



## Measurement & Control Instruments

Process Control  
Temperature Control  
Heating Cooling  
Counters  
Timers





# Process Controllers

"Smart I/O Module" System  
RS-232/485 Modbus RTU Serial Communication

ESM-4450 ESM-4950  
ESM-7750 ESM-9450 ESM-9950



- ▶ 8 steps profile control (Ramp & Soak) function and start-hold-stop by using logic input module
- ▶ For process value and process control Retransmission feature
- ▶ Detection of heater failure by using 0...5A dc CT input module

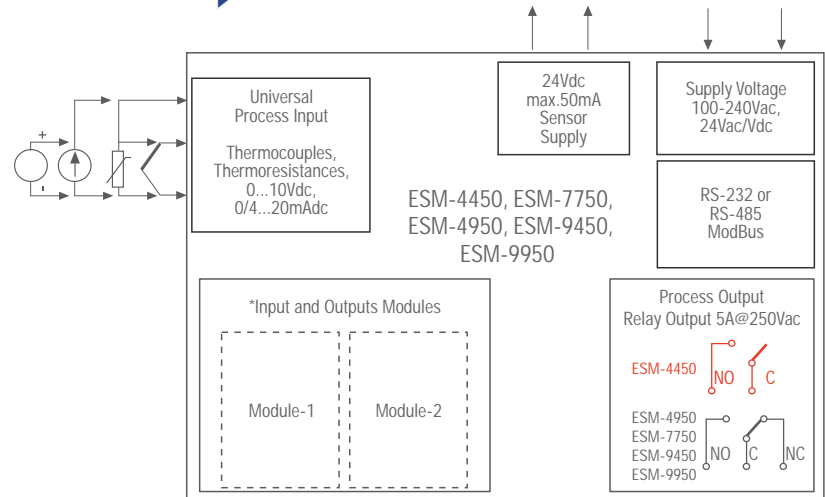
- ▶ Universal process input (TC, RTD, mVdc, Vdc, mA dc)
- ▶ Bumpless transfer
- ▶ Motorized valve control function

## Specifications

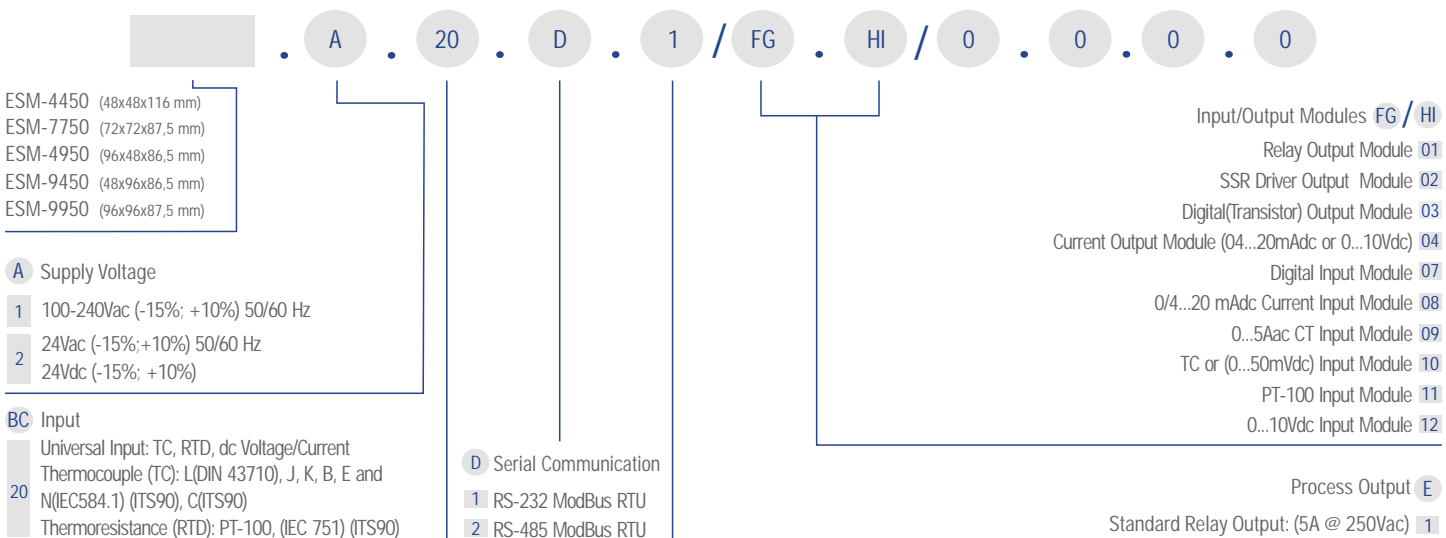
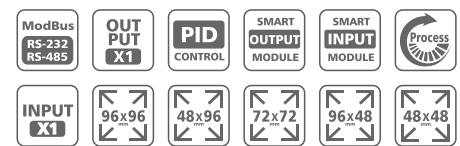
4 Digits process (PV) and 4 Digits set (SV) display  
Programmable heating, cooling and alarm functions for control outputs  
Auto-tune and Self-tune PID  
Dual or multi point calibration for dc Voltage/Current input  
Configurable ON/OFF, P, PI, PD, and PID control forms

## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale for thermocouple, thermoresistance, mV, V  $\pm 0.70\%$  of full scale for mA input  
Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
Line Compensation: Maximum 10 Ohm  
Sensor Break Protection: Upscale  
Sampling Cycle: 3 samples per second  
Input Filter: 0.0 to 900.0 seconds



\* Input and output modules can be mounted each module sockets.  
\* Only one analog input module can connect to the device at the same time.



# Process Controllers

Universal Input Dual SET PID

ESM-7730 ESM-4430  
ESM-9930 ESM-9430 ESM-4930



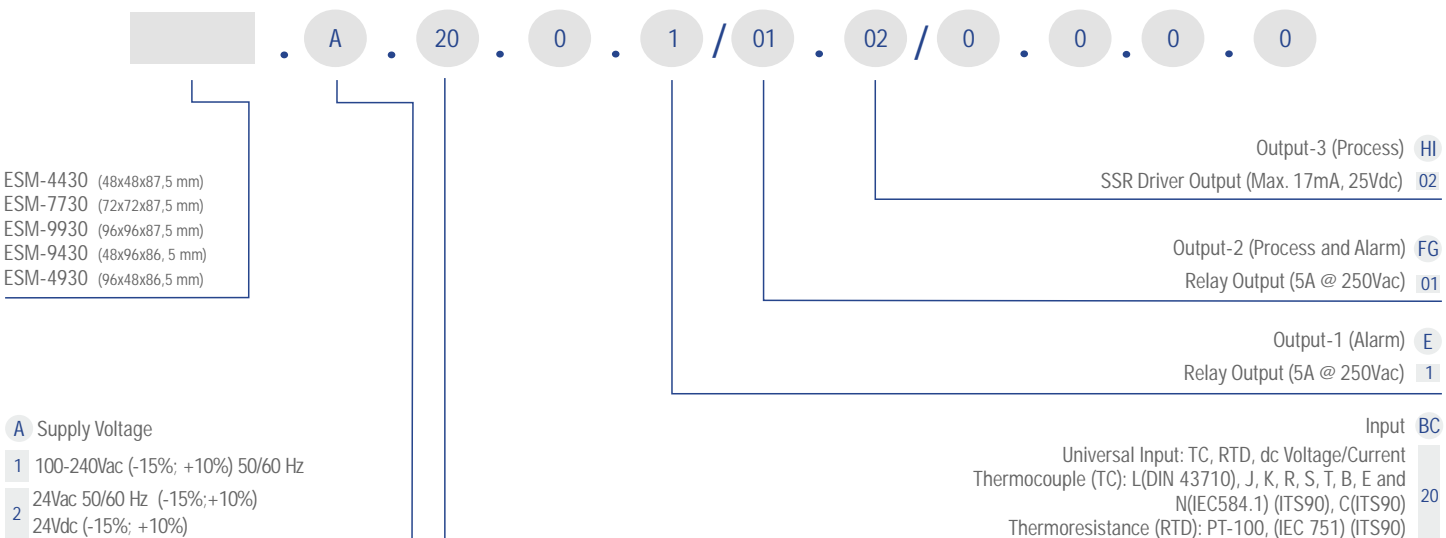
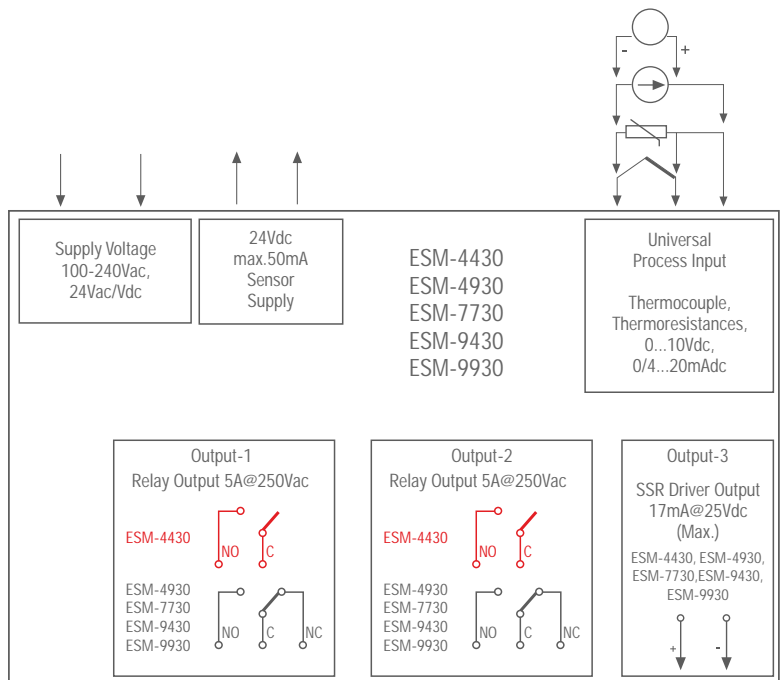
- ▶ Auto-tune and Self-tune PID
- ▶ Bumpless transfer
- ▶ Dual or multi point calibration for dc Voltage/Current input

## Specifications

4 Digits process (PV) and 4 Digits set (SV) display  
 Universal process input (TC, RTD, mVdc, Vdc, mAdc)  
 Configurable ON/OFF, P, PI, PD, and PID control forms  
 Manual/Automatic mode selection for control outputs  
 Programmable heating, cooling and alarm functions for control outputs

## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale for thermocouple, thermoresistance, mV, V  $\pm 0.70\%$  of full scale for mA input  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 3 samples per second  
 Input Filter: 0.0 to 900.0 seconds





# Process Indicators

"Smart Output Module" System RS-232/485  
Modbus RTU Serial Communication

ESM-4400 ESM-4900  
ESM-7700 ESM-9900



- ▶ Smart Output Module System
- ▶ Dual or multi point calibration for dc Voltage/Current input

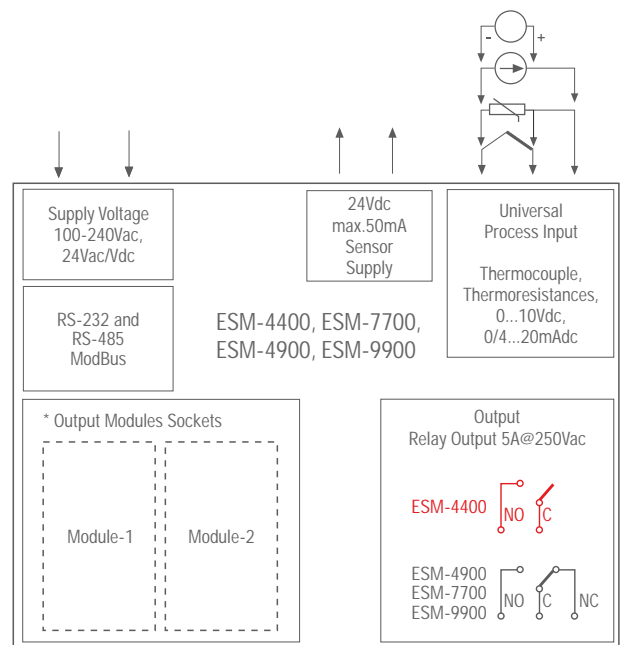
- ▶ Retransmission of Process Value or Process Control by using 0/4...20 mAdc Current Output Module

## Specifications

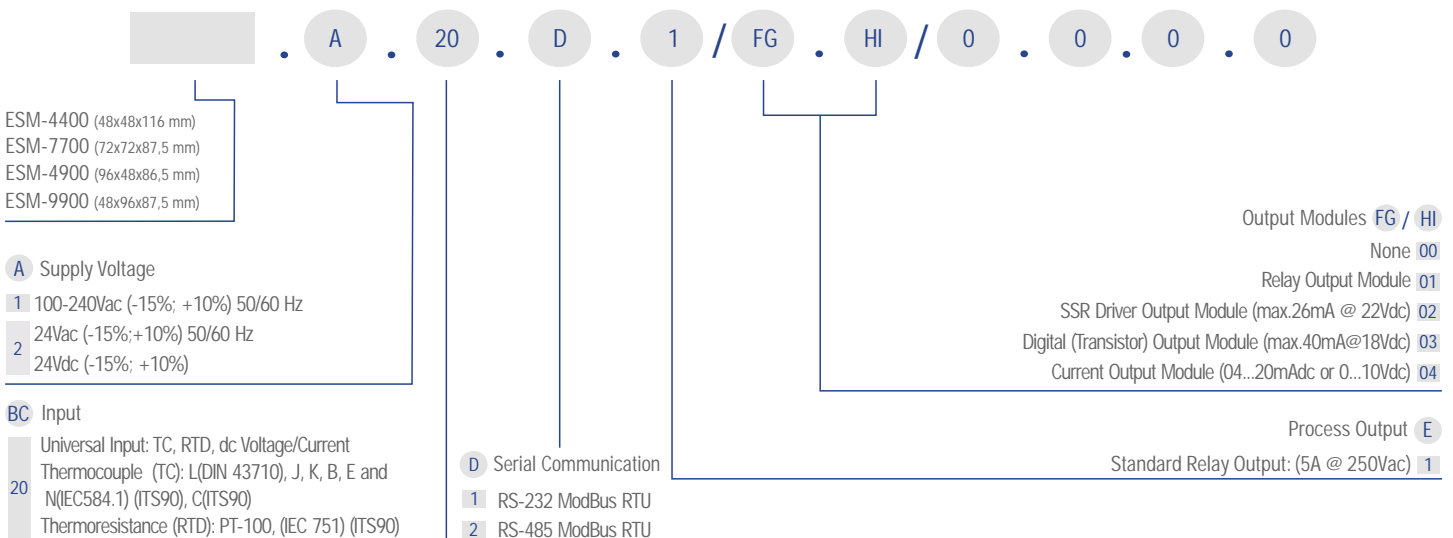
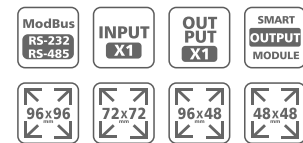
- 4 Digit process (PV) display
- Universal process input (TC, RTD, mVdc, Vdc, mAdc)
- Programmable Alarm functions
- RS-232 (standart) or RS-485(Optional) serial communication with Modbus RTU protocol

## Technical Specification

- Accuracy:  $\pm 0.25\%$  of full scale for thermocouple, thermoresistance, mV, V  $\pm 0.70\%$  of full scale for mA input
- Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Cycle: 3 samples per second
- Input Filter: 0.0 to 900.0 seconds



\* Output modules can be mounted each modules sockets.



