



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...5Adc CT input module

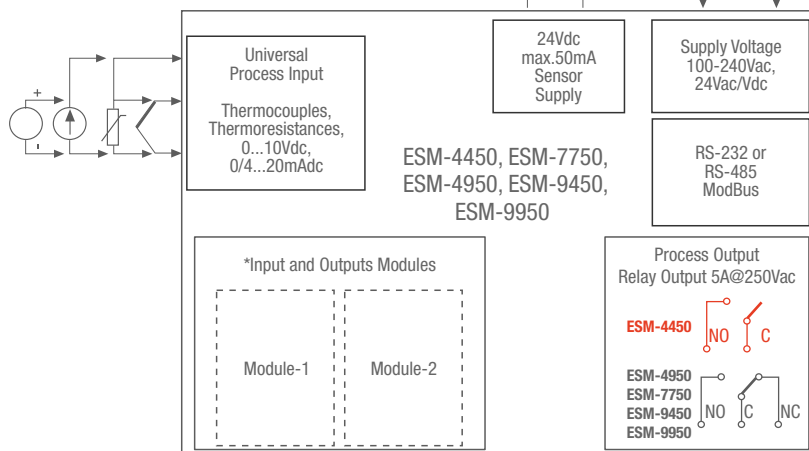
- Universal process input (TC, RTD, mVdc, Vdc, mAAdc)
- Bumpless transfer
- Motorized valve control function

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

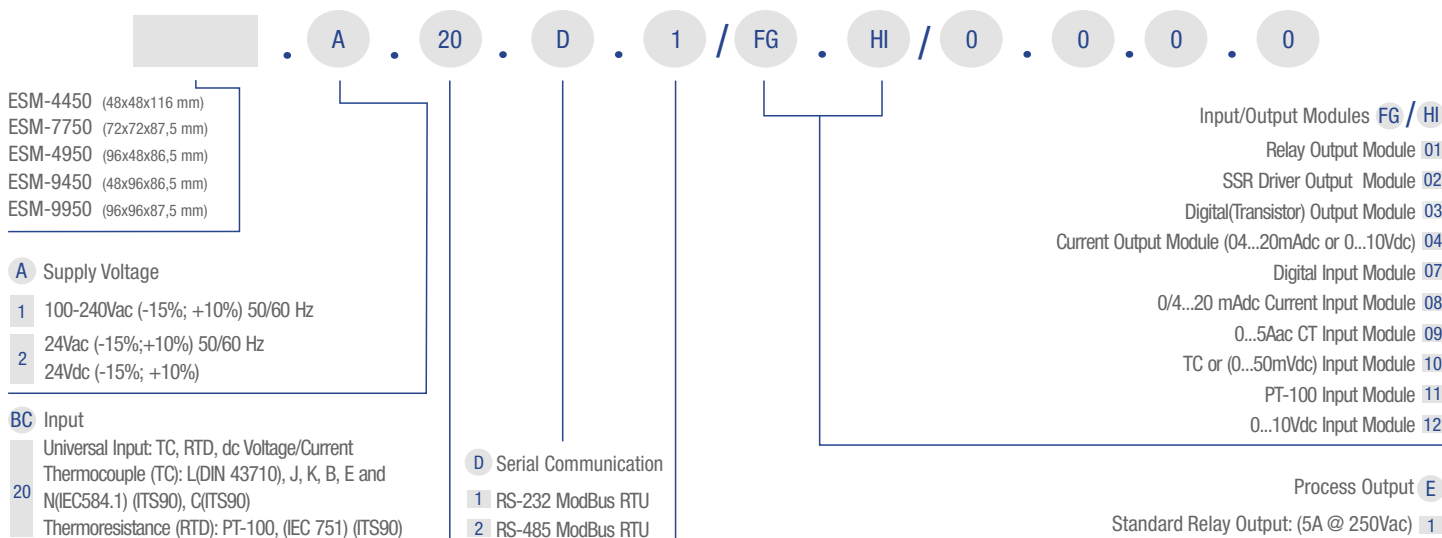
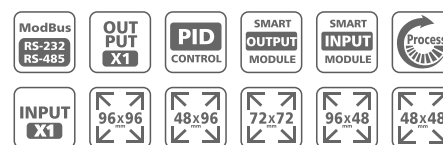
Technical Specification

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

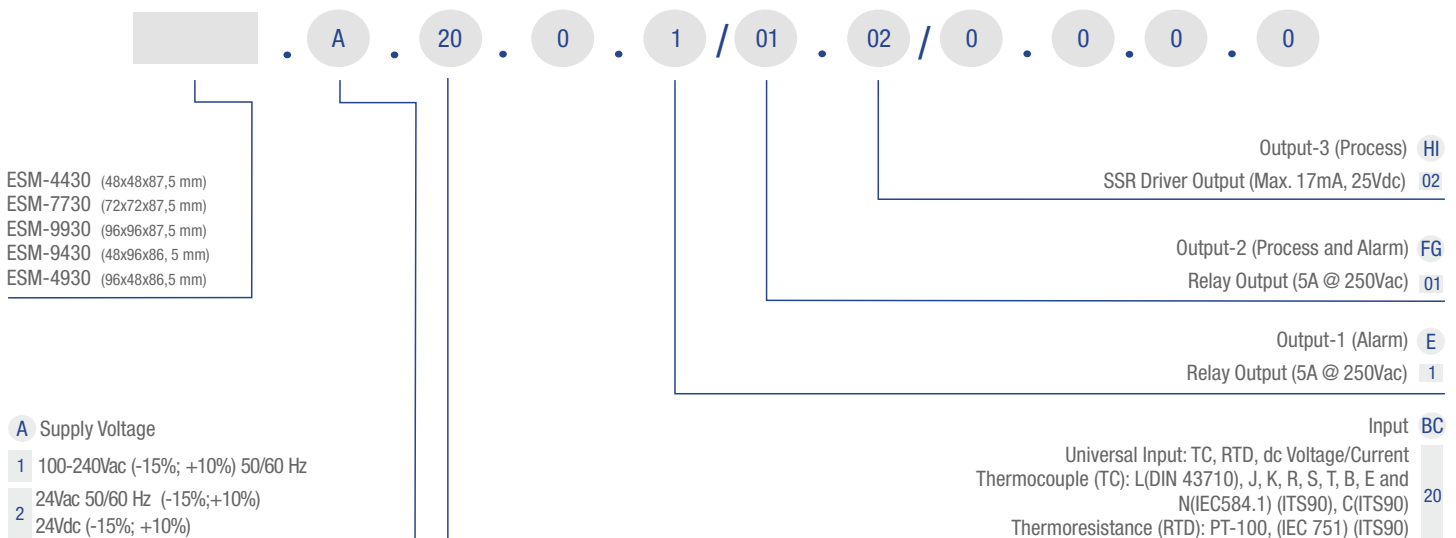
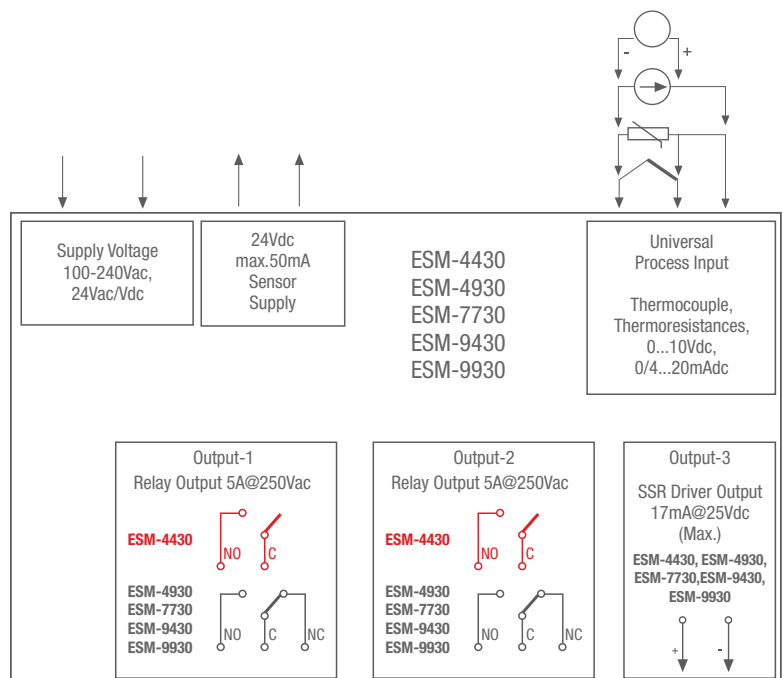
Dual or multi point calibration for dc Voltage/Current input

