F
28	S ,Pt10%Rh Pt IEC584.1(ITS90)	0°C,1700°C	32°F,3092°F
29	T ,Cu CuNi IEC584.1(ITS90)	-200°C,400°C	-328°F,752°F
30	T ,Cu CuNi IEC584.1(ITS90)	-199.9°C,400.0°C	-199.9°F,752.0°F
31	B ,Pt30%Rh Pt6%Rh IEC584.1(ITS90)	44°C,1800°C	111°F,3272°F
32	B ,Pt30%Rh Pt6%Rh IEC584.1(ITS90)	44.0°C,999.9°C	111.0°F,999.9°F
33	E ,NiCr CuNi IEC584.1(ITS90)	-150°C,700°C	-238°F,1292°F
34	E ,NiCr CuNi IEC584.1(ITS90)	-150.0°C,700.0°C	-199.9°F,999.9°F
35	N ,Nicrosil Nisil IEC584.1(ITS90)	-200°C,1300°C	-328°F,2372°F
36	N ,Nicrosil Nisil IEC584.1(ITS90)	-199.9°C,999.9°C	-199.9°F,999.9°F
37	C , (ITS90)	0°C,2300°C	32°F,3261°F
38	C , (ITS90)	0.0°C,999.9°C	32.0°F,999.9°F

BC	Input Type(RTD)	Scale(°C)	Scale(°F)
39	PT 100 , IEC751(ITS90)	-200°C,650°C	-328°F,1202°F
40	PT 100 , IEC751(ITS90)	-199.9°C,650.0°C	-199.9°F,999.9°F

BC	Input Type( === Voltage and Current)	Scale
41	0...50 mV ===	-1999,9999
42	0...5 V ===	-1999,9999
43	0...10 V ===	-1999,9999
44	0...20 mA ===	-1999,9999
45	4...20 mA ===	-1999,9999