# Process Indicators

ESM-3700-N



- ▶ Adjustable decimal point
- ▶ 5 Stage analog input filter option

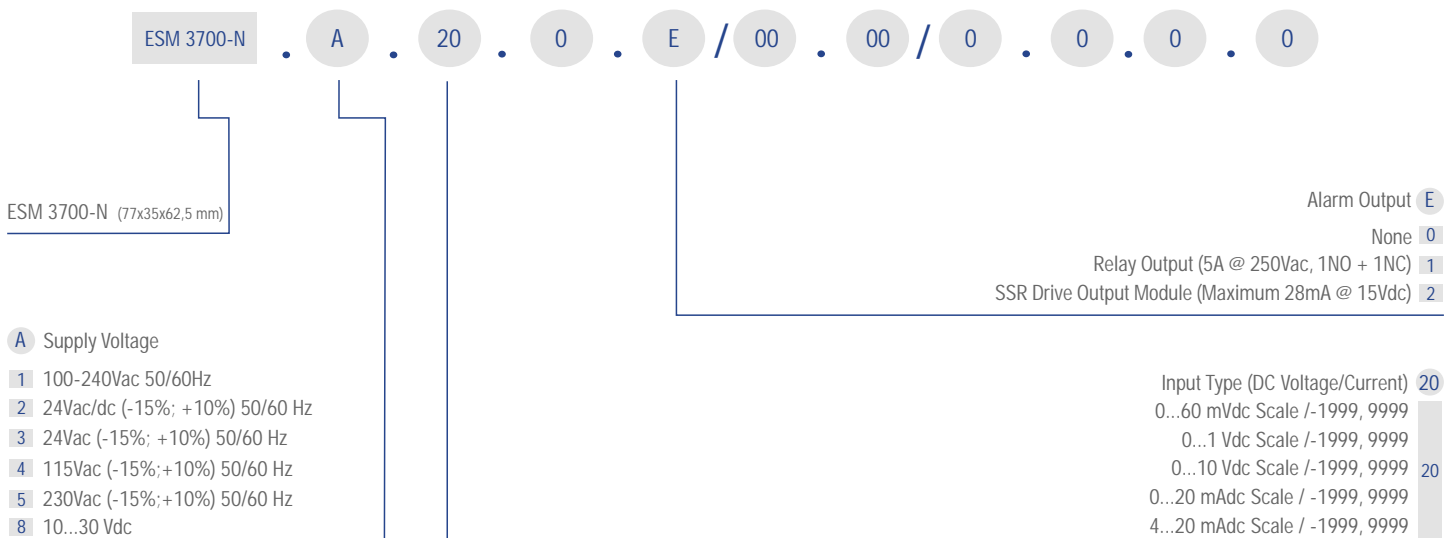
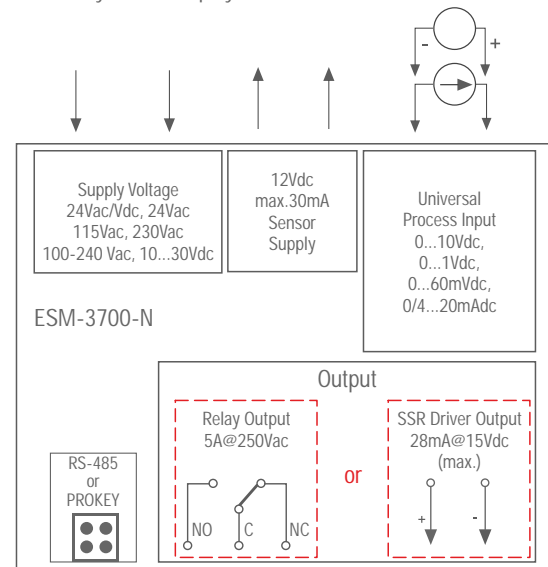
### Specifications

- 4 Digits display
- Easily adjustable from front panel
- Configurable display scale between -1999 and 9999
- Selectable universal process Input  
(0-10Vdc, 0-1Vdc, 0-60mVdc, 0-20mAdc, 4-20mAdc)
- User can be adjust device's reading value for selected input type
- Alarm output, Relay or SSR driver output (It must be determined in order)
- Adjustable alarm set value from front panel
- Programming mode password protection
- Installing parameters using ProkeyRemote acces, data collecting and controlling with Modbus RTU

### Technical Specification

- Accuracy:  $\pm 0.5\%$  of full scale
- Cold Junction Compensation: Automatic  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Time: 240 ms for 4...20 mAdc and 0...20 mAdc process input  
130 ms for 0...60 mVdc process Input  
100 ms for 0...1 Vdc and 0...10 Vdc process Input
- Input filter: 0.0..900.0 selectable between seconds

- ▶ Maximum and minimum measurement value are registered to the devices memory
- ▶ Maximum or minimum measurement value van be shown continuously on the display





# Process Controllers

Universal Input Dual SET PID

ESM-4435



- ▶ Universal process input (TC, RTD, mVdc, Vdc, mAdc)
- ▶ Dual or multi point calibration for dc Voltage/Current input

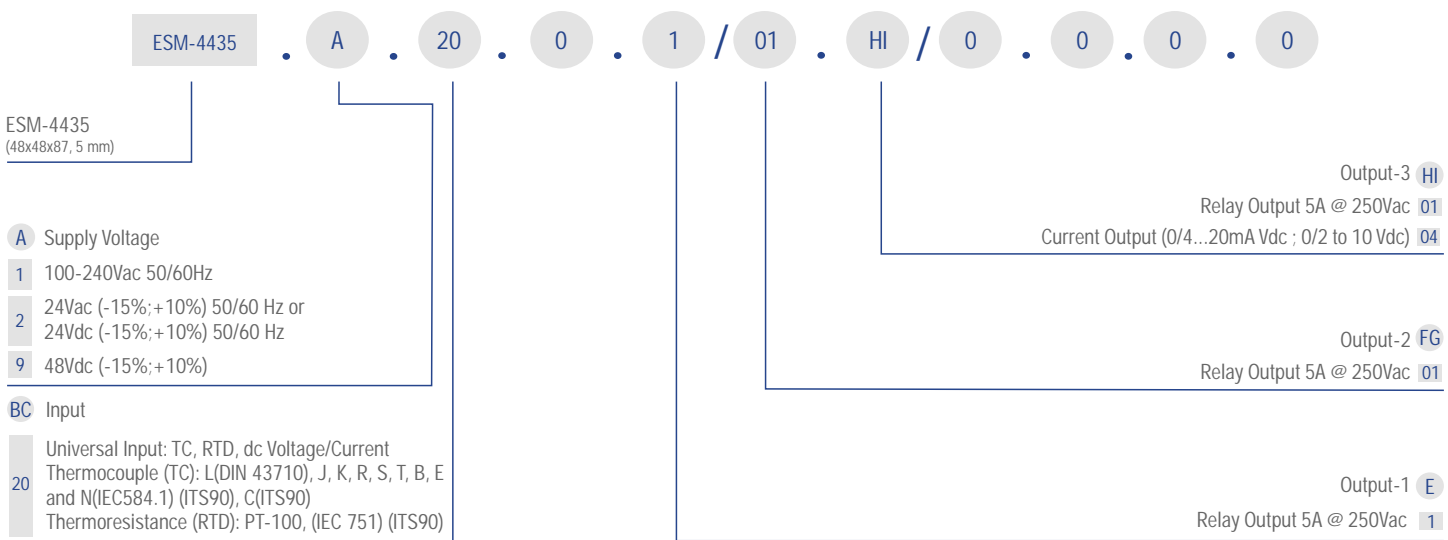
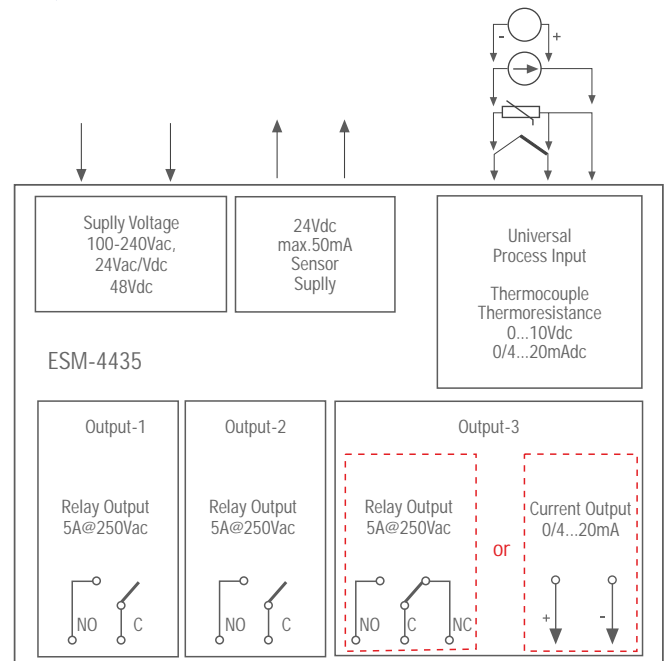
- ▶ Bumpless transfer
- ▶ Auto-tune ve Self-tune PID

## Specifications

4 Digits process (PV) and 4 Digits set (SV) display  
 Configurable ON/OFF, P, PI, PD, and PID control forms  
 Manual/Automatic mode selection for control outputs  
 Programmable heating, cooling and alarm functions for control outputs

## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale for thermocouple, thermoresistance, mV, V  $\pm 0.70\%$  of full scale for mA input  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 3 samples per second  
 Input Filter: 0.0 to 900.0 seconds



Order Code											ESM-4450	ESM-4950	ESM-7750	ESM-9450	ESM-9950	ESM-4430	ESM-4930	ESM-7730	ESM-9430	ESM-9930	ESM-4435	ESM-4400	ESM-4900	ESM-7700	ESM-9900	ESM-3700-N		
A	BC	D	E	/	FG	HI	/	U	V	W	Z																	
	20		1	/			/	0	0	0	0																	
<b>A Supply Voltage</b>																												
1	100-240Vac 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
2	24Vdc/Vac (-15%,+15%) 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	24Vac (-15%,+15%) 50/60Hz											-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
4	115Vac (-15%,+15%) 50/60Hz											-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
5	230Vac (-15%,+15%) 50/60Hz											-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
9	48Vdc (-15%,+10%) 50/60Hz											-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<b>BC Input Type</b>																												
20	Configurable Universal inputs											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<b>D Serial Communication</b>																												
0	None																+	+	+	+	+	+					+	
1	RS-232 ModBus RTU											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
2	RS-485 ModBus RTU											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
<b>E Process Output</b>																												
0	None																											+
1	Relay Output (At resistive load 5A@250Vac)											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	SSR Driver Output (Max. 20mA@12Vdc)											-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<b>FG Input/Output Modules-1</b>																												
00	None											+	+	+	+	+							+	+	+	+	+	+
01	Relay Output											+	+	+	+	+							+	+	+	+	+	-
02	SSR Driver Output (Max. 20mA@12Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
03	Transistor Output (Max. 40mA@18Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
04	Analogue (0/4...20mAdc or 0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
07	Digital Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
08	Analogue (0/4...20mAdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
09	CT Input Module (0...5Aac)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Thermocouple Input (0...50mVdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
11	Pt-100 Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
12	Analogue Input (0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<b>HI Input/Output Module - 2</b>																												
00	None											+	+	+	+	+							+	+	+	+	+	+
01	Relay Output											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
02	SSR Driver Output (Max. 20mA@12Vdc)											+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-
03	Transistor Output (Max. 40mA@18Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
04	Analogue (0/4...20mAdc or 0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
07	Digital Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
08	Analogue (0/4...20mAdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
09	CT Input Module (0...5Aac)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Thermocouple Input (0...50mVdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
11	Pt-100 Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
12	Analogue Input (0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
<b>Specifications</b>																												
"Smart I/O Modül" system											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
"Smart Output Modül" system											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-	
Universal process (TC, RTD, mVdc, Vdc, mAdc) input											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	
Bumpless transfer											+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	
Motorized valve control function											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
8 steps profile control											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
Remote Set point function											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
Re-transmission function											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-	
Detection of heater failure by CT input module											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Dimension</b>																												
77x35mm DIN											-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
48x48mm DIN 1/16											+	-	-	-	-	+	-	-	-	-	-	+	+	-	-	-	-	
96x48mm DIN 1/8											-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	-	-	
72x72mm DIN											-	-	+	-	-	-	-	+	-	-	-	-	-	-	+	-	-	
48x96mm DIN 1/8											-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	-	
96x96mm DIN 1/4											-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	+	-	





# Profile Control

ESM-9990



- ▶ Universal process input (TC, RTD, mVdc, Vdc, mAdc)
- ▶ In ceramic furnace applications

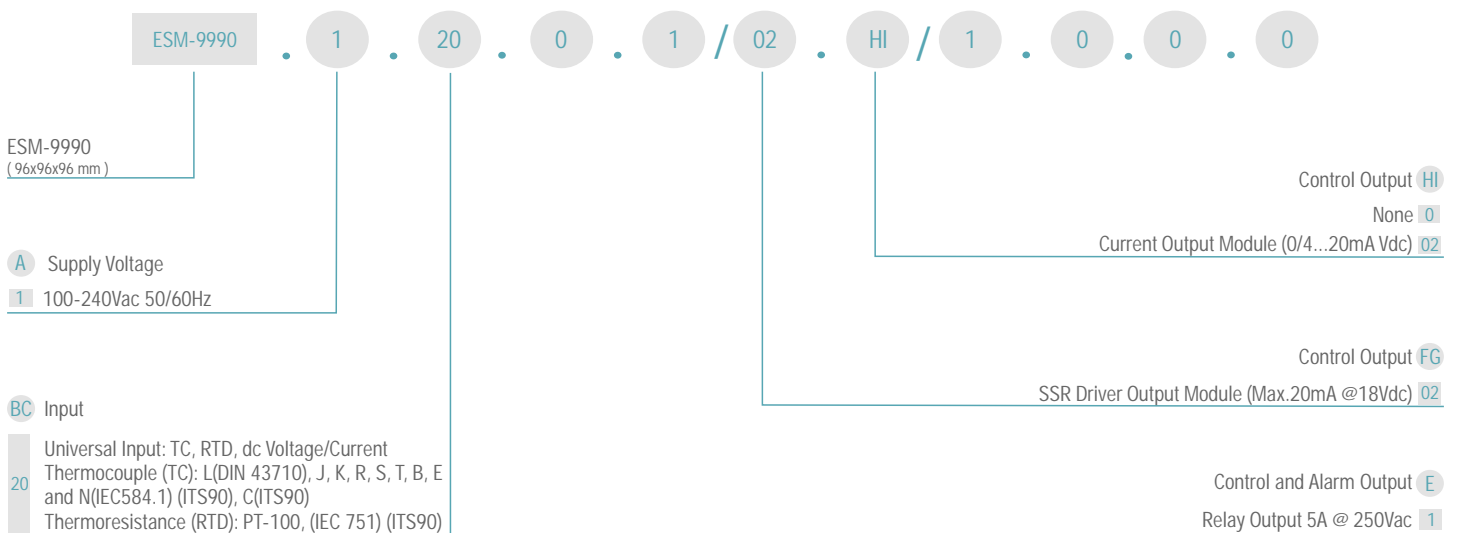
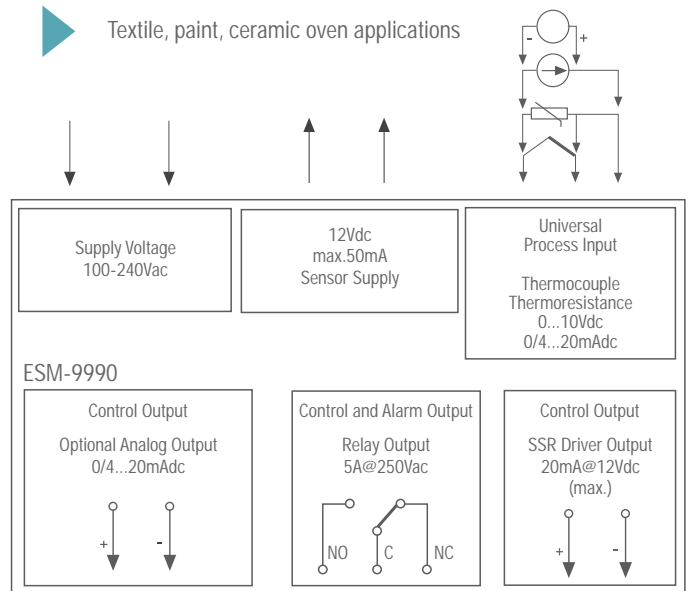
## Specifications

4 Digits proses (PV) ve 4 Digits set (SV) göstergesi  
 Hardware configuration with SSR and Current output module  
 Configurable ON/OFF, P, PI, PD and PID control forms  
 Heating function for control outputs  
 8 steps profile control ( Ramp & Soak ) function and Start-Pause-Stop  
 Power Down Back-up

## Technical Specification

Accuracy:  $\pm 0,25\%$  of FS for thermocouple  
 Cold Junction Compensation: Automatically  $\pm 0.1^{\circ}\text{C}/1^{\circ}\text{C}$ .  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 3 samples per second

- ▶ 8-step Profile Control (Ramp and Soak) and Start-Pause-Stop functions
- ▶ Textile, paint, ceramic oven applications



# Digital Potantiometer

EPM-3790N / EPR-3790N



## EPM-3790N

Forward, Reverse direction outputs and error input for V/F Speed Controller

## EPR-3790N

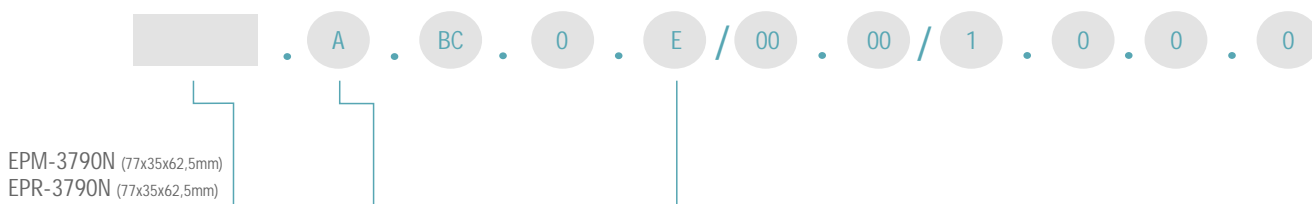
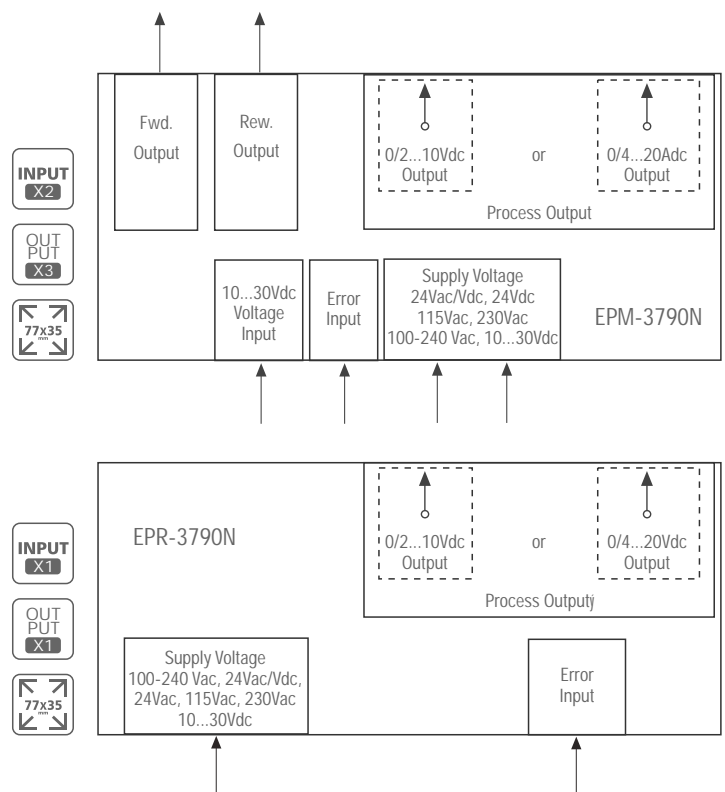
Fault input or (Remote start-stop)

### Specifications

- Operation at Adjustable Set Value
- Ramp Function
- Economical
- Easy to User
- 4 Digits Display
- Easily adjustable set value from front panel
- Configurable display scale between -1999 and 9999
- Adjustable decimal point
- Set value low limit and set value high limit boundaries
- Adjustable ramp up and ramp down time
- 0/2...10Vdc Voltage output or 0/4...20mAdc Current output (It must be determined in order.)
- Password protection for programming and adjustment sections

### Technical Specification

- Digital Input: Error input (max. 3mA@30Vdc)
- Resolution: 12 bits
- Fluctuation: Max. 30 mV
- Scale: Between-1999 and 9999