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

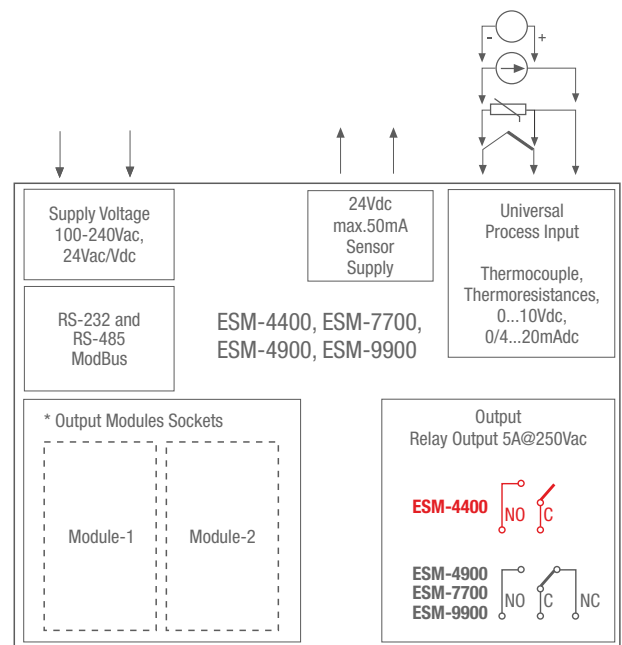
Cold Junction Compensation: Automatically $\pm 0.1^\circ\text{C}/1^\circ\text{C}$

Line Compensation: Maximum 10 Ohm

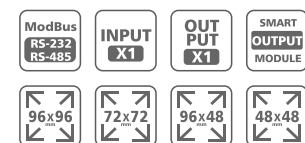
Sensor Break Protection: Upscale

Sampling Cycle: 3 samples per second

Input Filter: 0.0 to 900.0 seconds



* Output modules can be mounted each modules sockets.



ESM-4400 (48x48x116 mm)
ESM-7700 (72x72x87,5 mm)
ESM-4900 (96x48x86,5 mm)
ESM-9900 (48x96x87,5 mm)

A Supply Voltage

1 100-240Vac (-15%; +10%) 50/60 Hz
2 24Vac (-15%;+10%) 50/60 Hz
2 24Vdc (-15%; +10%)

BC Input

Universal Input: TC, RTD, dc Voltage/Current
Thermocouple (TC): L(DIN 43710), J, K, B, E and N(IEC584.1) (ITS90), C(ITS90)
Thermoresistance (RTD): PT-100, (IEC 751) (ITS90)

D Serial Communication

1 RS-232 ModBus RTU
2 RS-485 ModBus RTU

Output Modules **FG / HI**

None **00**

Relay Output Module **01**

SSR Driver Output Module (max.26mA @ 22Vdc) **02**

Digital (Transistor) Output Module (max.40mA@18Vdc) **03**

Current Output Module (0/4...20mAdc or 0...10Vdc) **04**

Process Output **E**

Standard Relay Output: (5A @ 250Vac) **1**

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 $\pm 0.1^\circ\text{C}/1^\circ\text{C}$

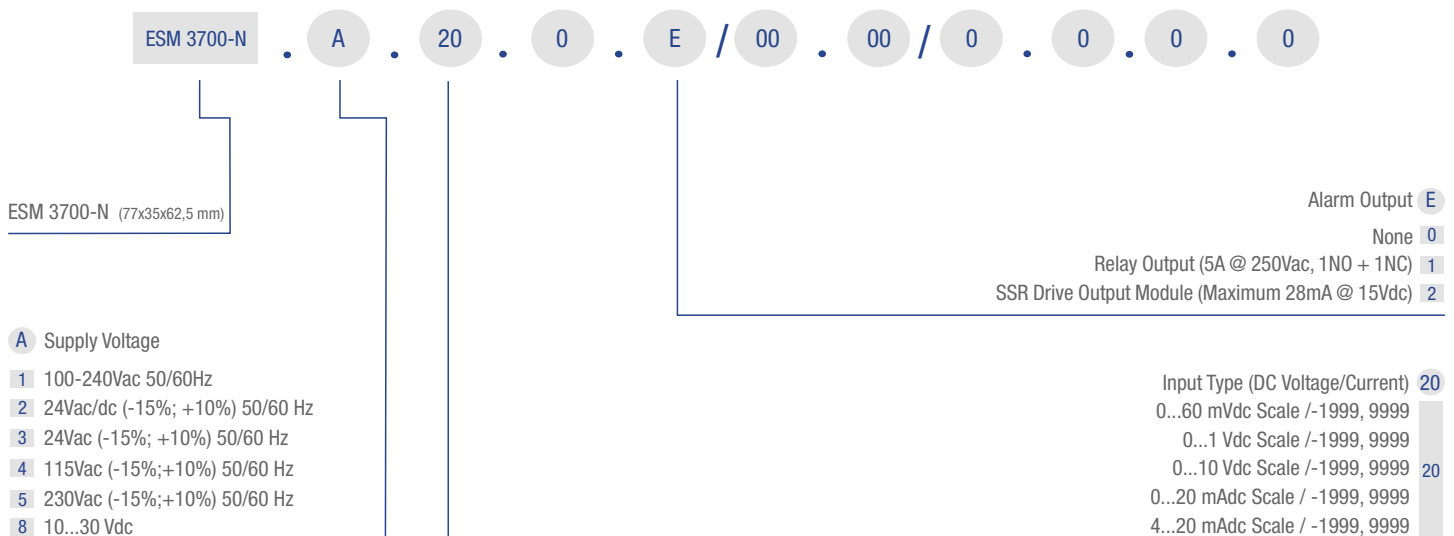
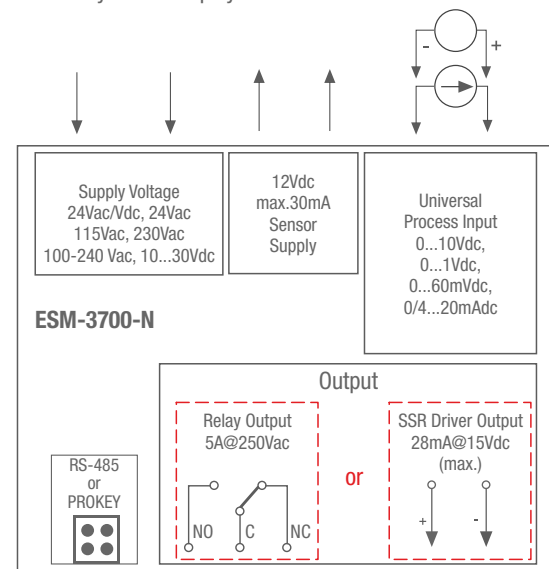
Line Compensation: Maximum 10 Ohm

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

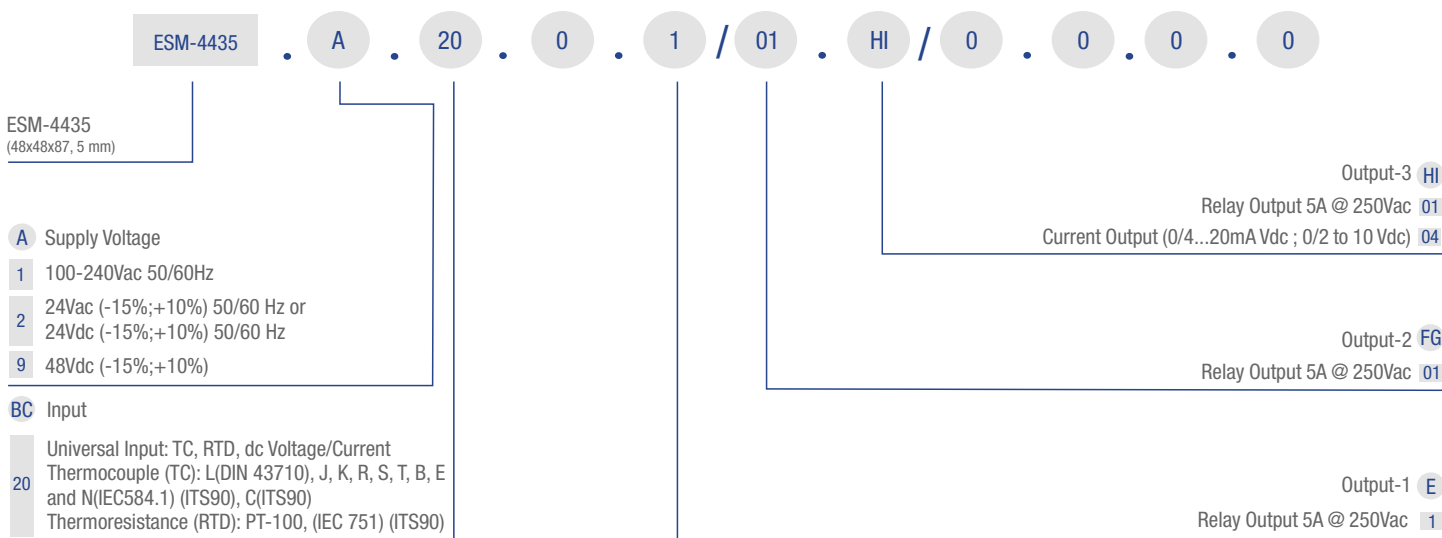
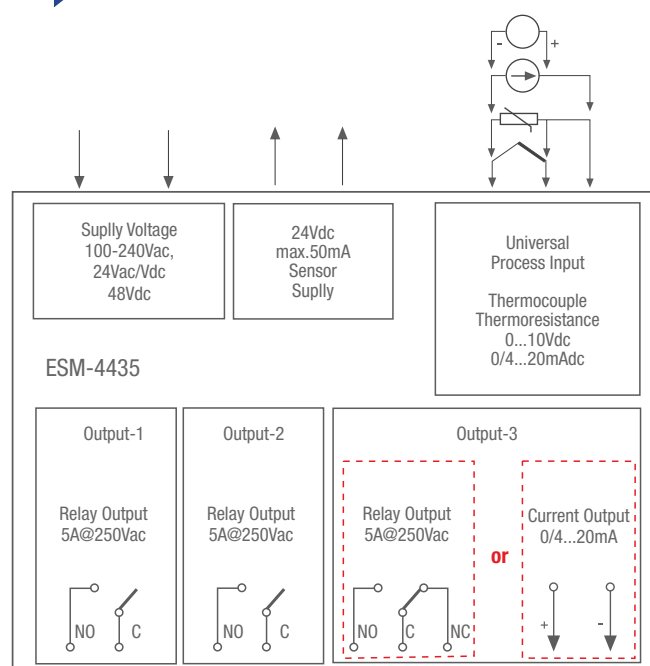
Cold Junction Compensation: Automatically $\pm 0.1^\circ\text{C}/1^\circ\text{C}$