EPM-3790N (77x35x62,5mm)  
EPR-3790N (77x35x62,5mm)

- A Power Supply
- 1 100-240Vac 50/60Hz
- 2 24Vac/dc (±15%) 50/60Hz
- 3 24Vac (±15%) 50/60Hz
- 4 115Vac (±15%) 50/60Hz
- 5 230Vac (±15%) 50/60Hz
- 8 10 - 30Vdc

- Output E
- Current Output (0/4...20mA) 4
- Voltage Output (0/2...10V Maks. 10mA) 5



# 8 Channel Scanner

Channel 8N - Channel 8AN



- ▶ 320 x 240 Pixel TFT LCD screen
- ▶ 3 Different alarm and pre-alarm types for each channel (High, Low and Band Alarms)

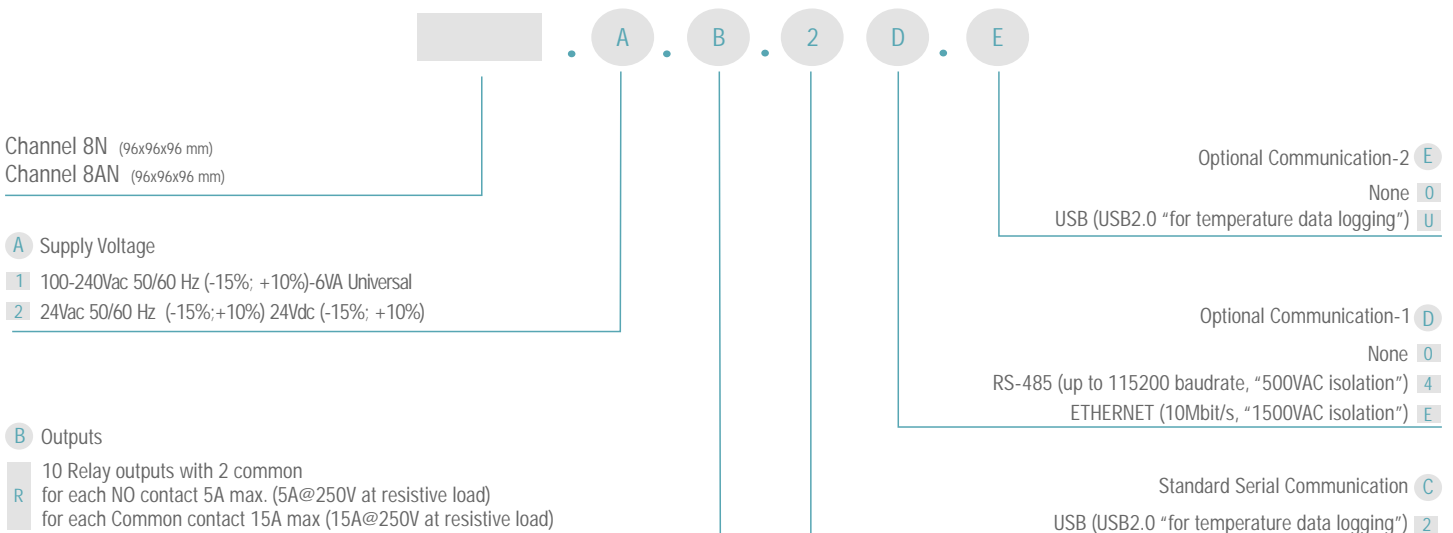
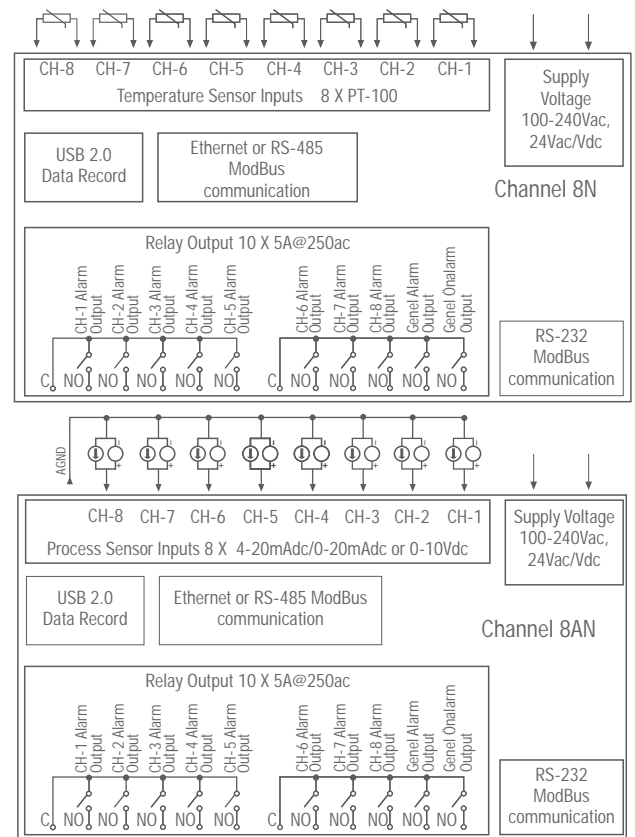
- ▶ ModBus RTU communication protocol (RS-232, RS-485 and Ethernet communication)
- ▶ Operating with Real Time Clock (RTC)

## Specifications

- 8 Analogue inputs
- 8 PT-100 input with two wires
- ON-OFF control
- Sensor error detection
- Adjustable offset
- User defined channel labels
- Display scan modes
- Relay outputs
- Data Logging to USB Flash Memory
- Adjustable data logging time interval
- Password protection for programming mode

## Technical Specification

- Accuracy:  $\pm 0,25\%$  of full scale
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Time: 400msecs



# 4 Zone PID Control

PID QUADRO

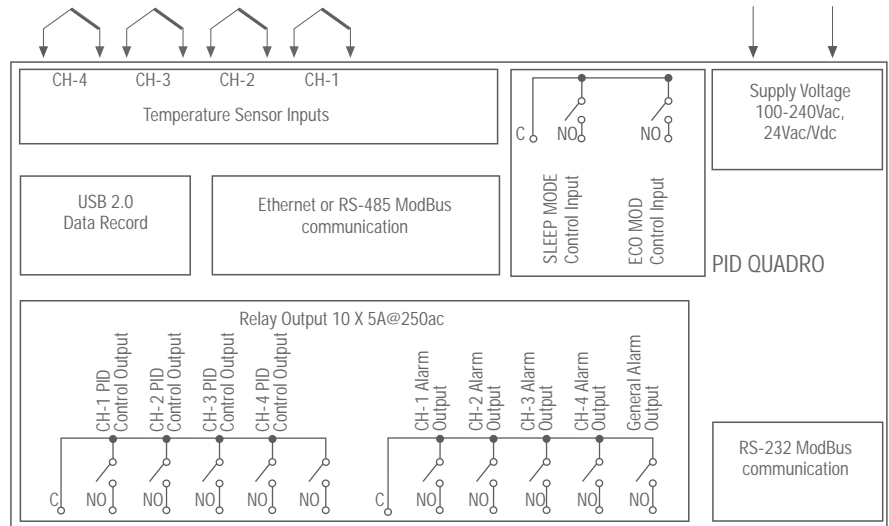


- ▶ Auto-Tuning and Self-Tuning (Automatic calculations of PID parameters)
- ▶ Data Logging to USB Flash Memory

- ▶ Soft-Start (Ramp action during power on) specification
- ▶ 3 Different alarm types for each channel (High, Low and Band Alarms)

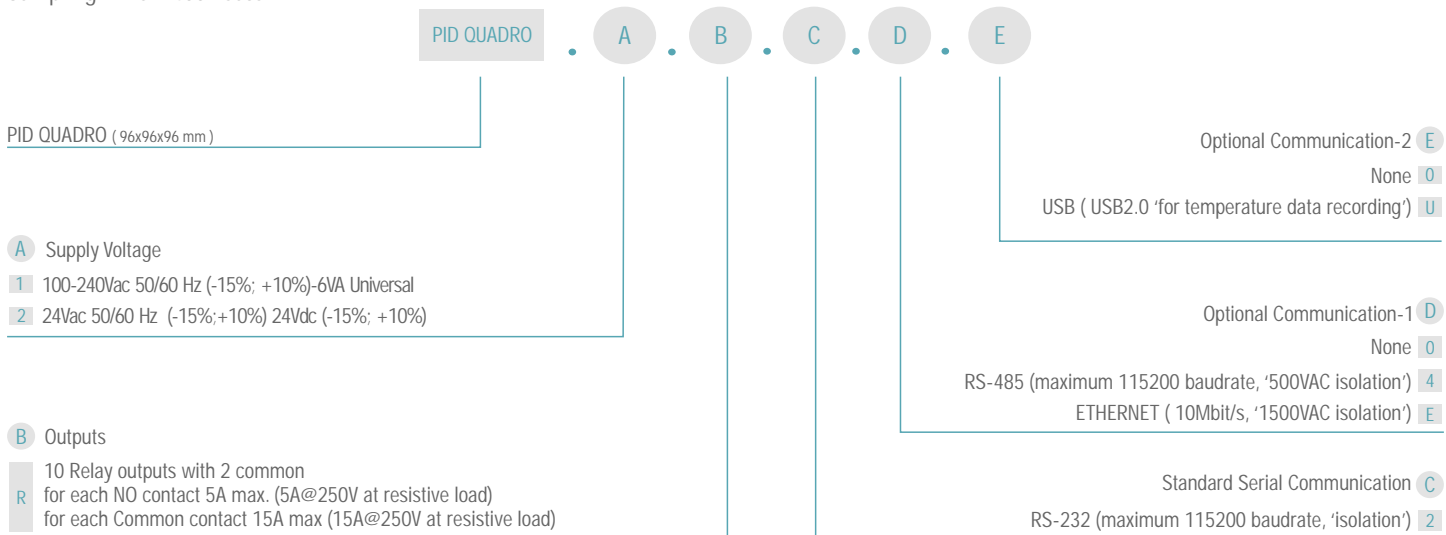
## Specifications

- 128 x 64 Graphical LCD display
- 4 Thermocouple (J, K, L, R or S type) sensor inputs
- Configurable P, PI, PD and PID control forms
- Relay outputs
- Sensor error detection
- Adjustable temperature offset for each channel
- User defined channel labels
- Operating with Real Time Clock (RTC)
- ModBus RTU communication protocol (RS-232, RS-485 and Ethernet communication)
- Adjustable data logging time interval
- Password protection for programming mode



## Technical Specification

- Accuracy:  $\pm 0,25\%$  of full scale
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Time: 1400msecs



# Temperature and Humidity Controller

ESM-3723



- ▶ Temperature Sensor Input (NTC, PTC, PT-100 and ProNem Mini PMI-P)
- ▶ Auto-Tune PID

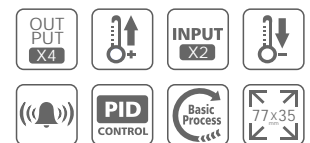
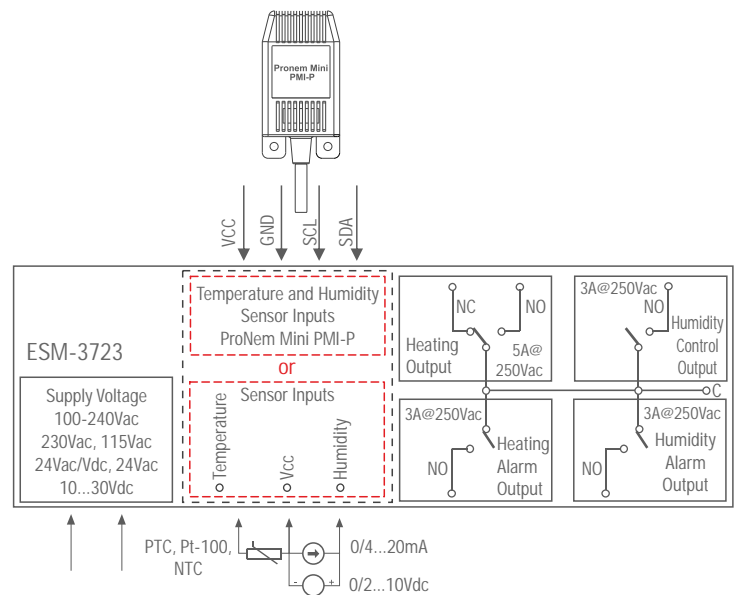
- ▶ Humidity Sensor Input (0/2..10V, 0/4..20mA or ProHumidity Mini PMI-D)
- ▶ 4 Digits Temperature and 4 Digit Humidity Display

## Specifications

Heating Control Output, Heating Alarm Output  
 Humidity Control Output, Humidity Alarm Output  
 PID or ON/OFF selectable temperature control  
 Set Value Boundaries  
 Alarm parameters and alarm status can be adjusted according to the audible alert (internal buzzer functions for alarm conditions)  
 Password protection for programming section

## Technical Specification

ESM-3723 Measurement range  
 0°C...100°C (PTC, NTC, Pt-100),  
 0°C...100°C (PT100),  
 -20°C...80°C(ProNem Mini PMI-P)  
 Accuracy: Scale ±%1, Sensor Break Protection: Upscale  
 Sampling Cycle: 3 samples per second Control Form: ON/OFF, PID  
 Pronem Mini Measurement range  
 Measurement range (RH): 0...100 %RH  
 Measurement range (T): -20°C...+80°C  
 Accuracy (RH): +/-2 %RH (Typ)@23°C  
 Accuracy (T): +/-0,3°C (Typ)@23°C



ESM-3723

ESM-3723  
 (76x34,5x71 mm)

### A Supply Voltage

- 1 100-240Vac 50/60Hz
- 2 24Vac/dc 50/60 Hz (-15%; +10%)
- 3 24Vac 50/60 Hz (-15%; +10%)
- 4 115Vac 50/60 Hz (-15%;+10%)
- 5 230Vac 50/60 Hz (-15%;+10%)
- 8 10..30Vdc 1.5W

### B Temperature Sensor Input

- 1 PT 100, IEC751(ITS90)
- 2 PTC
- 3 NTC
- 4 0/2..10Vdc Voltage Input
- 5 0/4..20mA Current Input
- 6 ProNem Mini PMI-P

### C Humidity Sensor Input

- 4 0/2..10Vdc Voltage Input
- 5 0/4..20mA Current Input
- 6 ProNem Mini PMI-P

### E Process Output

- 1 Heating Control: Relay (5A @ 250Vac)
- 2 SSR Driver output (Maximum 30mA @ 15Vdc)

- 1 PTC-M6L40.K1.5 (PTC Air Probe 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 1.5m cable for cooling application)
- 4 NTC-M6L50.K1.5 (Metal protective tubular, 1.5 m wired NTC probe)
- 6 ProNem Mini PMI-P (2.5m cable for Temperature and Humidity application)

Humidity Alarm Output U  
 Relay (3A@250Vac) 1

Heating Alarm Output HI  
 Relay (3A@250Vac) 01

Humidity Output FG  
 (3A@250Vac) 01

# Digital Ammeter

EDA-3700



▶ AC, DC or True RMS measuring feature

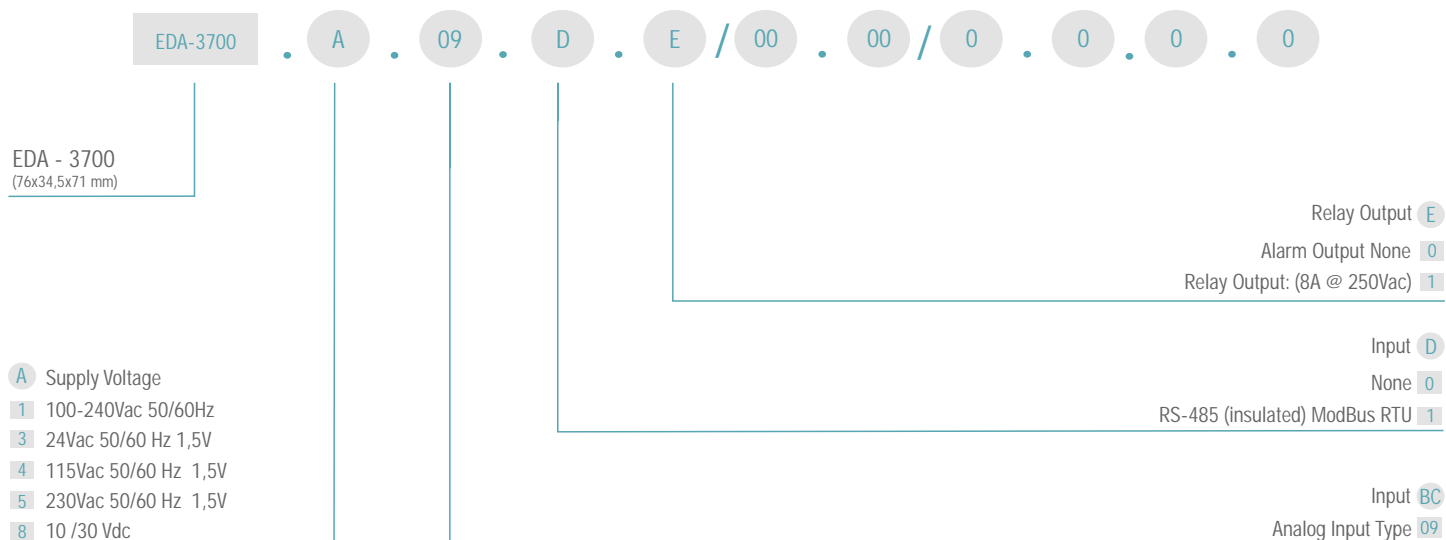
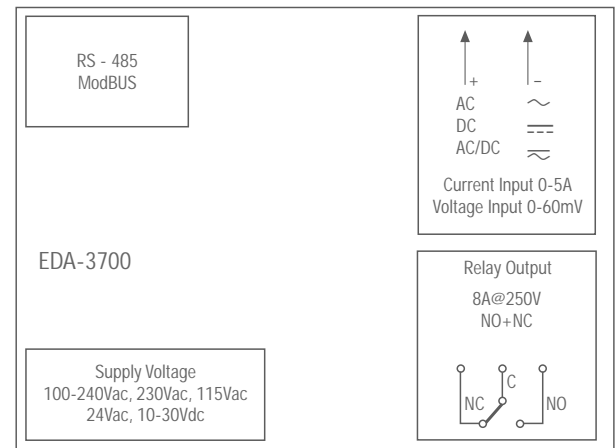
▶ Remote access, data collecting and controlling with Modbus RTU