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																	
A Supply Voltage																												
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											-	-	-	-	-	-	-	-	-	+	-	-	-	-	-		
BC Input Type																												
20	Configurable Universal inputs											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
D Serial Communication																												
0	None																+	+	+	+	+	+			+			
1	RS-232 ModBus RTU											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
2	RS-485 ModBus RTU											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
E Process Output																												
0	None																									+		
1	Relay Output (At resistive load 5A@250Vac)											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
2	SSR Driver Output (Max. 20mA@12Vdc)											-	-	-	-	-	-	-	-	-	-	-	-	-	-	+		
FG Input/Output Modules-1																												
00	None											+	+	+	+	+							+	+	+	+	+	
01	Relay Output											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	
02	SSR Driver Output (Max. 20mA@12Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
03	Transistor Output (Max. 40mA@18Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
04	Analogue (0/4...20mAadc or 0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
07	Digital Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
08	Analogue (0/4...20mAadc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
09	CT Input Module (0...5Aac)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
10	Thermocouple Input (0...50mVdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
11	Pt-100 Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
12	Analogue Input (0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
HI Input/Output Module - 2																												
00	None											+	+	+	+	+							+	+	+	+	+	
01	Relay Output											+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-	
02	SSR Driver Output (Max. 20mA@12Vdc)											+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	
03	Transistor Output (Max. 40mA@18Vdc)											+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-	
04	Analogue (0/4...20mAadc or 0...10Vdc)											+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-	
07	Digital Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
08	Analogue (0/4...20mAadc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
09	CT Input Module (0...5Aac)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
10	Thermocouple Input (0...50mVdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
11	Pt-100 Input											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
12	Analogue Input (0...10Vdc)											+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
Specifications																												
“Smart I/O Modül” system												+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
“Smart Output Modül” system												+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	+	-
Universal process (TC, RTD, mVdc, Vdc, mAadc) 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												+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Dimension																												
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

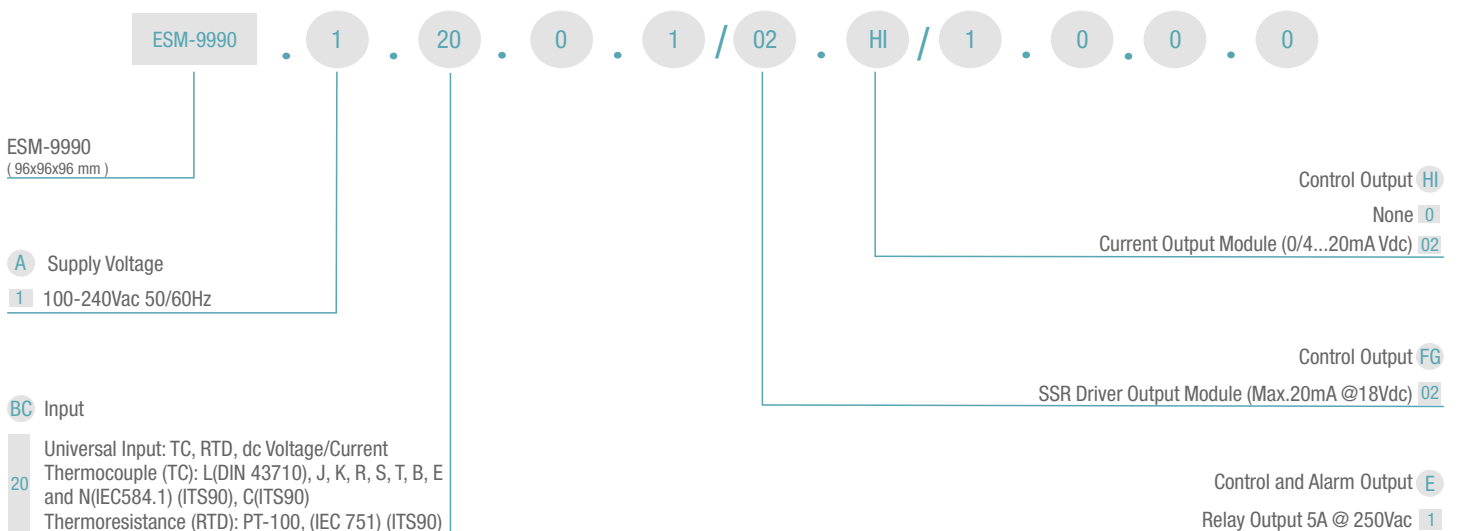
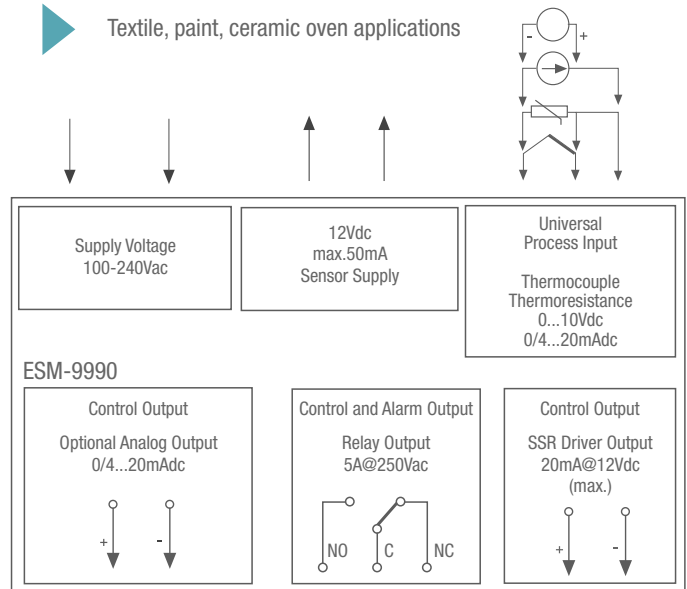
Specifications

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...20mA Current output

(It must be determined in order.)

Password protection for programming and adjustment sections

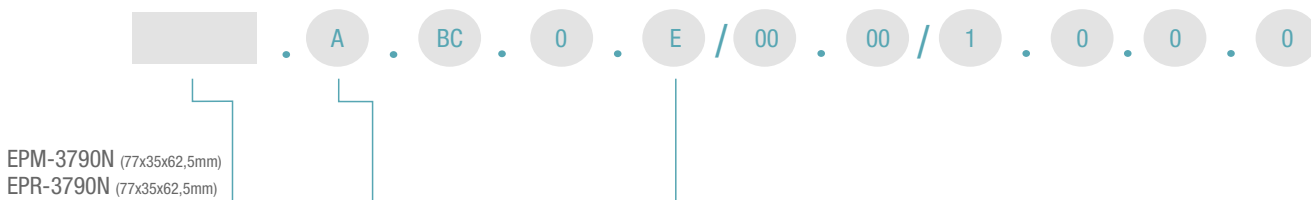
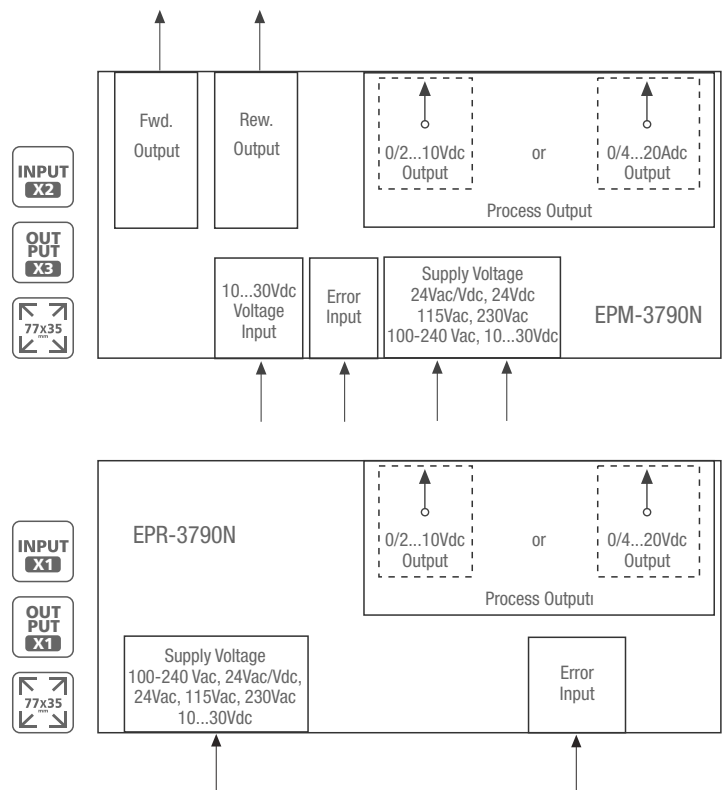
Technical Specification

Digital Input: Error input (max. 3mA@30Vdc)

Resolution: 12 bits

Fluctuation: Max. 30 mV

Scale: Between-1999 and 9999



- 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)

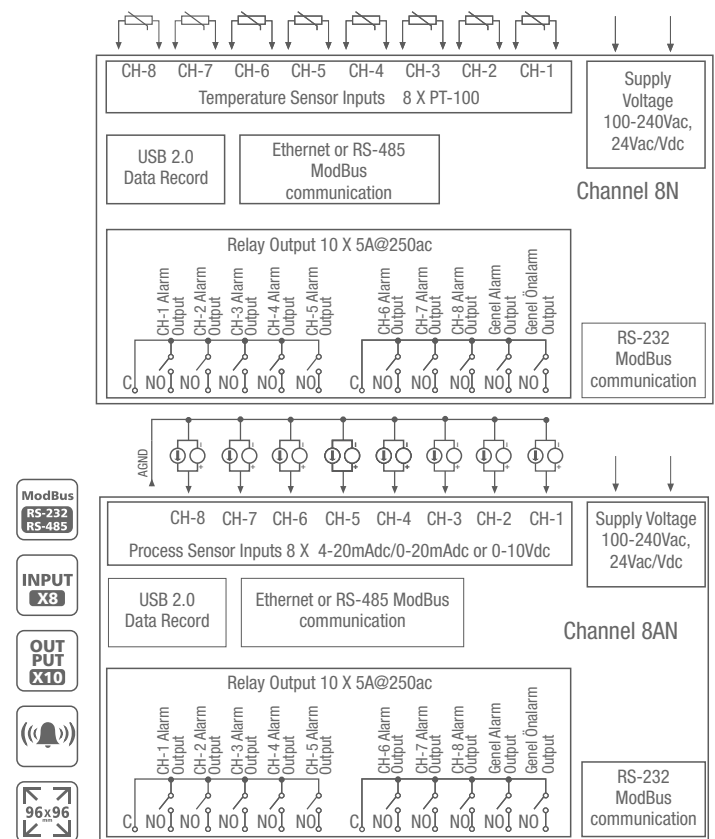
Specifications

- 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

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



Channel 8N (96x96x96 mm)
Channel 8AN (96x96x96 mm)

- A** Supply Voltage
- 1 100-240Vac 50/60 Hz (-15%; +10%)-6VA Universal
 - 2 24Vac 50/60 Hz (-15%;+10%) 24Vdc (-15%; +10%)

- B** Outputs
- R 10 Relay outputs with 2 common for each NO contact 5A max. (5A@250V at resistive load) for each Common contact 15A max (15A@250V at resistive load)

- Optional Communication-2 **E**
- None **0**
 - USB (USB2.0 "for temperature data logging") **U**
- Optional Communication-1 **D**
- None **0**
 - RS-485 (up to 115200 baudrate, "500VAC isolation") **4**
 - ETHERNET (10Mbit/s, "1500VAC isolation") **E**
- Standard Serial Communication **C**
- USB (USB2.0 "for temperature data logging") **2**

4 Zone PID Control

PID QUADRO

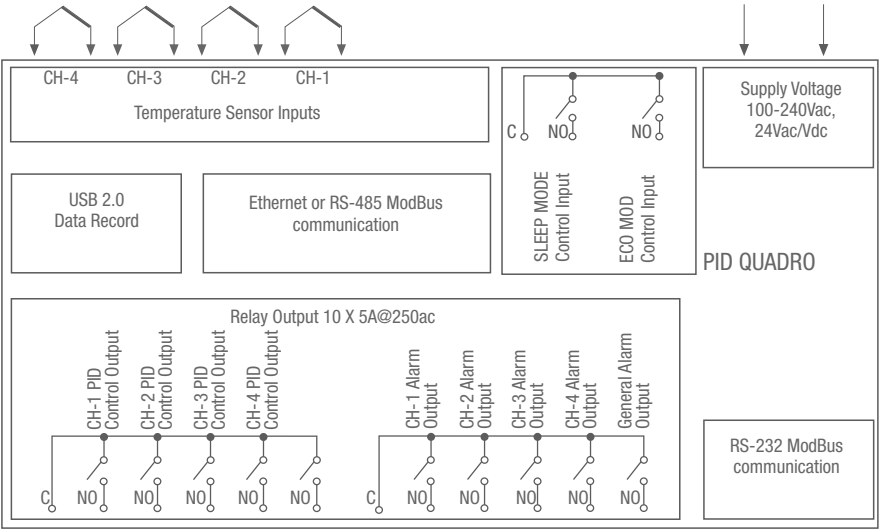


- ▶ Auto-Tuning and Self-Tuning (Automatic calculations of PID parameters)
- ▶ Data Logging to USB Flash Memory