## Specifications

- Easily changeable from front panel
- 5A or 60 mV AC, DC, AC/DC input
- Programmable scale from 5A to 9999A
- Alarm parameters
- Password protection for programming mode
- Having CE mark according to European Norms

## Technical Specification

- Physical properties: 76 mm x 34.5 mm x 71 mm Plastic for panel mounting protection. Panel section 71 x 29 mm.
- Protection Class : NEMA 4X (Ip65 at front, Ip20 at rear)
- Accuracy: Scale  $\pm 1\%$ ,
- Reading frequency : According to parameter value, Control Form: ON/OFF
- Storage / Operating Temperature :-30 °C to +80 °C / -20 °C to +70°C
- Storage / Operating Humidity : 90 % max. (None condensing)
- Environmental Ratings : Standard, indoor at an altitude of less than 2000 meters with none condensing humidity.
- Scale : AC ve RMS 0 - 9999 / DC (-1999) - 9999
- Display : 14 mm Red 4 digits LED Display





# Temperature Controllers

Single SET Digital On/Off

ESM-3710-N

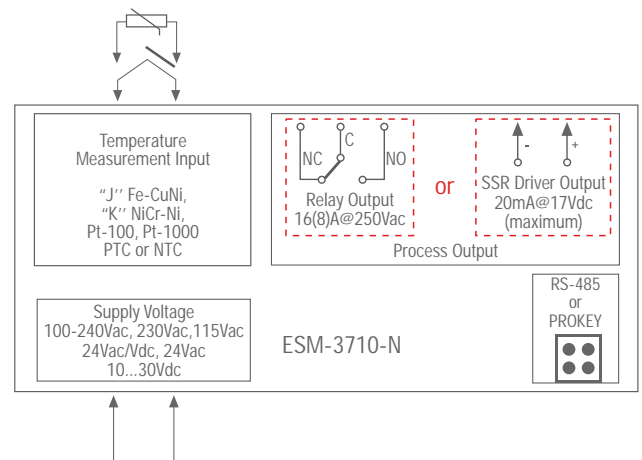


- ▶ Installing parameters using Prokey
- ▶ Password protection for programming section

- ▶ Remote access, data collecting and controlling with Modbus RTU
- ▶ Adjustable internal buzzer according to sensor defect status

## Specifications

- 4 Digits Display
- NTC Input or PTC Input or J type thermocouple Input or Ktype thermocouple Input or 2-Wire PT-100 Input or 2-Wire PT-1000 Input (Must be determined in order.)
- Adjustable temperature offset
- ON/OFF temperature control
- Selectable heating or cooling function
- Selectable decimal type for PTC and NTC via parameter
- Adjustable temperature offset
- Set value low limit and set value high limit boundaries
- Operation selection of compressor operates continuously, stops or operates periodically in case of sensor defect
- Compressor protection delays



## Technical Specification

- Accuracy:  $\pm 1\%$  of 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



ESM-3710-N . A . BC . 0 . E / 00 . 00 / 1 . V . 0 . 0

ESM-3710-N (76x34,5x71 mm)

### A Supply Voltage

- 1 100-240Vac 50/60Hz
- 2 24Vac/dc (-15%;+10%) 50/60 Hz -1.5VA
- 3 24Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 4 115Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 5 230Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 8 10-30Vdc

### BC Input

- 05 J, Fe CuNi IEC584.1(ITS90)
- 10 K, NiCr Ni IEC584.1(ITS90)
- 11 Pt 100, (-50...400°C)
- 09 Pt 100, (-19.9...99.9°C)
- 12 PTC (-50...150°C) / PTC (-19.9...99.9°C)
- 14 Pt 1000, (-50...400°C)
- 13 Pt 1000, (-19.9...99.9°C)
- 18 NTC (-50...100°C) / NTC (-19.9...99.9°C)

- V
- 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 (Metal protective tubular, 1.5 m wired NTC probe)

### Process Output E

- 1 Relay Output: (16(8)A @ 250Vac)
- 2 SSR Driver Output (Maximum 20mA @ 17Vdc)
- 3 Relay Output (30(15)A@240Vac, 1 NO (Only for NTC input type devices.))

# Temperature Controller

DIN RAIL Mounting Digital On/Off

ESM-1510-N



## DIN RAIL Mounting

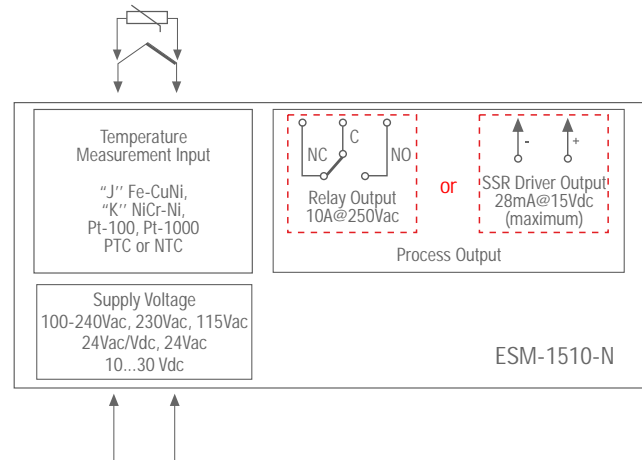
### Specifications

- 3 Digits display
- PTC, NTC PT-100, PT-1000 thermoresesistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types (Must be determined in order)
- ON/OFF Temperature Control
- Selectable Heating or Cooling Function
- Selectable decimal type for PTC and NTC via parameter
- Adjustable Temperature Offset Value
- Set Value Boundaries
- 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

### Technical Specification

- Accuracy:  $\pm 1\%$  of 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

## Heating / Cooling Applications



ESM-1510-N . A . BC . 0 . E / 00 . 00 / 2 . V . 0 . 0

ESM-1510-N (90x35x61,2 mm)

#### A Supply Voltage

- 1 100-240Vac 50/60Hz
- 2 24Vac/dc (-15%;+10%) 50/60 Hz -1.5VA
- 3 24Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 4 115Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 5 230Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 8 10...30 Vdc

#### BC Input

- 05 J, Fe CuNi IEC584.1(ITS90)
- 10 K, NiCr Ni IEC584.1(ITS90)
- 11 Pt 100, (-50...400°C)
- 09 Pt 100, (-19.9...99.9°C)
- 12 PTC (-50...150°C) / PTC (-19.9...99.9°C)
- 15 PTC (-19.9...99.9°C)
- 14 Pt 1000, (-50...400°C)
- 13 Pt 1000, (-19.9...99.9°C)
- 18 NTC (-50...100°C) / NTC (-19.9...99.9°C)
- 19 NTC (-19.9...99.9°C)

- V
- 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 (Metal protective tubular, 1.5 m wired NTC probe)

#### Process Output E

- 1 Relay Output (10A @ 250Vac)
- 2 SSR Driver Output (Maximum 28mA @ 15Vdc)





# Heating Controller

Single SET ON/OFF

ESM-3711-HN



- ▶ Remote access, data collecting and controlling with Modbus RTU
- ▶ Installing parameters using Prokey
- ▶ User can select to start cooking time (Timer) when temperature reaches to the set value

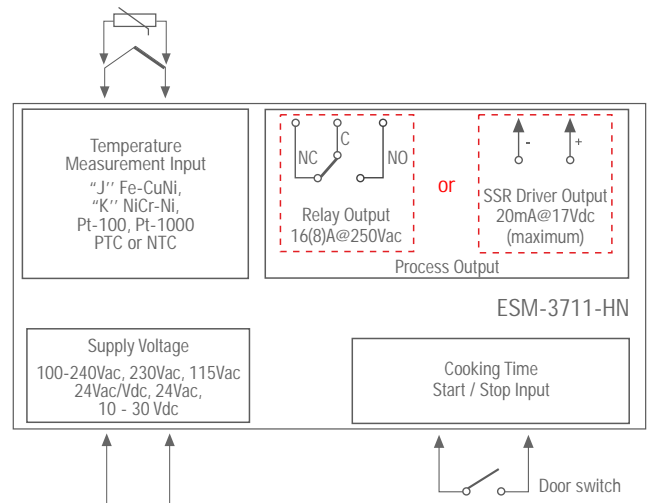
- ▶ Adjustable temperature offset
- ▶ Functional Internal Buzzer
- ▶ ON / OFF temperature control

## Specifications

- 4 Digits display
- User can select to start Cooking Time when Temperature reaches to the Set Value
- PTC, NTC, PT-100, PT-1000 thermoresistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types
- Temperature Control Output and Alarm Output
- Selectable decimal type for PTC and NTC via parameter
- Relay or SSR Driver Output
- Adjustable Cooking Time from Front Panel
- Digital Input (Start/Stop Input for Cooking Time)
- Temperature Control According to the Cooking Time
- Adjustable Internal Buzzer According to Cooking Time,
- Probe Defect and Alarm Status

## Technical Specification

- Accuracy:  $\pm 1\%$  of 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



ESM-3711-HN . A . BC . 0 . E / 00 . 00 / . 1 . V . 0 . 0

ESM-3711-HN  
(76x34.5x71 mm)

- A** Supply Voltage
- 1** 100-240Vac 50/60Hz
- 2** 24Vac/dc ( $\pm 15\%$ ) 50/60 Hz
- 3** 24Vac ( $\pm 15\%$ ) 50/60 Hz
- 4** 115Vac ( $\pm 15\%$ ) 50/60 Hz
- 5** 230Vac ( $\pm 15\%$ ) 50/60 Hz
- 8** 10...30Vdc
- BC** Input
- 05** J, Fe CuNi IEC584.1(ITS90)
- 10** K, NiCr Ni IEC584.1(ITS90)
- 11** Pt 100, (-50...400°C)
- 09** Pt 100, (-19.9...99.9°C)
- 12** PTC (-50...150°C) / PTC (-19.9...99.9°C)
- 14** Pt 1000, (-50...400°C)
- 13** Pt 1000, (-19.9...99.9°C)
- 18** NTC (-50...100°C) / NTC (-19.9...99.9°C)

- V**
- 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  
(Metal protective tubular, 1.5 m wired NTC probe)
- E** Process Output
- 1** Relay Output: (16(8)A @ 250Vac)
- 2** SSR Driver Output: (Max.20mA, Max.17Vdc)

# Cooling Controller Devices

Single SET

ESM-3711-CN



- ▶ Selectable defrost function (hot gas or electric)
- ▶ Remote access, data collecting and controlling with ModBus RTU

- ▶ Operation selection of compressor operate continuously, stops or operates periodically in case of cabinet probe defect

## Specifications

Cooling Application

NTC Input or PTC Input (Must be determined in order.)

Selectable decimal type for PTC and NTC via parameter

ON/OFF Control

Adjustable °C and °F

Set value boundaries

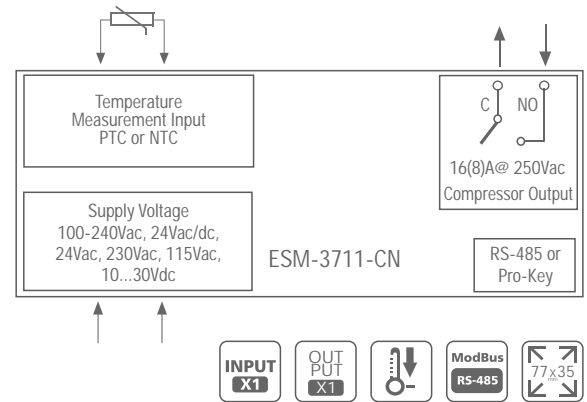
Selectable defrost function (hot gas or electric)

Adjustable defrost time from front panel

Defrost time and/or manuel defrost and/or temperature set value protection

Installing parameters using Prokey

Password protection for programming mode

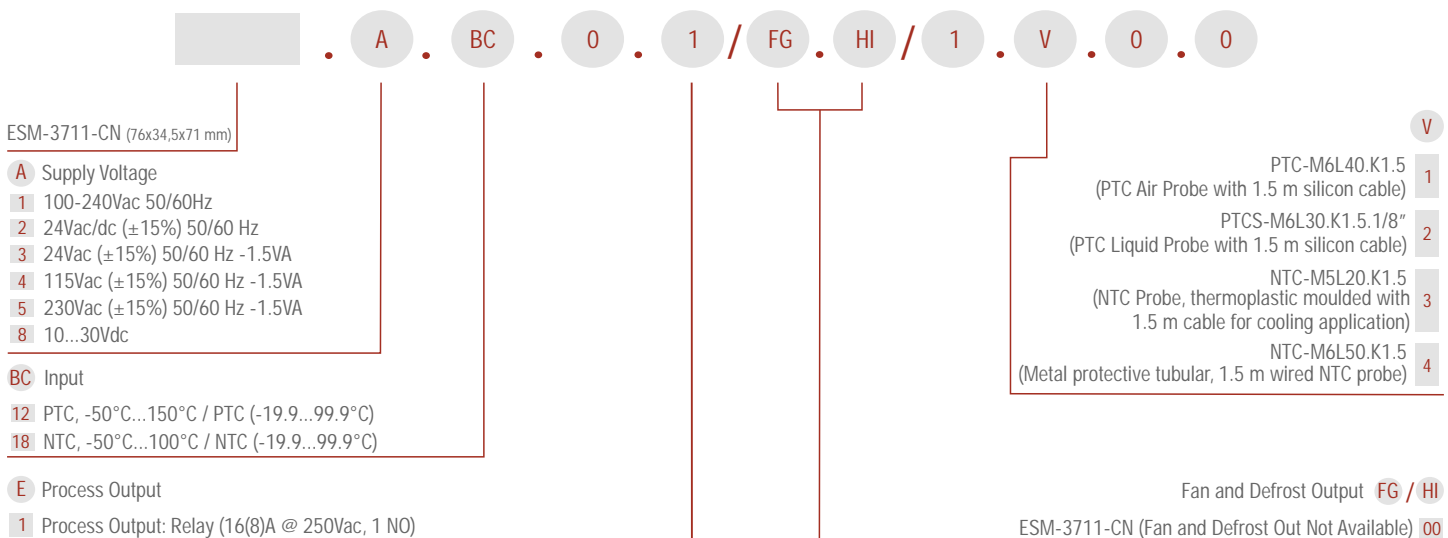


## Technical Specification

Accuracy: ±1%of scale

Sensor Break Protection: Upscale

Sampling Cycle: 3 samples per second





# Cooling Controller Devices

Duel SET

ESM-3712-CN

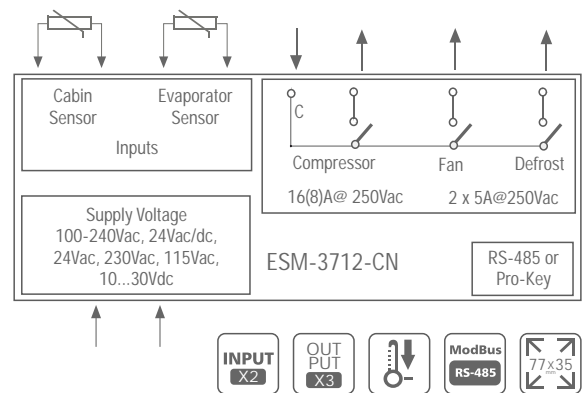


- ▶ Installing parameters using Prokey  
Remote access, data collecting and controlling with ModBus RTU
- ▶ Separately adjustable 2 offset value for cabinet and evaporator sensor

- ▶ Operation selection of compressor operate continuously, stops or operates periodically in case of cabinet probe defect
- ▶ Fan can be operated depending on compressor and defrost

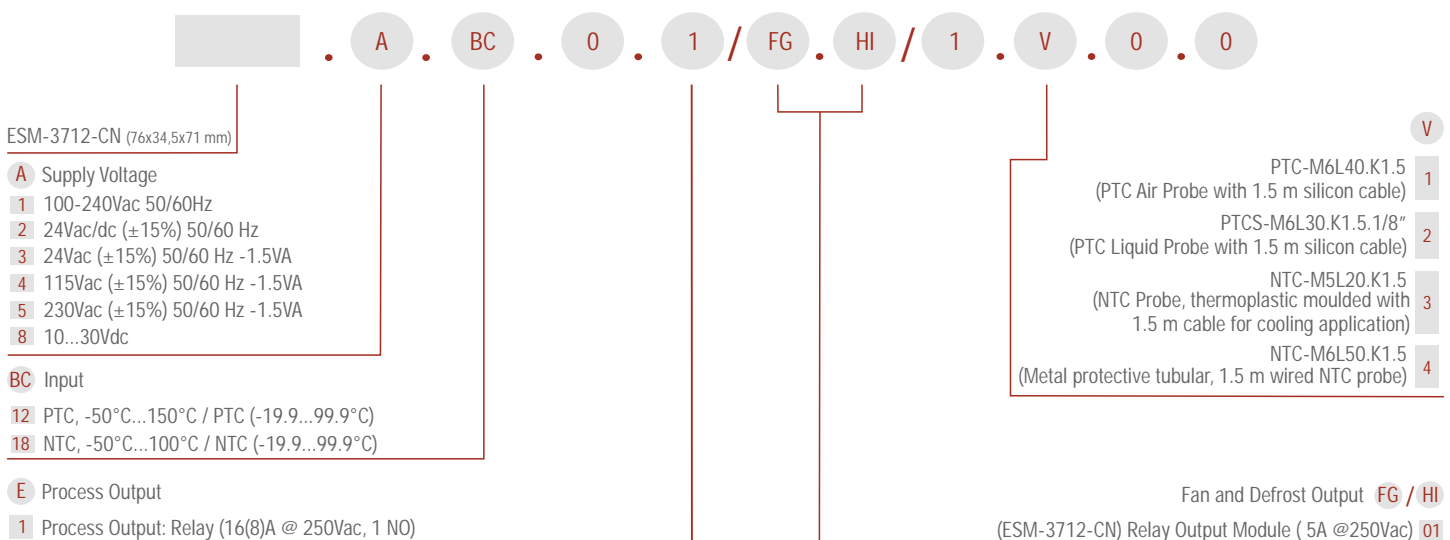
## Specifications

- NTC Input or PTC Input (Must be determined in order.)
- Selectable decimal type for PTC and NTC via parameter
- ON/OFF Control
- Adjustable °C and °F
- Set value boundaries
- 2 sensor input for cabinet and evaporator
- Configurable digital input
- Selectable defrost function (hot gas or electric)
- Adjustable defrost time from front panel
- Defrost time and/or manual defrost and/or temperature set value protection
- 3 Output for compressor, defrost and fan controls
- Password protection for programming mode



## Technical Specification

- Accuracy: ±1% of scale
- Sensor Break Protection: Upscale
- Sampling Cycle: 3 samples per second



# Temperature Controller

Dual SET On/Off Heating and Cooling Controller

ESM-3712-HCN



- ▶ Installing parameters using Prokey
- ▶ 2 Output for compressor and alarm controls

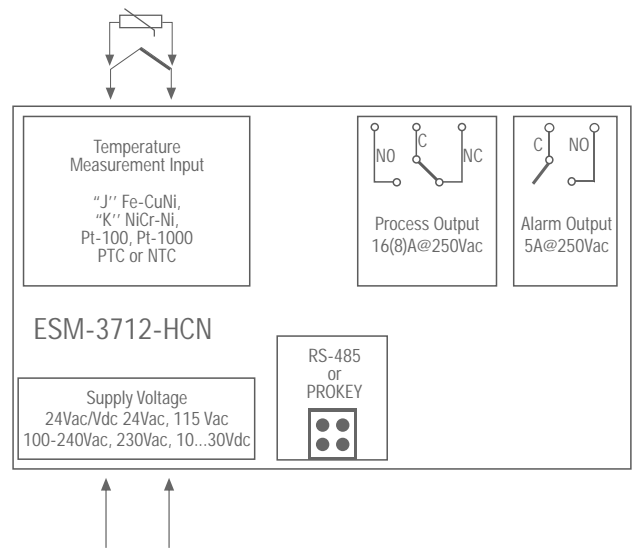
- ▶ Remote access, data collecting and controlling with Modbus RTU
- ▶ Process Set value and Alarm Set value low limit and set value high limit boundaries

## Specifications

- 4 Digits Display
- NTC Input or PTC Input (Must be determined in order)
- Selectable decimal type for PTC and NTC via parameter
- ON/OFF temperature control
- Selectable heating or cooling function
- Selection of operation with hysteresis
- Adjustable temperature offset
- Alarm parameters
- Operation selection of compressor operates continuously, stops or operates periodically in case of sensor defect
- Compressor protection delays
- Password protection for programming section
- Adjustable Alarm Set Value from front panel
- Adjustable internal buzzer according to Sensor prob defect and Alarm status

## Technical Specification

- Accuracy:  $\pm 1\%$  of 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



ESM-3712-HCN . A . BC . 0 . 1 / 1 . 00 / . 1 . V . 0 . 0

ESM-3712-HCN  
(76x34,5x71 mm)

- A** Supply Voltage
  - 1 100-240Vac 50/60Hz
  - 2 24Vac/dc ( $\pm 15\%$ ) 50/60 Hz
  - 3 24Vac ( $\pm 15\%$ ) 50/60 Hz
  - 4 115Vac ( $\pm 15\%$ ) 50/60 Hz
  - 5 230Vac ( $\pm 15\%$ ) 50/60 Hz
  - 8 10...30Vdc
- BC** Input
  - 05 J, Fe CuNi IEC584.1(ITS90)
  - 10 K, NiCr Ni IEC584.1(ITS90)
  - 11 Pt 100, (-50...400°C)
  - 9 Pt 100, (-19.9...99.9°C)
  - 12 PTC (-50...150°C) / PTC (-19.9...99.9°C)
  - 18 NTC (-50...100°C) / NTC (-19.9...99.9°C)
  - 14 Pt 1000, (-50...400°C)
  - 13 Pt 1000, (-19.9...99.9°C)

- V**
- 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 (Metal protective tubular, 1.5 m wired NTC probe)
- FG** Alarm Output (5A @ 250Vac, 1 NO)
- E** Process Output Relay (16(8)A @ 250Vac, 1 NO)



# Temperature Controllers

Single & Dual ON/OFF

ESM-4410 ESM-7710 ESM-9910



ON/OFF Control Form

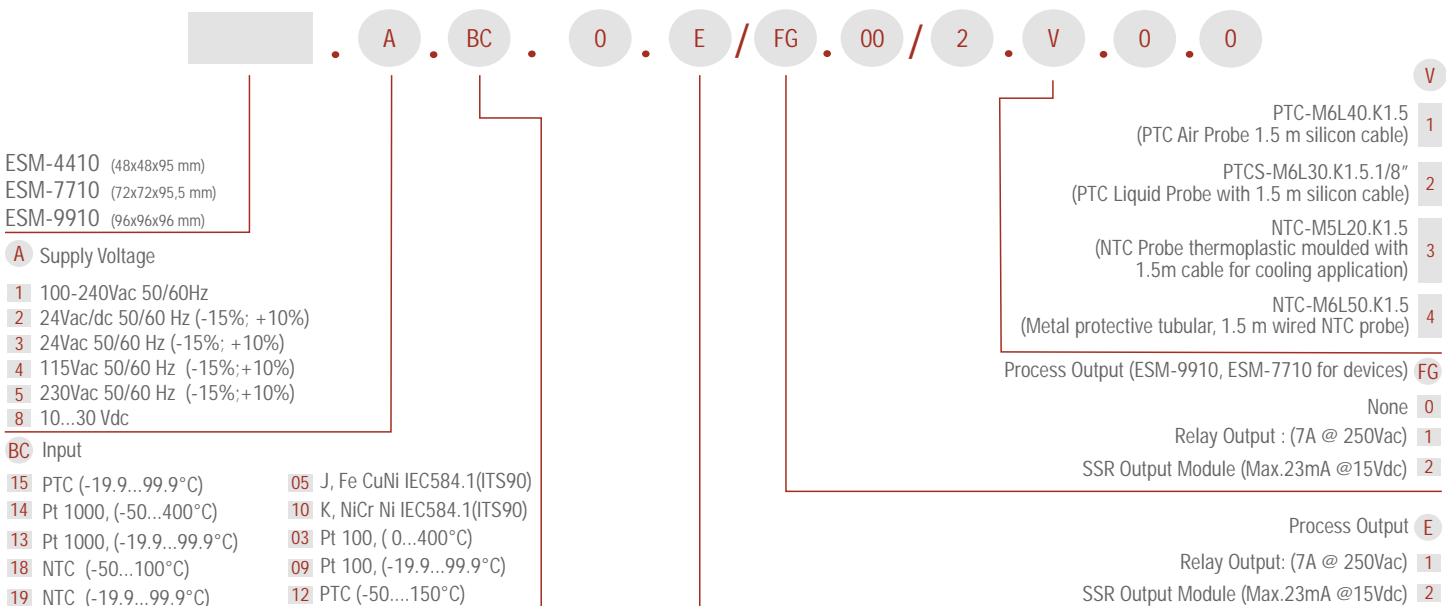
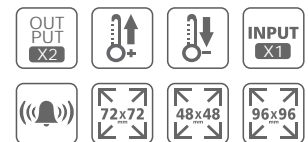
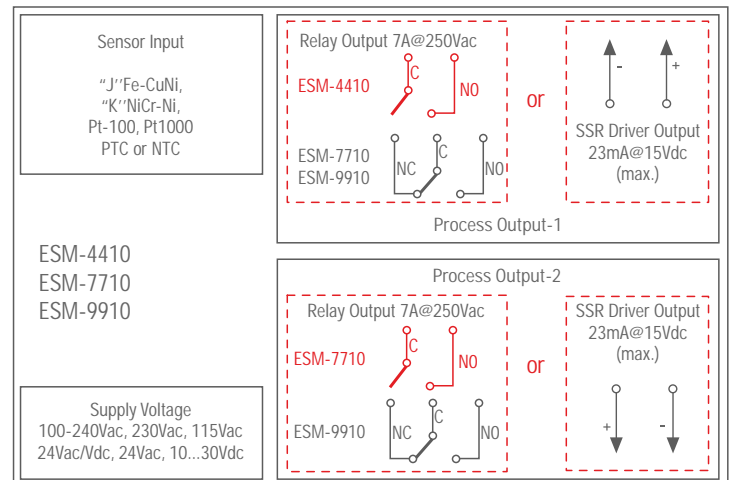
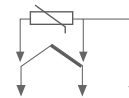
Selectable Heating and Cooling Function

## Specifications

- PTC, NTC, PT-100, PT-1000 thermoresistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types (Must be determined in order)
- Operating Type Selection with Hysteresis
- Adjustment of Temperature Offset Value
- Minimum Pulling Time Adjustment for Control Outputs
- Password Protection for Programming Section

## Technical Specification

- Accuracy:  $\pm 1\%$  of 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



# Temperature Controller

Dual SET PID

ESM-3720



- ▶ Remote access, data collecting and controlling with Modbus RTU
- ▶ Installing parameters using Prokey
- ▶ PID or ON/OFF selectable temperature control

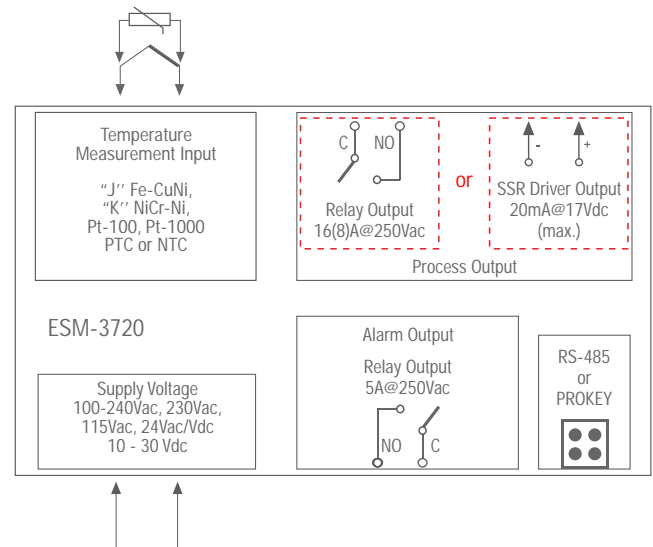
- ▶ Password protection for programming section
- ▶ Having CE mark according to European Norms
- ▶ Adjustable internal buzzer according to sensor defect status

## Specifications

- 4 Digits Display
- NTC Input or PTC Input or J type thermocouple Input or Ktype thermocouple Input or 2-Wire PT-100 Input or 2-Wire PT-1000 Input (Must be determined in order.)
- Adjustable temperature offset
- Selectable decimal type for PTC and NTC via parameter
- Adjustable temperature offset
- Set value low limit and set value high limit boundaries
- Operation selection of compressor operates continuously, stops or operates periodically in case of sensor defect
- Compressor protection delays

## Technical Specification

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



ESM-3720 A . BC . 0 . E / 01 . 00 / . 1 . V . 0 . 0

ESM-3720 (76x34,5x71mm)

<b>A</b> Supply Voltage	<b>V</b>
<b>1</b> 100-240Vac 50/60Hz	<b>1</b> PTC-M6L40.K1.5 (PTC Air Probe with 1.5 m silicon cable)
<b>2</b> 24Vac/dc (±15%) 50/60 Hz	<b>2</b> PTCS-M6L30.K1.5.1/8" (PTC Liquid Probe with 1.5 m silicon cable)
<b>3</b> 24Vac (±15%) 50/60 Hz	<b>3</b> NTC-M5L20.K1.5 (NTC Probe, thermoplastic moulded with 1.5 m cable for cooling application)
<b>4</b> 115Vac (±15%) 50/60 Hz	<b>4</b> NTC-M6L50.K1.5 (Metal protective tubular, 1.5 m wired NTC probe)
<b>5</b> 230Vac (±15%) 50/60 Hz	<b>FG</b> Alarm Output
<b>8</b> 10-30Vdc	<b>01</b> 5A@250 Vac, 1 NO
<b>BC</b> Input	<b>E</b> Process Output
<b>05</b> J, Fe CuNi IEC584.1(ITS90)	<b>1</b> Relay Output: (16(8)A @ 250Vac)
<b>10</b> K, NiCr Ni IEC584.1(ITS90)	<b>2</b> SSR Driver output (Maximum 20mA @ 17Vdc)
<b>11</b> Pt 100, (-50...400°C)	
<b>09</b> Pt 100, (-19.9...99.9°C)	
<b>12</b> PTC (-50...150°C) / PTC (-19.9...99.9°C)	
<b>14</b> Pt 1000, (-50...400°C)	
<b>13</b> Pt 1000, (-19.9...99.9°C)	
<b>18</b> NTC (-50...100°C) / NTC (-19.9...99.9°C)	



# Temperature Controllers

DIN RAIL Mounting Type, Digital PID Controller

ESM-1520



## DIN RAIL Mounting

### Specifications

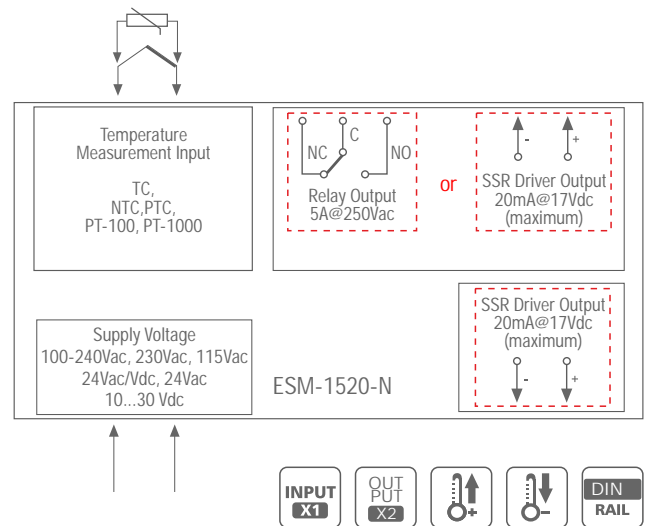
- 3 Digits display
- PTC, NTC PT-100, PT-1000 thermoresesistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types (Must be determined in order)
- PID or ON/OFF Temperature Control
- Selectable Heating or Cooling Function
- Selectable decimal type for PTC and NTC via parameter
- Adjustable Temperature Offset Value
- Set Value Boundaries
- 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

### Technical Specification

- Accuracy:  $\pm 1\%$  of 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

## Heating / Cooling Applications

## PID or ON/OFF Temperature Controller



ESM-1520-N . A . BC . 0 . E / FG . 00 / 2 . V . 0 . 0

ESM-1520-N (90x35x61,2 mm)

### A Supply Voltage

- 1 100-240Vac 50/60Hz
- 2 24Vac/dc (-15%:+10%) 50/60 Hz -1.5VA
- 3 24Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 4 115Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 5 230Vac ( $\pm 15\%$ ) 50/60 Hz -1.5VA
- 8 10...30 Vdc

### BC Input

- 05 J, Fe CuNi IEC584.1(ITS90)
- 10 K, NiCr Ni IEC584.1(ITS90)
- 11 Pt 100, (-50...400°C)
- 09 Pt 100, (-19.9...99.9°C)
- 12 PTC (-50...150°C) / PTC (-19.9...99.9°C)
- 14 Pt 1000, (-50...400°C)
- 18 NTC (-50...100°C) / NTC (-19.9...99.9°C)

### E Process Output-1

- 2 SSR Driver Output (Maximum 20mA @ 17Vdc)

- V
- 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 (Metal protective tubular, 1.5 m wired NTC probe)

### Process Output-2 FG

- 1 Relay Output (5A @ 250Vac)
- 2 SSR Driver Output (Maximum 20mA @ 17Vdc)

# PID Temperature Controllers

ESM-4420 ESM-4920  
ESM-7720 ESM-9420 ESM-9920



- ▶ Universal process input (TC,RTD)
- ▶ Adaptation of PID Coefficients to the system with Self-Tune and AUTO-Tune operations