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

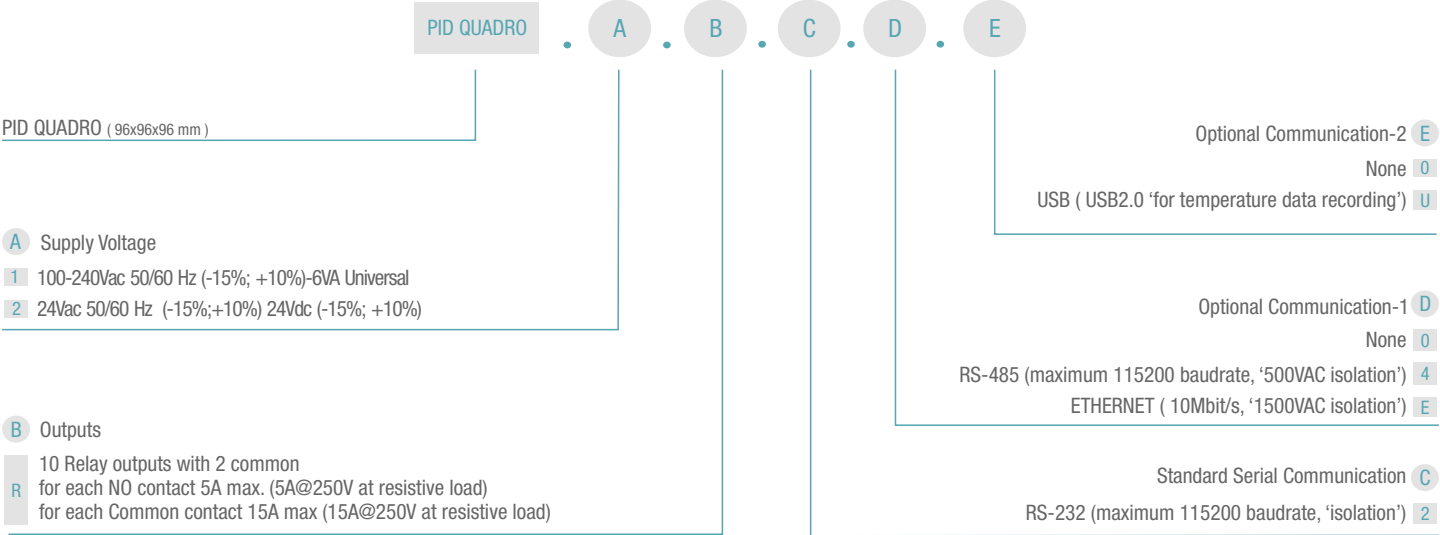
Specifications

- 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



CE EAC

- 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 $\pm 1\%$, **Sensor Break Protection:** Upscale

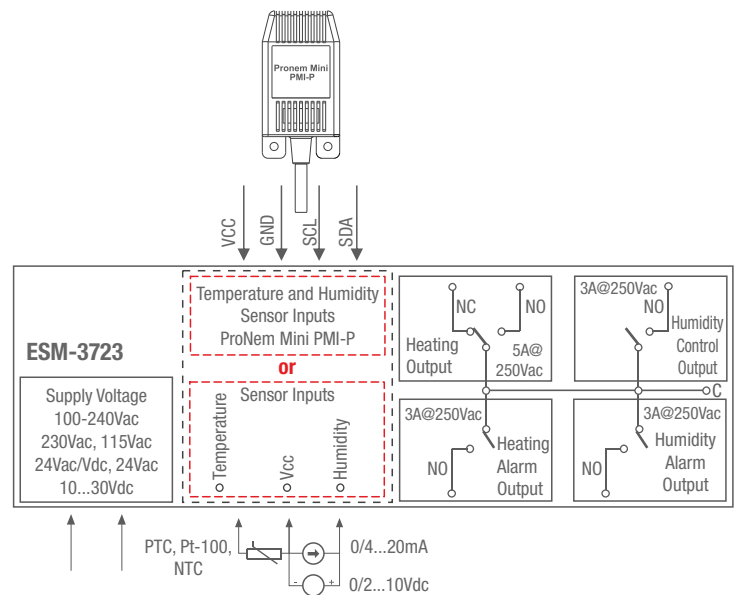
Sampling Cycle: 3 samples per second **Control Form:** ON/OFF, PID

Pronem Mini Measurement range

Measurement range (RH): 0...100 %RH
Measurement range (T): -20°C...+80°C

Accuracy (RH): $\pm 2\%$ RH (Typ)@23°C

Accuracy (T): $\pm 0.3^\circ\text{C}$ (Typ)@23°C



ESM-3723

A

B

C

0

E

/

01

01

/

1

V

0

0

ESM-3723
(76x34,5x71 mm)

A Supply Voltage

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

B Temperature Sensor Input

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

E Process Output

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

C Humidity Sensor Input

- 0/2...10Vdc Voltage Input
- 0/4...20mA Current Input
- ProHumidity Mini PMI-D

- PTC-M6L40.K1.5
(PTC Air Probe 1.5 m silicon cable)
- PTCS-M6L30.K1.5.1/8"
(PTC Liquid Probe with 1.5 m silicon cable)
- NTC-M5L20.K1.5
(NTC Probe thermoplastic moulded with 1.5m cable for cooling application)
- NTC-M6L50.K1.5
(Metal protective tubular, 1.5 m wired NTC probe)
- ProNem Mini PMI-P
(2.5m cable for Temperature and Humidity application)