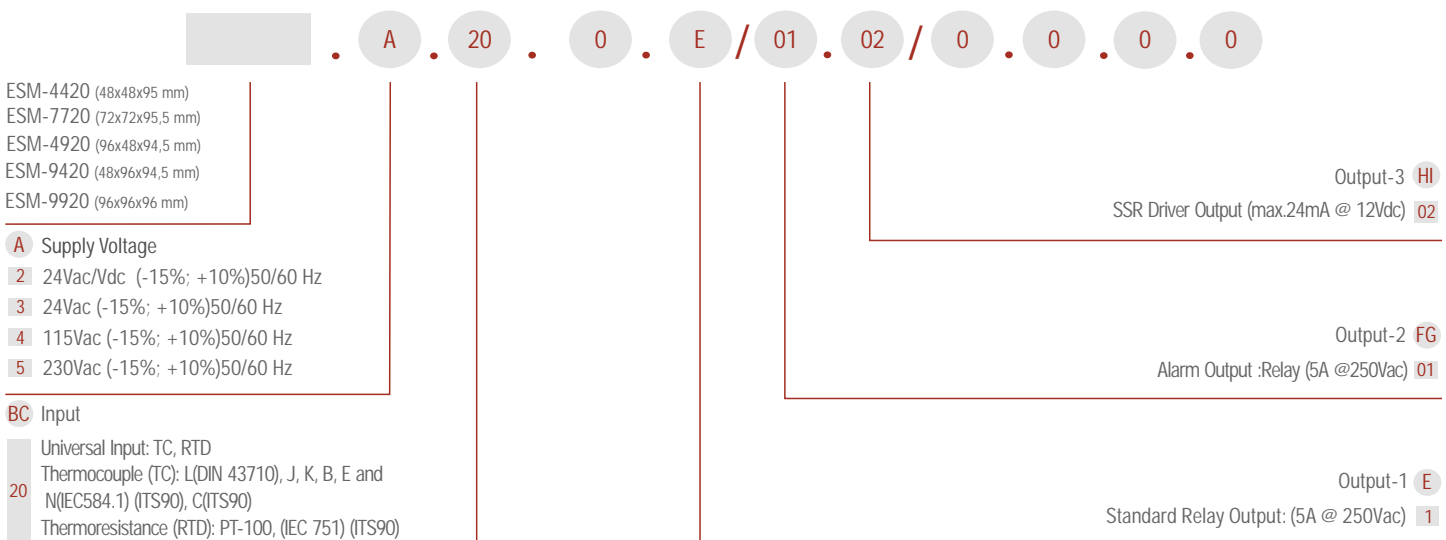
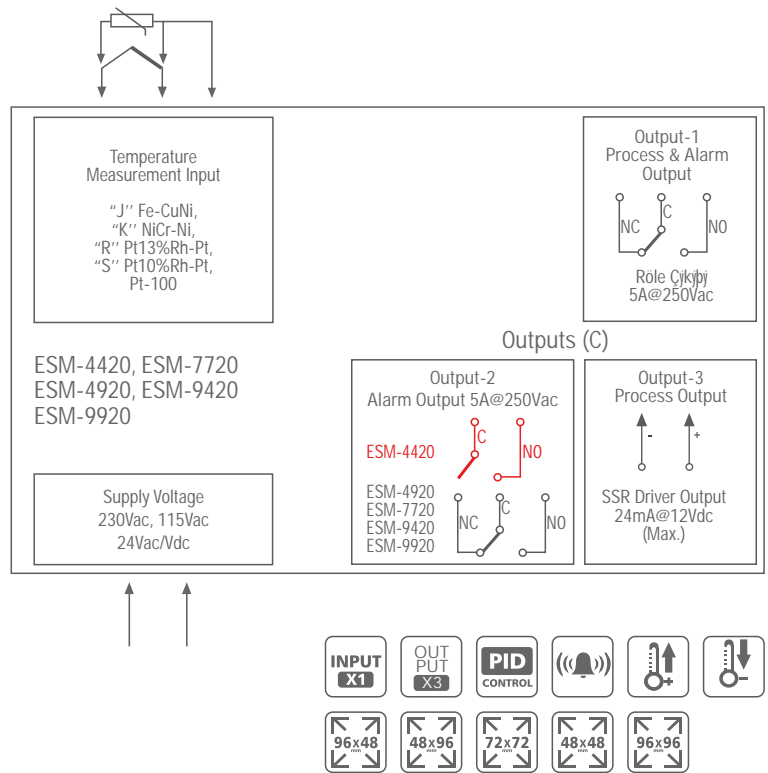
- ▶ 2 Relays and 1 SSR drive output
- ▶ Soft Start Output For Resistance Durability

## Specifications

- 4 Digits process (PV) and 4 Digits set value (SV) display
- Configurable ON/OFF, P, PI, PD, and PID control forms
- Programmable Heating or Cooling Functions for Control Output
- Alarm Functions for Alarm Output
- SET Value Limitation For System Protection
- Sensor Break Protection

## Technical Specification

- Accuracy:  $\pm 0.25\%$  of full scale for thermocouple, thermoresistance
- Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Cycle: 3 samples per second
- Input Filter: 1.0 second







# PID Temperature Controllers

ESD-9950-N

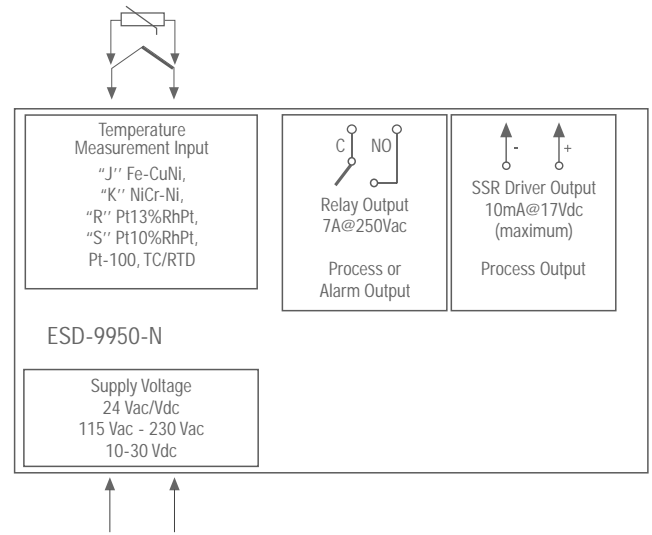


- ▶ Adjustable temperature offset
- ▶ Programmable control and alarm functions for control outputs

- ▶ Programmable ON-OFF, P, PI, PD, PID control forms
- ▶ With Auto Tune / Self Tune operation, the PID coefficients adaptation to the system

## Specifications

- 4 Digits display
- J type Thermocouple Input or
- K type Thermocouple Input or
- R type Thermocouple Input or
- S type Thermocouple Input or
- 2 or 3 wire PT 100 Input



## Technical Specification

- Accuracy:  $\pm 25\%$  of scale
- Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$
- Sensor Break Protection: Upscale
- Sampling Cycle: 10 samples per second



ESD-9950-N . A . 20 . 0 . 1 / 02 . 00 / . 0 . 0 . 0 . 0

ESD-9950-N (96x96x100 mm)

- A** Supply Voltage
- 2** 24Vac/dc ( $\pm 15\%$ ) 50/60 Hz
- 3** 24Vac ( $\pm 15\%$ ) 50/60 Hz
- 4** 115Vac ( $\pm 15\%$ ) 50/60 Hz
- 5** 230Vac ( $\pm 15\%$ ) 50/60 Hz
- 8** 10 - 30 Vdc

- BC** Input
- Universal Input: TC, RTD
- Thermocouple (TC): J, K, R, S and N(IEC584.1) (ITS90), C(ITS90)
- Thermoresistance (RTD): PT-100, (IEC 751) (ITS90)

Process Output **FG**  
 SSR Driver Output (Max. 10mA, Max. 17Vdc) **02**

Process or Alarm Output **E**  
 Relay Output (7A @ 250Vac) (NO,NC,C) **1**



Order Code		Eco LITE	Eco PID	Eco PID+	Eco HR
A	B	C	D	E	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>A Dimension</b>					
4	48x48mm	+	+	+	+
<b>B Supply Voltage</b>					
1	100-240Vac 50/60Hz	+	+	+	+
2	24Vac/dc ( $\pm 15\%$ ) 50/60Hz	+	+	+	+
3	115Vac ( $\pm 15\%$ ) 50/60Hz	+	+	+	+
5	230Vac ( $\pm 15\%$ ) 50/60Hz	+	+	+	+
6	10-30Vdc	+	+	+	+
7	24Vac ( $\pm 15\%$ ) 50/60Hz	+	+	+	+
<b>C Output-1</b>					
1R	1xRelay Output (NO+C) 5A@250Vac	+	+	+	+
2R	2xRelay Output (NO+NO+C) 5A@250Vac	+	+	+	+
3R	3xRelay Output (NO+NO+C, NO+C) 5A@250Vac	-	-	+	-
2W	3xRelay Output (NO/NC+C, NO+C) 5A@250Vac	-	-	+	-
<b>D Output-2</b>					
S	SSR driver output (Maks. 10mA, 12Vdc)	-	+	+	+
<b>E Communication</b>					
0	Without Communication	+			
485	RS-485 ModBus	-	+	*	+
DI	Digital Input (220Vac) for secondary set value	-	-	-	+
<b>Specificatio</b>					
	Universal Thermocouples (TC) & Thermoresistances (RTD) input	+	+	+	+
	ON-OFF control form	+	+	+	+
	P, PI, PID, control form	-	+	+	+
	Adaptation of PID coefficients to the system with Self-Tune and Auto-Tune operation	-	+	+	+
	Selectable heating and cooling function	+	+	+	+
	Adjustable temperature offset value	+	+	+	+
	Adjustable hysteresis value	+	+	+	+
	Minimum pulling time adjustment for control outputs	+	+	+	+
	Saving and Recovery of user parameters	+	+	+	+
	Return to Factory settings	+	+	+	+
	RS-485ModBus (RTU) communication option	-	+	+	+
	Digital or RS-485 input for activate the 2nd Set value	-	-	-	+
	4 Digits Process, 4 Digits Set notation	-	-	+	-

\* **Eco PID+** No communication in 2W and 3R output types

# Temperature Controllers

ECO LITE



- ▶ TC (J,K,R,S,T Input Types) and RTD inputs selectable by parameter
- ▶ Low Power Consumption, Energy saving and Environmentally Friendly with 2VA

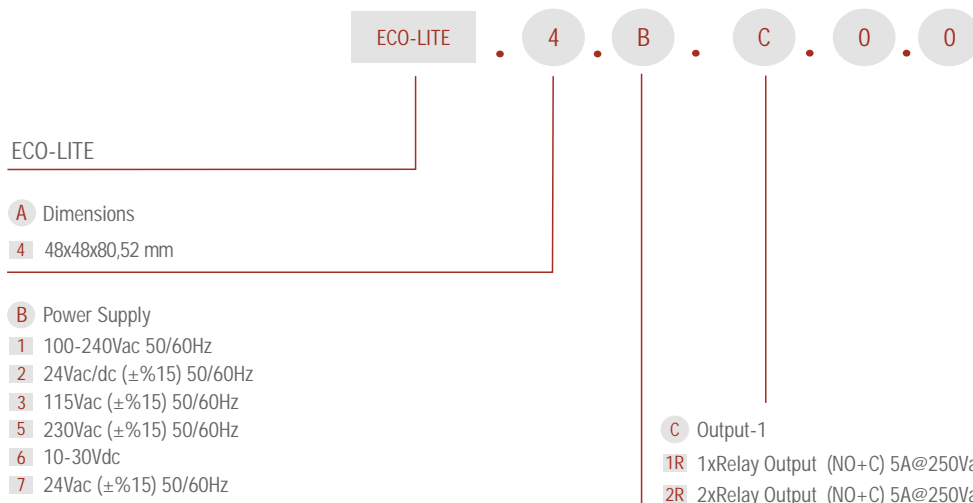
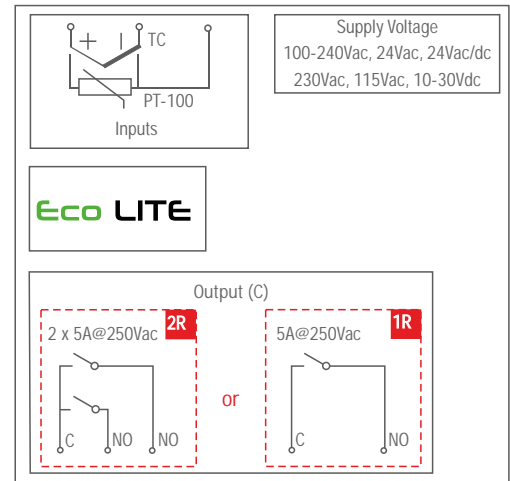
- ▶ Saving and Recovery of user parameters
- ▶ Return to Factory Settings

## Specifications

- 3 Digits Process (PV) and 4 Digits Set (SV) display
- Process input ( TC, RTD )
- ON-OFF control form
- Selectable heating and cooling function
- Selectable temperature offset value
- Operation type selection with hysteresis
- Minimum pulling time adjustment for control outputs
- Password protection for programming mode

## Technical Specification

- Accuracy:  $\pm 0.25\%$  of full scale
- Cold Junction Compensation: Automatically  $\pm 0.1^{\circ}\text{C}/1^{\circ}\text{C}$
- Line Compensation: Maximum 10 Ohm
- Sensor Break Protection: Upscale
- Sampling Cycle: 0.1 second





# PID Temperature Controllers

ECO PID

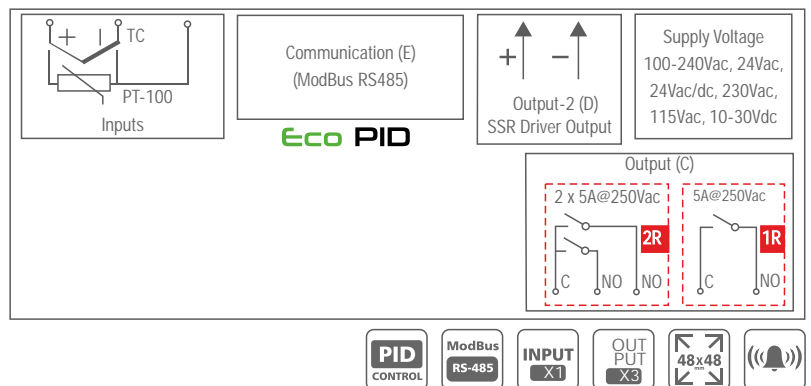


- ▶ High Resolution Sensitive PID control
- ▶ TC (J,K,R,S,T Input Types) and RTD inputs selectable by parameter
- ▶ RS-485 Modbus (RTU) communication option

- ▶ Saving and Recovery of user parameters
- ▶ Return to Factory Settings

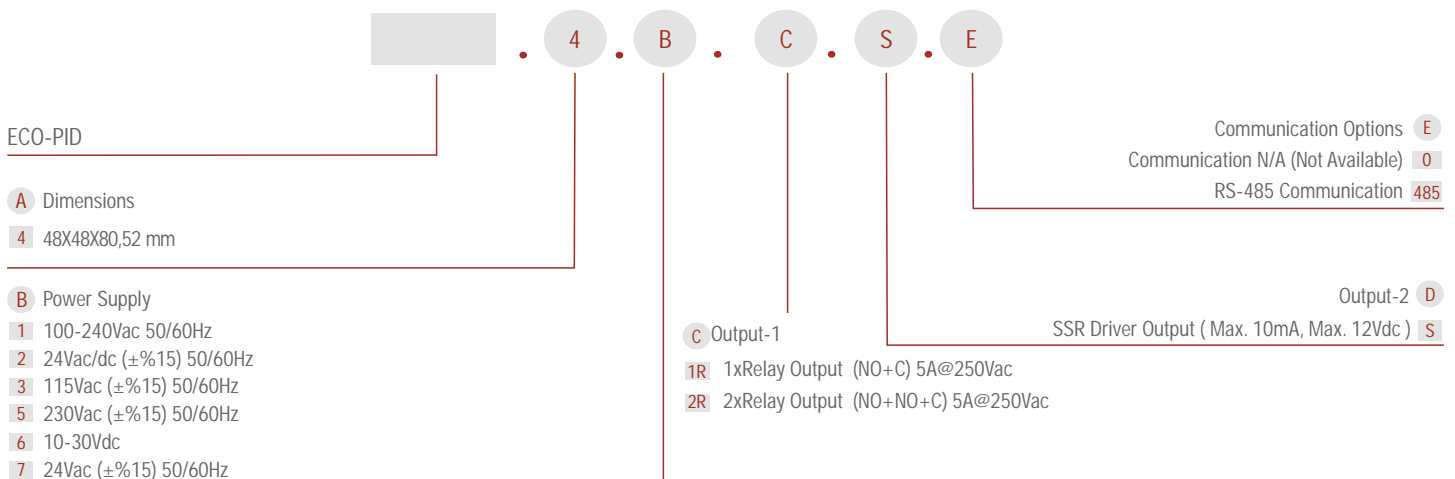
## Specifications

3 Digits Process (PV) and 4 Digits Set (SV) display  
 Process input ( TC, RTD )  
 Programmable ON-OFF, P, PI, PD, PID control forms  
 Adaptation of PID Coefficients to the system with Self-Tune operation (Step Response Tuning) and Auto-Tune (limit cycling-tuning)  
 Selectable heating and cooling function  
 Selectable temperature offset value  
 Operation type selection with hysteresis  
 Minimum pulling time adjustment for control outputs  
 Password protection for programming mode



## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 0.1 second



# Temperature Controllers

ECO PID+

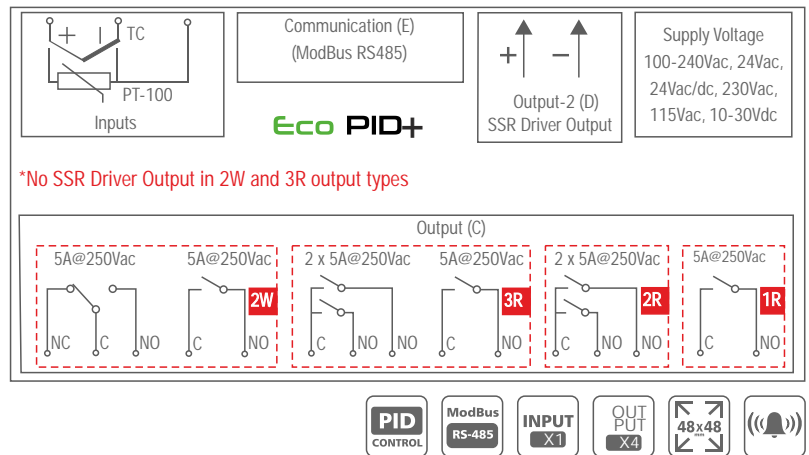


- ▶ High Resolution Sensitive PID control
- ▶ TC (J,K,R,S,T Input Types) and RTD inputs selectable by parameter
- ▶ RS-485 Modbus (RTU) communication option

- ▶ Saving and Recovery of user parameters
- ▶ Return to Factory Settings

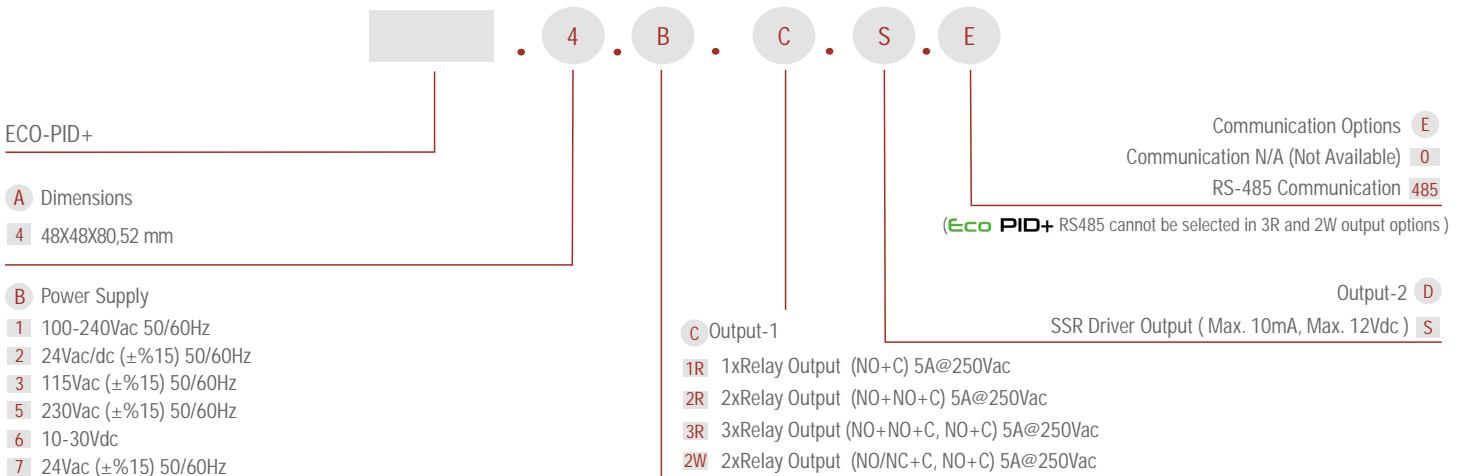
## Specifications

4 Digits Process (PV) and 4 Digits Set (SV) display  
 Process input ( TC, RTD )  
 Programmable ON-OFF, P, PI, PD, PID control forms  
 Adaptation of PID Coefficients to the system with Self-Tune operation (Step ResponseTuning) and Auto-Tune (limitcycling-tuning)  
 Selectable heating and cooling function  
 Selectable temperature offset value  
 Operation type selection with hysteresis  
 Minimum pulling time adjustment for control outputs  
 Password protection for programming mode



## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 0.1 second





# PID Hot Runner

ECO HR



- ▶ High Resolution Sensitive PID control
- ▶ TC (J,K,R,S,T Input Types, PT-100) selectable by parameter
- ▶ Low Power Consumption, Energy saving and Environmentally Friendly with 2VA
- ▶ Activate 2nd Set Value by front panel

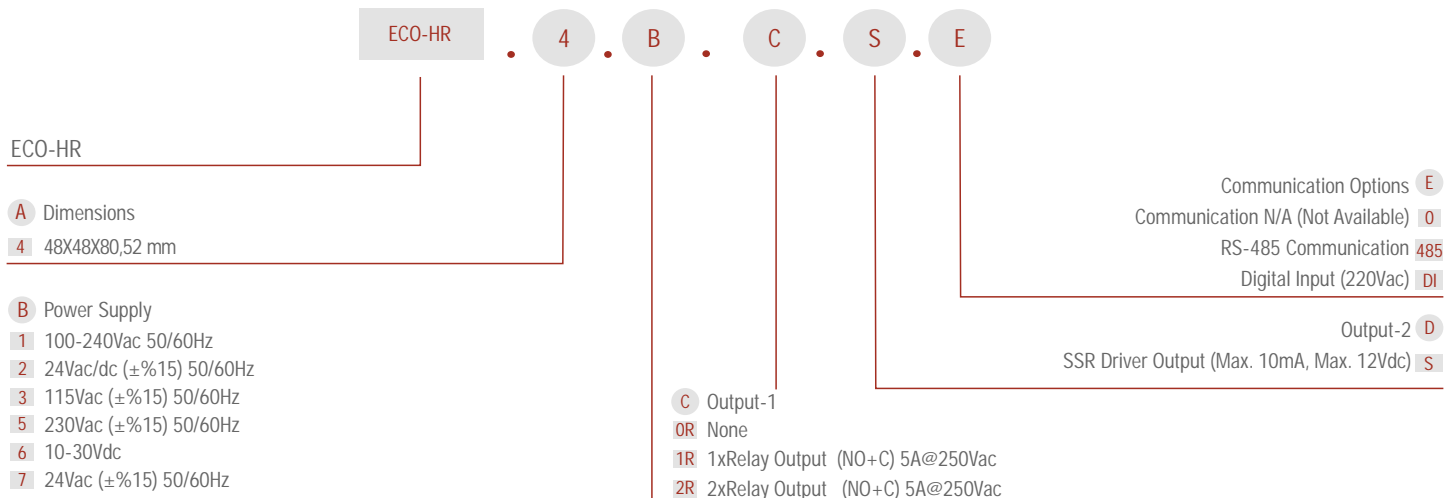
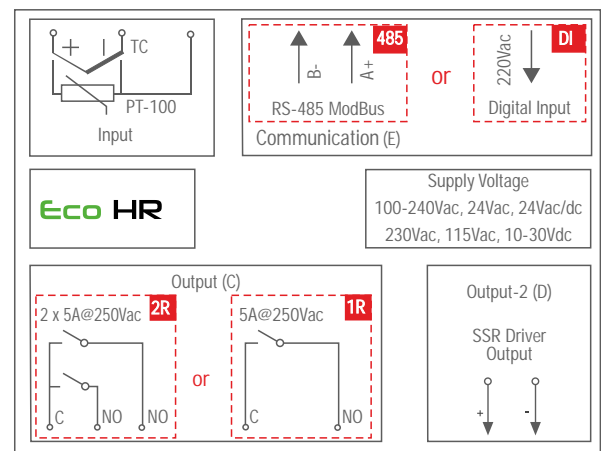
- ▶ Saving and Recovery of user parameters
- ▶ RS-485 Modbus (RTU) communication option
- ▶ Return to Factory Settings
- ▶ Digital or RS-485 input for activate the 2nd Set Value (Optional)

## Specifications

3 Digits Process (PV) and 4 Digits Set (SV) display  
 Process input ( TC,RTD )  
 Programmable ON-OFF, P, PI, PD, PID control forms  
 Adaptation of PID Coefficients to the system  
 with Self-Tune operation (Step Response Tuning) and  
 Auto-Tune (limitcycling-tuning)  
 Selectable heating and cooling function  
 Selectable temperature offset value  
 Operation type selection with hysteresis  
 Minimum pulling time adjustment for control outputs  
 Password protection for programming mode

## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 0.1 second



# PID Process Controllers

ECO PRO+

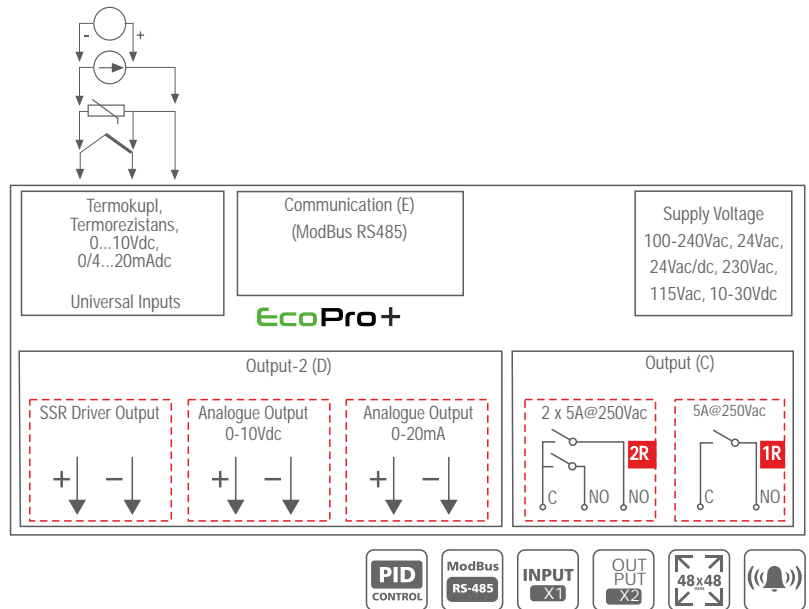


- ▶ High Resolution Sensitive PID control
- ▶ Universal process input (TC, RTD, mVdc, Vdc, mAdc)
- ▶ 8 steps profile control (Ramp & Soak) function and start-hold-stop by using logic input module

- ▶ Saving and Recovery of user parameters
- ▶ Return to Factory Settings
- ▶ Bumpless transfer

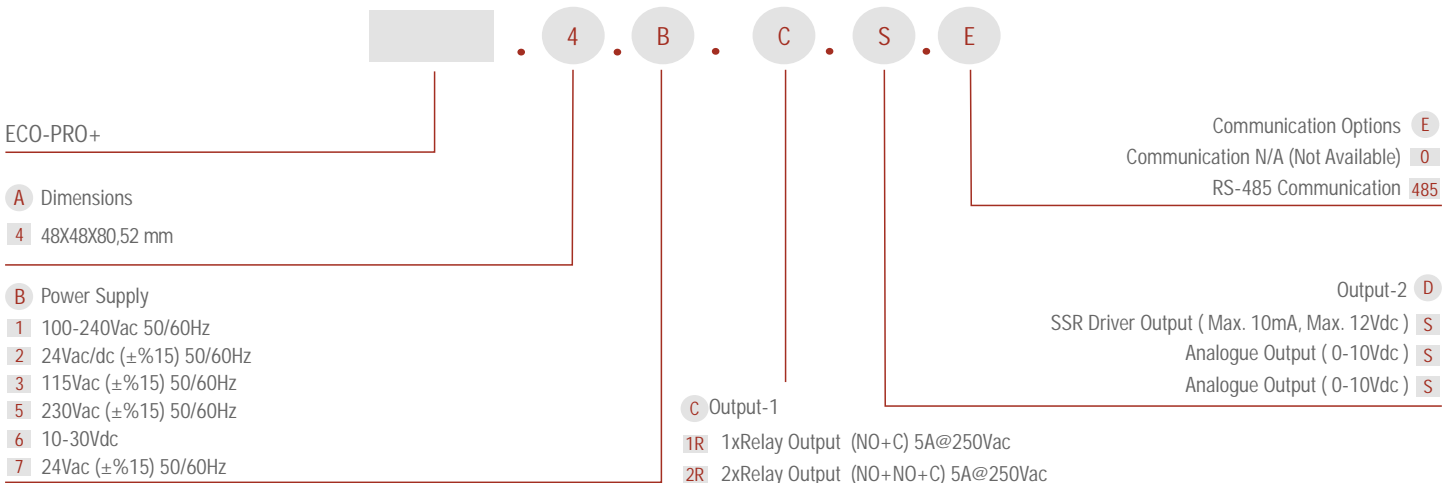
## Specifications

4 Digits Process (PV) and 4 Digits Set (SV) display  
 Programmable ON-OFF, P, PI, PD, PID control forms  
 Adaptation of PID Coefficients to the system with Self-Tune operation (Step Response Tuning) and Auto-Tune (limitcycling-tuning)  
 Selectable heating and cooling function  
 Selectable temperature offset value  
 Operation type selection with hysteresis  
 Minimum pulling time adjustment for control outputs  
 RS-485 Modbus (RTU) communication option  
 Password protection for programming mode



## Technical Specification

Accuracy:  $\pm 0.25\%$  of full scale  
 Cold Junction Compensation: Automatically  $\pm 0.1^\circ\text{C}/1^\circ\text{C}$   
 Line Compensation: Maximum 10 Ohm  
 Sensor Break Protection: Upscale  
 Sampling Cycle: 0.1 second







- Configurable Counter, Totalizer Counter, Batch Counter, Timer, Chronometer, Frequencymeter and Tachometer
- Operation with Automatic and Manual Reset

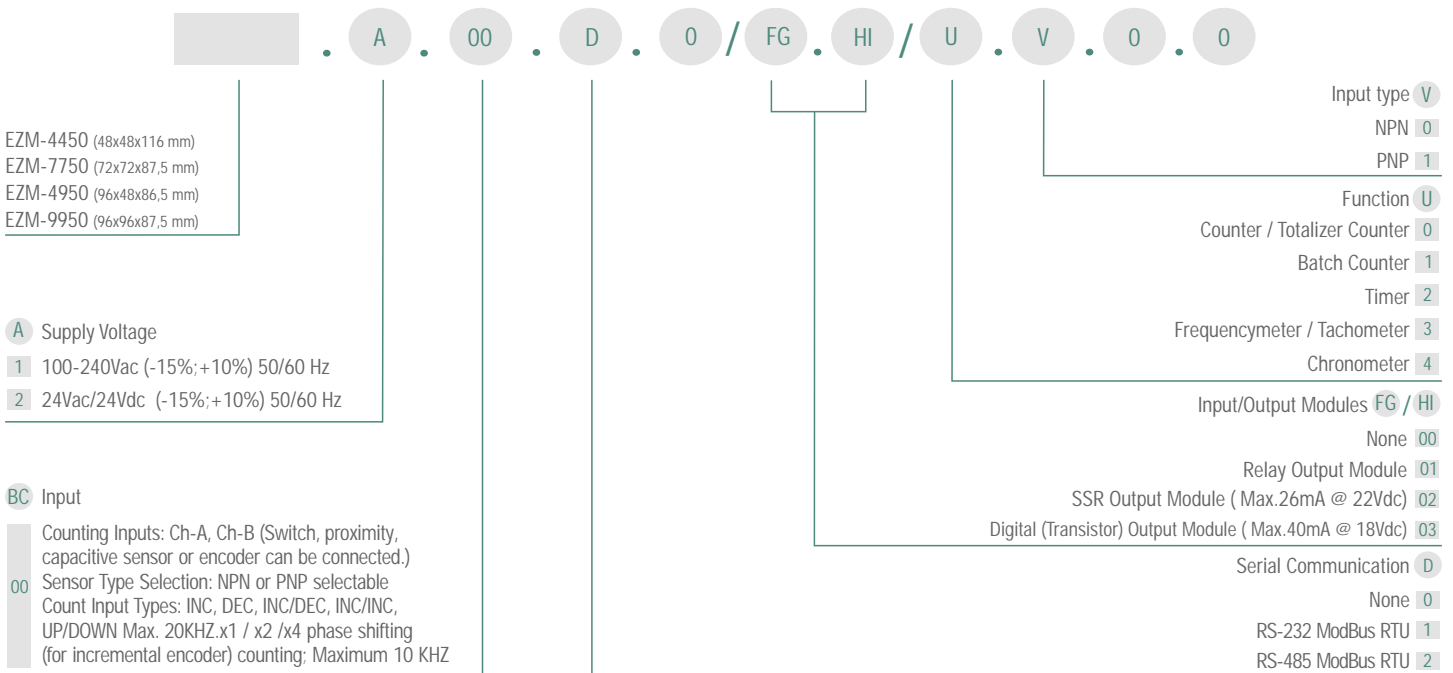
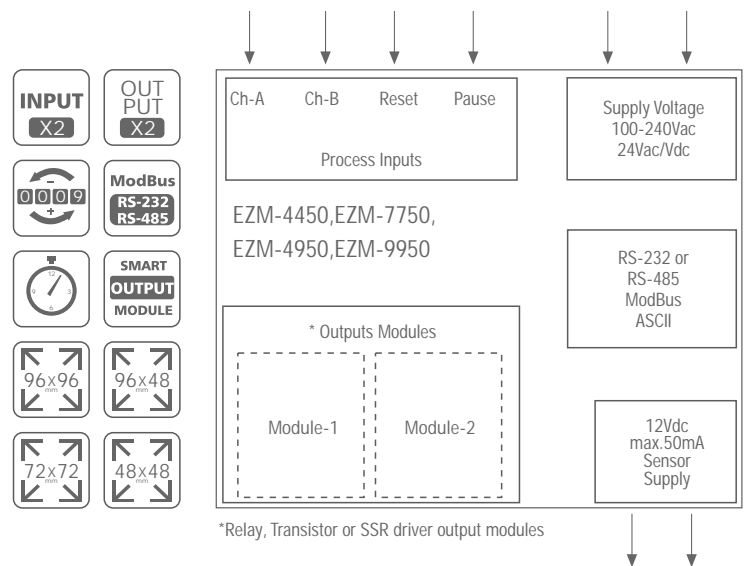
- Programmable Time Bases for Timer and Chronometer
- Multiplication Coefficient and Decimal Point Position

### Specifications

6 Digits display  
 Reset, Pause and ChA-ChB Counting Inputs  
 Absolute or Offset Operation in Counter Function  
 Different Alarm Alternatives in Frequencymeter and Cycle Measuring Functions  
 INC, DEC, INC/INC, INC/DEC, UP/DOWN,  
 x1 / x2 / x4 Counting with Phase Shifting Property in Counter  
 RS-232 (standard) or RS-485 (optional) Serial Communication with Modbus ASCII or RTU Protocol

### Technical Specification

Operating Temperature : 0...50°C  
 Humidity : 0-90/RH (non condensing)  
 Protection Class : Ip65 at front, IP20 at rear



# Counters

Single SET Programmable Counters

EZM-XX30

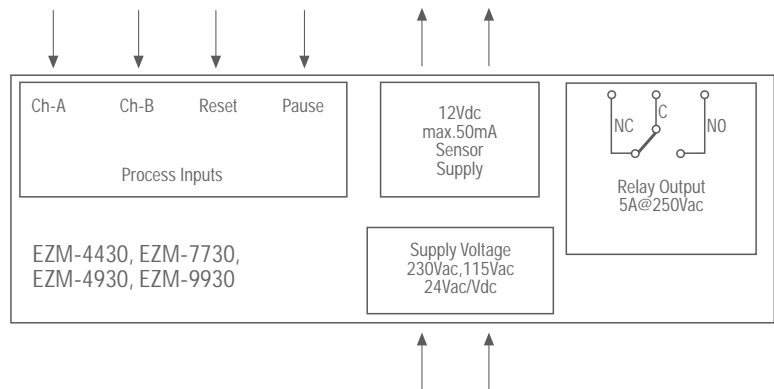


▶ Reset, Pause and ChA-ChB Counting Inputs

▶ Multiplication Coefficient and Decimal Point Position

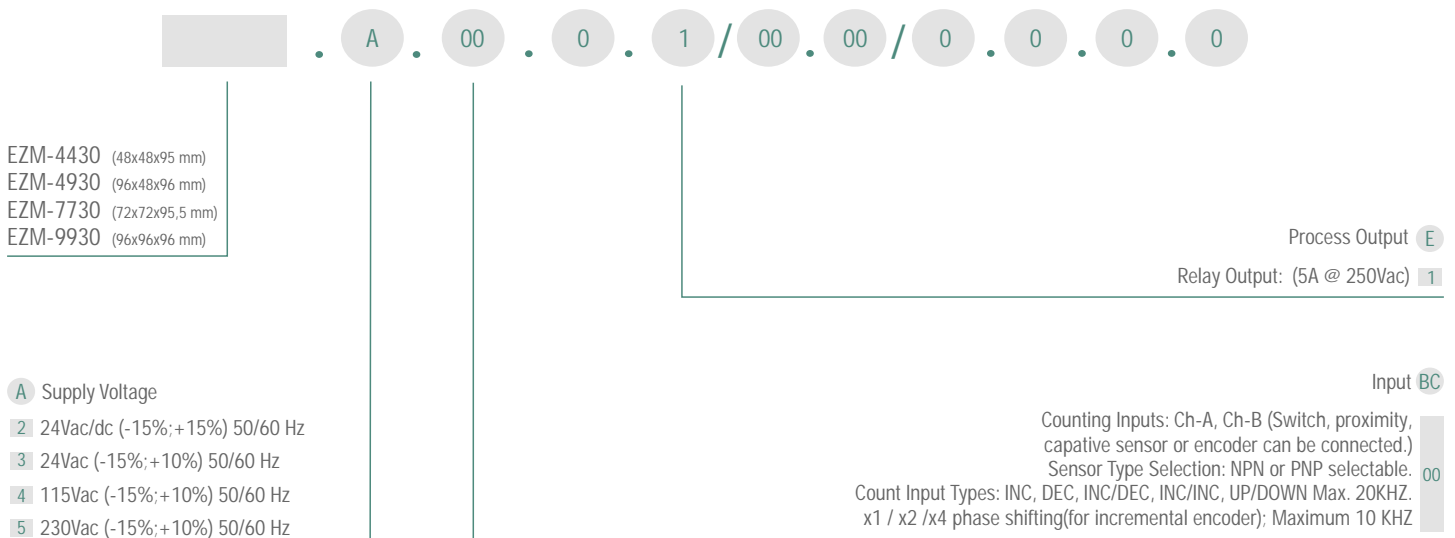
## Specifications

- 6 Digits process (PV) and 6 digits Set (SV) Value Display
- Operation with 1 Set Value
- NPN/PNP Type Operation
- Operation with Automatic and Manuel Reset
- INC, DEC, INC/INC, INC/DEC, UP/DOWN,
- x1 / x2 / x4 Counting with Phase Shifting Property



## Technical Specification

- Operating Temperature: 0...50 °C
- Humadity: 0-90%RH (none condensing)
- Protection: Ip65 at front, Ip20 at rear.