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

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

Humidity Output
(3A@250Vac) 01

Digital Ammeter

EDA-3700



AC, DC or True RMS measuring feature

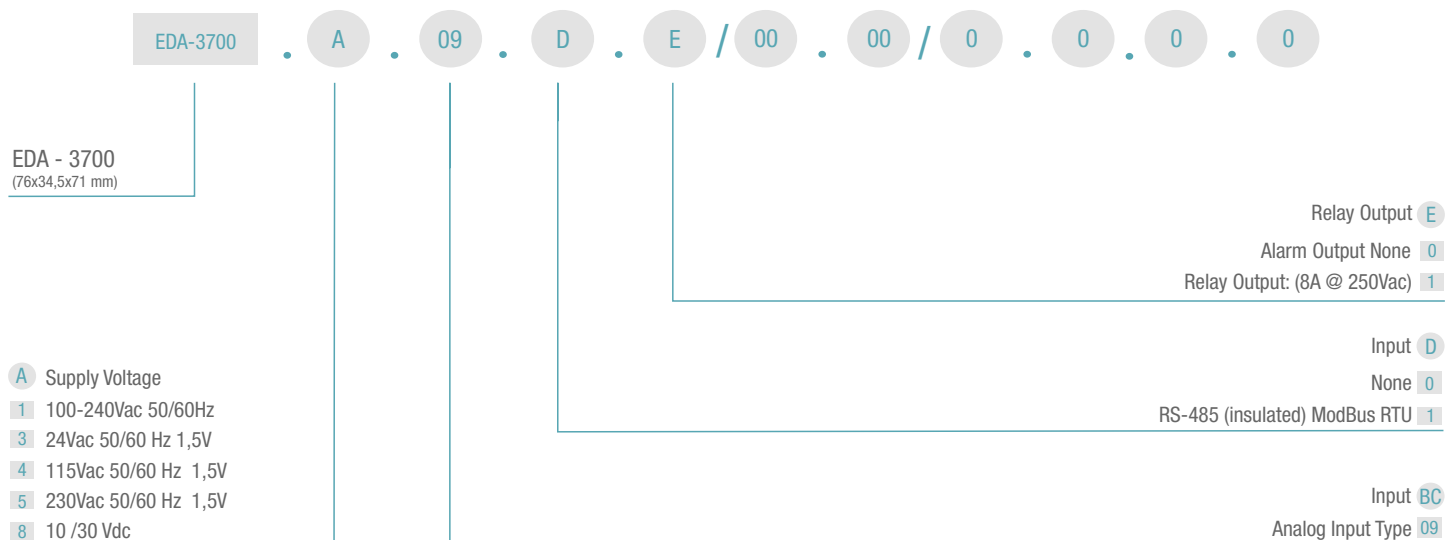
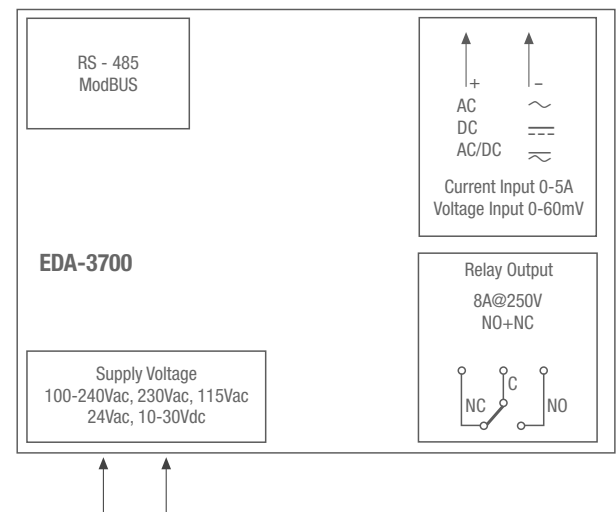
Remote access, data collecting and controlling with Modbus RTU

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

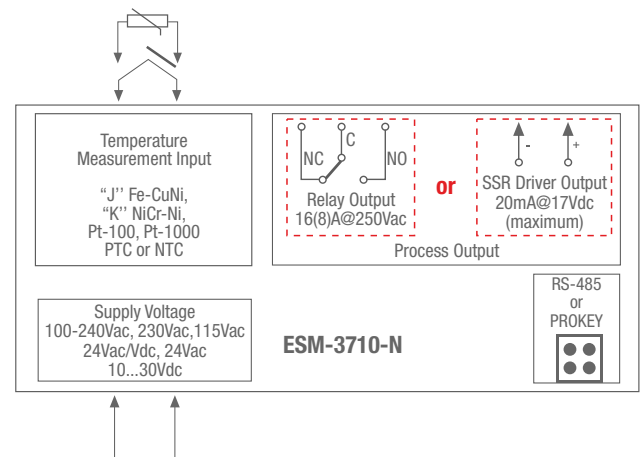


- ▶ Installing parameters using Prokey
- ▶ Password protection for programming section

- ▶ 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 (76x34,5x71 mm)		V	
A Supply Voltage		PTC-M6L40.K1.5 (PTC Air Probe with 1.5 m silicon cable)	1
1 100-240Vac 50/60Hz		PTCS-M6L30.K1.5.1/8"	2
2 24Vac/dc (-15%;+10%) 50/60 Hz -1.5VA		(PTC Liquid Probe with 1.5 m silicon cable)	
3 24Vac ($\pm 15\%$) 50/60 Hz -1.5VA		NTC-M5L20.K1.5	3
4 115Vac ($\pm 15\%$) 50/60 Hz -1.5VA		(NTC Probe, thermoplastic moulded with 1.5 m cable for cooling application)	
5 230Vac ($\pm 15\%$) 50/60 Hz -1.5VA		NTC-M6L50.K1.5	4
8 10-30Vdc		(Metal protective tubular, 1.5 m wired NTC probe)	
BC Input		Process Output E	
05 J, Fe CuNi IEC584.1(ITS90)	12 PTC (-50....150°C) / PTC (-19.9...99.9°C)	Relay Output: (16(8)A @ 250Vac)	1
10 K, NiCr Ni IEC584.1(ITS90)	14 Pt 1000, (-50...400°C)	SSR Driver Output (Maximum 20mA @ 17Vdc)	2
11 Pt 100, (-50...400°C)	13 Pt 1000, (-19.9...99.9°C)	Relay Output (30(15)A@240Vac, 1 NO (Only for NTC input type devices.)	3
09 Pt 100, (-19.9...99.9°C)	18 NTC (-50...100°C) / NTC (-19.9...99.9°C)		

Temperature Controller

DIN RAIL Mounting Digital On/Off

ESM-1510-N



DIN RAIL Mounting



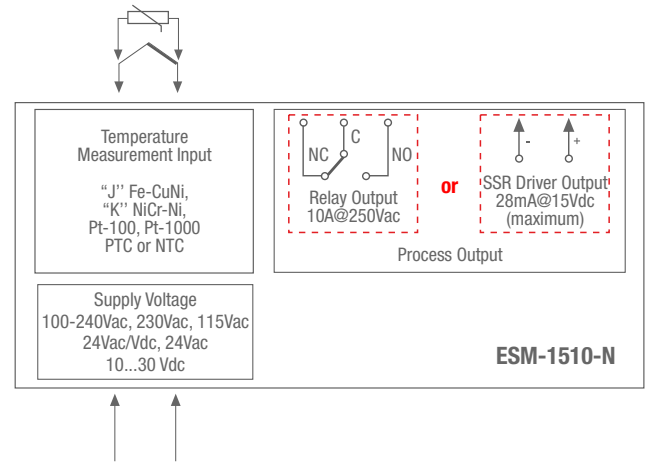
Heating / Cooling Applications

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



ESM-1510-N (90x35x61,2 mm)		ESM-1510-N	
A Supply Voltage		BC Input	
1	100-240Vac 50/60Hz	05	J, Fe CuNi IEC584.1(ITS90)
2	24Vac/dc (-15%;+10%) 50/60 Hz -1.5VA	10	K, NiCr Ni IEC584.1(ITS90)
3	24Vac ($\pm 15\%$) 50/60 Hz -1.5VA	11	Pt 100, (-50...400°C)
4	115Vac ($\pm 15\%$) 50/60 Hz -1.5VA	09	Pt 100, (-19.9...99.9°C)
5	230Vac ($\pm 15\%$) 50/60 Hz -1.5VA	12	PTC (-50...150°C) / PTC (-19.9...99.9°C)
8	10...30 Vdc	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	
		PTC-M6L40.K1.5	
		(PTC Air Probe with 1.5 m silicon cable)	
		PTCS-M6L30.K1.5.1/8"	
		(PTC Liquid Probe with 1.5 m silicon cable)	
		NTC-M5L20.K1.5	
		(NTC Probe, thermoplastic moulded with 1.5 m cable for cooling application)	
		NTC-M6L50.K1.5	
		(Metal protective tubular, 1.5 m wired NTC probe)	
		E Process Output	
		Relay Output (10A @ 250Vac)	
		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