# Timer Relay

EZM-3735

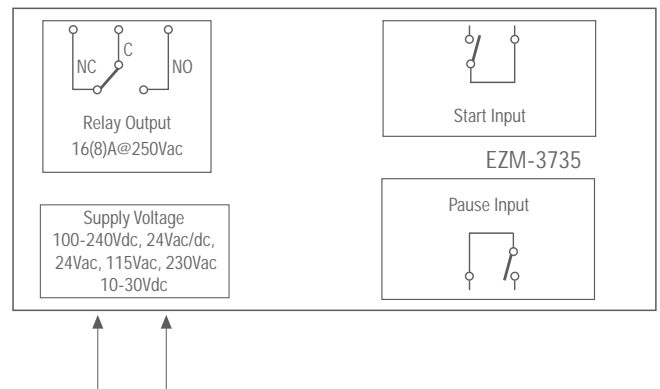


- ▶ Start and Stop Possibility by front Panel
- ▶ External Start and Pause Input

- ▶ Programmable Time Bases (Second, Minute, Hour)
- ▶ Adjustable internal buzzer according to Timer Stop status.

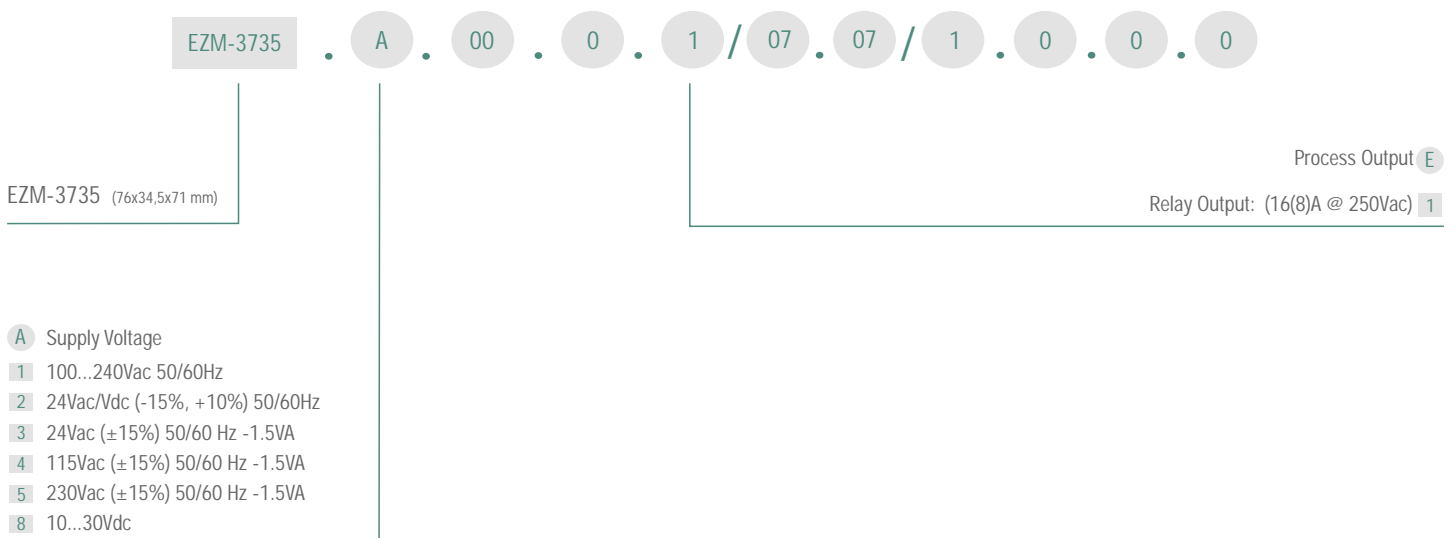
## Specifications

- 4 Digits Display
- Operation with One Set value
- Single Contact Output for Timing control ( ON /OFF )
- Pause possibility by front Panel
- Set value high limit boundaries
- Display can be adjusted to show Second, Minute and Hour
- Password protection for programming section
- Having CE mark according to European Norms



## Technical Specification

- Operating Temperature : 0...50°C
- Humidity : 0-90/RH (non condensing)
- Protection Class : Ip65 at front, IP20 at rear



# Timer Relays

EZM-XX35

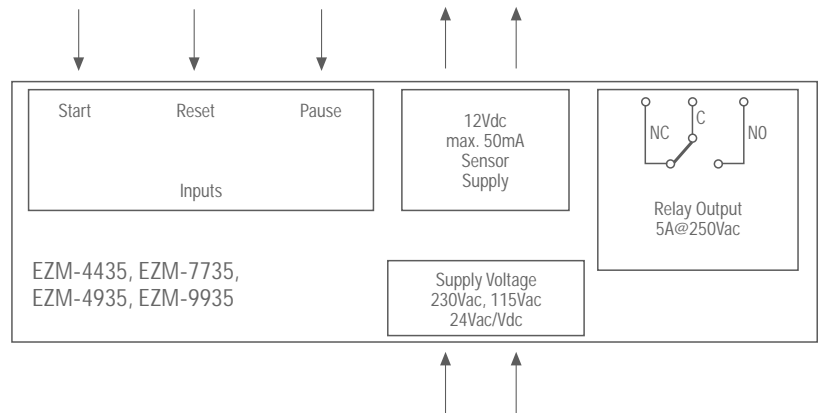


▶ Operation with Automatic and Manual Reset

▶ Programmable Time Bases (Second, Minute, Hour)

## Specifications

- 6 Digits process (PV) and 6 Digits Set (SV) Value Display
- Single Contact Output for Timing control ( ON /OFF )
- Operation with 1 Set Value
- Reset, Pause and Start Inputs
- Password protection for programming section
- NPN/PNP Type Operation



## Technical Specification

- Operating Temperature : 0...50°C
- Humidity : 0-90/RH (non condensing)
- Protection Class : Ip65 at front, IP20 at rear



- EZM-4435 (48x48x95 mm)
- EZM-4935 (96x48x96 mm)
- EZM-7735 (72x72x95,5 mm)
- EZM-9935 (96x96x96 mm)

- A Supply Voltage
- 2 24Vac/dc (-15%;+15%) 50/60 Hz
- 3 24Vac (-15%;+10%) 50/60 Hz
- 4 115Vac (-15%;+10%) 50/60 Hz
- 5 230Vac (-15%;+10%) 50/60 Hz



Process Output E  
Relay Output: (5A @ 250Vac) 1

Input BC  
Pause Input: Switch, proximity or capacitive sensor can be connected.  
Start Input: Switch, proximity or capacitive sensor can be connected.  
Sensor Type Selection: It can be selected NPN/PNP



# Digital Tachometer

ERM 3770-N

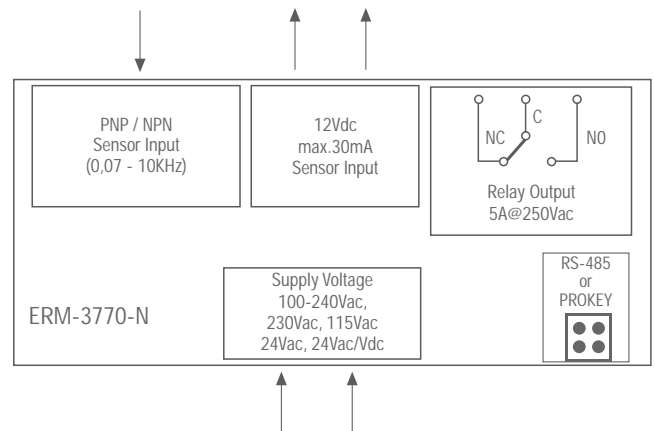


- ▶ 0.07Hz to 10000Hz input signal
- ▶ Working with Process Set and Alarm Set value

- ▶ Set Decimal Point
- ▶ Automatic sampling (1 sec to 16 sec)

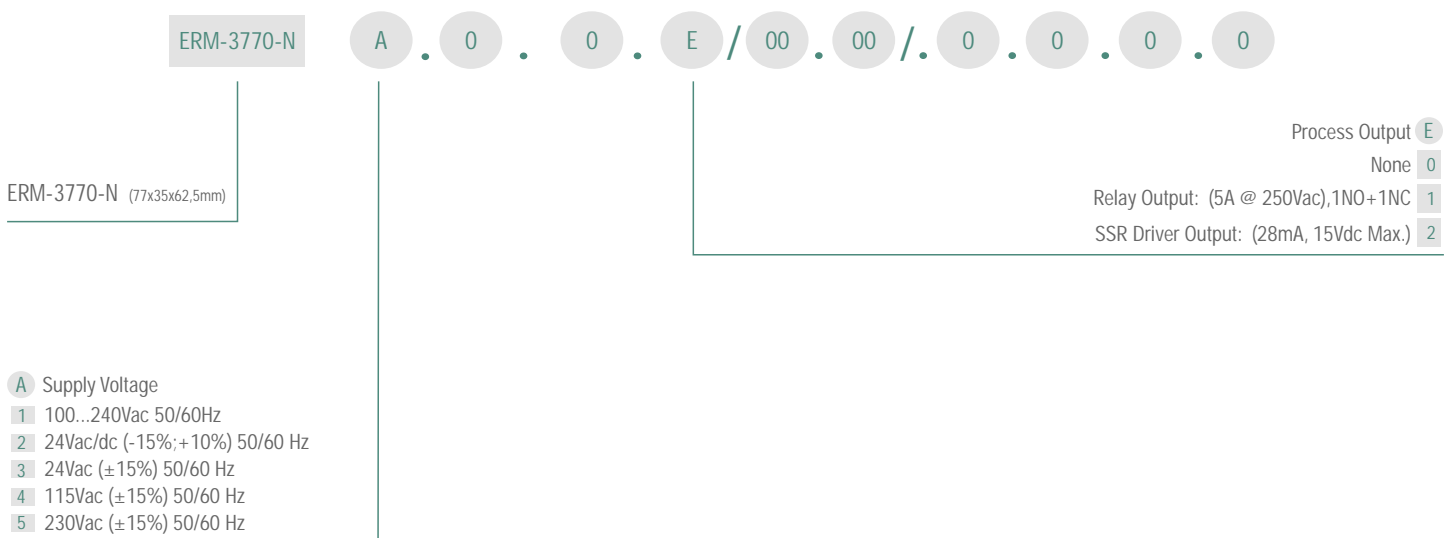
## Specifications

- 4 Digits Display
- Adjustable decimal point
- Division rate
- NPN or PNP input type
- Alarm output
- Relay or SSR driver output (It must be determined in order.)
- Alarm Set value boundary
- Programming mode password protection
- Installing parameters using Prokey
- Remote acces, data collecting and controlling with Modbus RTU



## Technical Specification

- Accuracy: 0.01% of scale
- Counting Inputs: Ch-A, Ch-B (Switch, proximity, capacitive sensor or encoder can be connected.)
- Sensor Supply Voltage: NPN or PNP selectable as
- Sensor Input Type: INC, DEC, INC/DEC, INC/INC, UP/DOWN Max. 20KHZ.
- x1 / x2 /x4 Counting for phase shift (for incremental encoder); Maximum 10 KHz



Order Code											
A	BC	D	E	/	FG	HI	/	U	V	W	Z
	00			/			/	0	0	0	0

	EZM-4450	EZM-7750	EZM-4950	EZM-9950	EZM-4430	EZM-7730	EZM-4930	EZM-9930	EZM-4931	EZM-4435	EZM-7735	EZM-4935	EZM-9935	ERM-3770N	EZM-3735
<b>A Supply Voltage</b>															
1	100...240Vac 50/60Hz	+	+	+	+	-	-	-	-	-	-	-	-	+	+
2	24Vac/Vdc (-15%, +10%) 50/60Hz	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	24Vac (-15%, -10%) 50/60Hz	-	-	-	-	+	+	+	+	+	+	+	+	+	+
4	115Vac (-15%, -10%) 50/60Hz	-	-	-	-	+	+	+	+	+	+	+	+	+	+
5	230Vac (-15%, -10%) 50/60Hz	-	-	-	-	+	+	+	+	+	+	+	+	+	+
8	10 - 30 Vdc	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<b>D Serial Communication</b>															
0	None					+	+	+	+	+	+	+	+	+	+
1	RS-232 ModBus ASCII	+	+	+	+	-	-	-	-	+	-	-	-	-	-
2	RS-485 ModBus ASCII	+	+	+	+	-	-	-	-	-	-	-	-	-	-
<b>E Process Output-1</b>															
0	None	+	+	+	+					+					+
1	Relay Output	-	-	-	-	+	+	+	+	-	+	+	+	+	+
<b>FG Modules Output-1</b>															
00	None	+	+	+	+	+	+	+	+	+	+	+	+	+	+
01	Relay Output	+	+	+	+	-	-	-	-	+	-	-	-	-	-
02	SSR Driver Output (max. 20mA@12Vdc)	+	+	+	+	-	-	-	-	+	-	-	-	-	-
03	Digital (Transistor) Output (max. 40mA@18Vdc)	+	+	+	+	-	-	-	-	-	-	-	-	-	-
<b>HI Modules Output-2</b>															
00	None	+	+	+	+	+	+	+	+	+	+	+	+	+	+
01	Relay Output	+	+	+	+	-	-	-	-	+	-	-	-	-	-
02	SSR Driver (max. 20mA@12Vdc)	+	+	+	+	-	-	-	-	+	-	-	-	-	-
03	Digital (Transistor) Output (max. 40mA@18Vdc)	+	+	+	+	-	-	-	-	-	-	-	-	-	-
<b>Specifications</b>															
Counter		+	+	+	+	+	+	+	+	+	-	-	-	-	-
Total Counter		+	+	+	+	-	-	-	-	-	-	-	-	-	-
Batch Counter		+	+	+	+	-	-	-	-	-	-	-	-	-	-
Timer		+	+	+	+	-	-	-	-	-	+	+	+	+	+
Chronometer		+	+	+	+	-	-	-	-	-	-	-	-	-	-
Frequencymeter		+	+	+	+	-	-	-	-	-	-	-	-	-	-
Tachometer		+	+	+	+	-	-	-	-	-	-	-	-	+	-
Working with automatic and manual reset		+	+	+	+	+	+	+	+	+	+	+	+	+	-
Smart Output module system		+	+	+	+	-	-	-	-	-	-	-	-	-	-
Ch-A, Ch-B Encoder inputs		+	+	+	+	+	+	+	+	+	-	-	-	-	-
Multiplication coefficient and decimal point position		+	+	+	+	+	+	+	+	+	-	-	-	+	+
Process display		6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	4 digits	4 digits
SET display		6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	6 digits	-	-
Start input		-	-	-	-	-	-	-	-	+	+	+	+	-	+
Reset and Pause input		+	+	+	+	+	+	+	+	+	+	+	+	+	-
Supply voltage for switch and proximity sensors		+	+	+	+	+	+	+	+	+	+	+	+	+	-
Operation with 2 Set values		+	+	+	+	-	-	-	-	+	-	-	-	-	-
Password protection for programming section		+	+	+	+	+	+	+	+	+	+	+	+	+	+
<b>Dimension</b>															
77x35mm DIN		-	-	-	-	-	-	-	-	-	-	-	-	+	+
48x48mm DIN 1/16		+	-	-	-	+	-	-	-	-	+	-	-	-	-
72x72mm DIN		-	+	-	-	-	+	-	-	-	+	-	-	-	-
96x48mm DIN 1/8		-	-	+	-	-	-	+	-	+	-	+	-	-	-
96x96mm DIN 1/4		-	-	-	+	-	-	-	+	-	-	-	+	-	-





🏠: Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.)  
Fethiye OSB Mah., Turkuaz Cd. No:15 16215 Nilüfer - BURSA - TÜRKİYE  
📞:+90 224 261 19 00 - 📠:+90 224 261 19 12  
🌐:www.emkoelektronik.com.tr