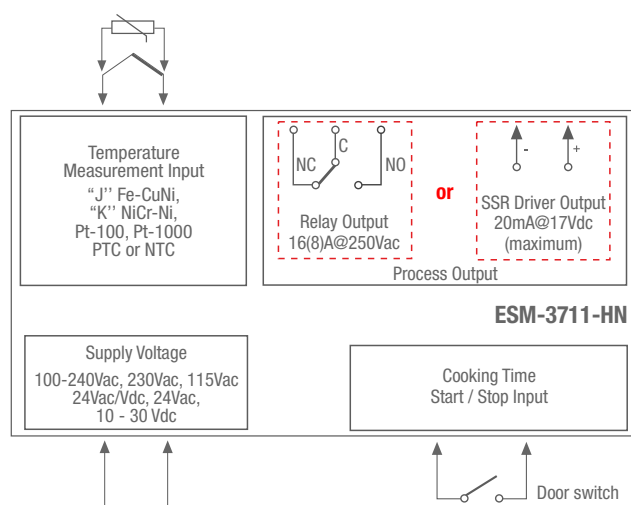
- Adjustable temperature offset
- Functional Internal Buzzer
- ON / OFF temperature control

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 & Duel SET

ESM-3711-CN ESM-3712-CN



- 3 Output for compressor, defrost and fan controls
- 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

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

2 sensor input for cabinet and evaporator

Configurable digital input

Selectable defrost function (hot gas or electric)

Adjustable defrost time from front panel

Fan can be operated depending on evaporator temperature or (cabinet-evaporator) temperature

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

Installing parameters using Prokey

Remote access, data collecting and controlling with ModBus RTU

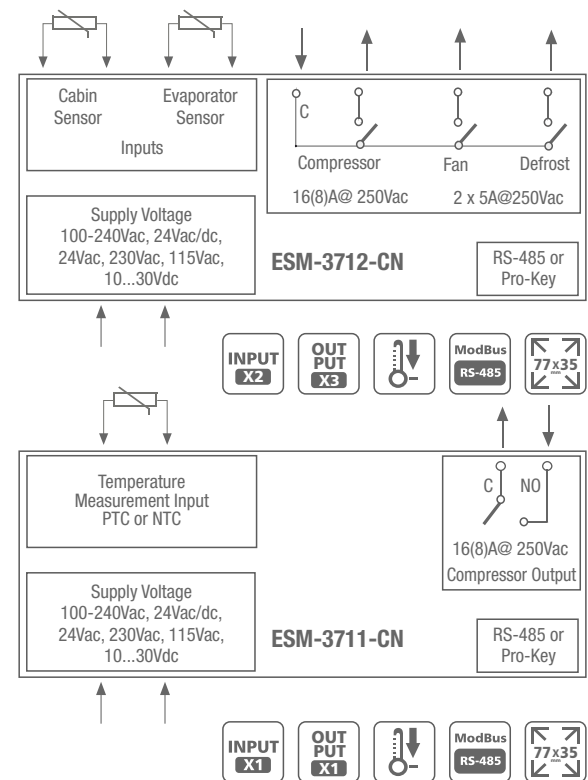
Password protection for programming mode

Technical Specification

Accuracy: ±1% of scale

Sensor Break Protection: Upscale

Sampling Cycle: 3 samples per second



ESM-3711-CN (76x34,5x71 mm)
ESM-3712-CN (76x34,5x71 mm)

A Supply Voltage

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

BC Input

- 12 PTC, -50°C...150°C / PTC (-19.9...99.9°C)
- 18 NTC, -50°C...100°C / NTC (-19.9...99.9°C)

E Process Output

- 1 Process Output: Relay (16(8)A @ 250Vac, 1 NO)

- 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)

Fan and Defrost Output **FG / HI**

ESM-3711-CN (Fan and Defrost Out Not Available) **00**
(ESM-3712-CN) Relay Output Module (5A @250Vac) **01**



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

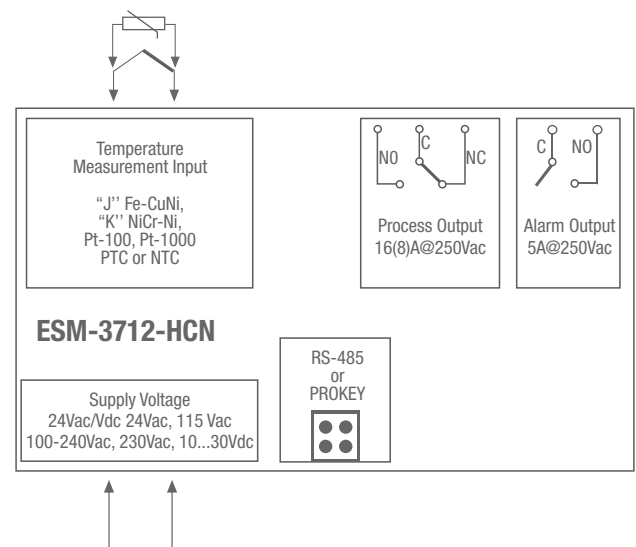
Technical Specification

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)

PTC-M6L40.K1.5
(PTC Air Probe with 1.5 m silicon cable)

PTCS-M6L30.K1.5.1/8"
(PTC Liquid Probe with 1.5 m silicon cable)

NTC-M5L20.K1.5
(NTC Probe, thermoplastic moulded with 1.5 m cable for cooling application)

NTC-M6L50.K1.5
(Metal protective tubular, 1.5 m wired NTC probe)

Alarm Output **FG**
(5A @ 250Vac, 1 NO)

Process Output **E**
Relay (16(8)A @ 250Vac, 1 NO)

Temperature Controllers

Single & Dual ON/OFF

ESM-4410 ESM-7710 ESM-9910



ON/OFF Control Form

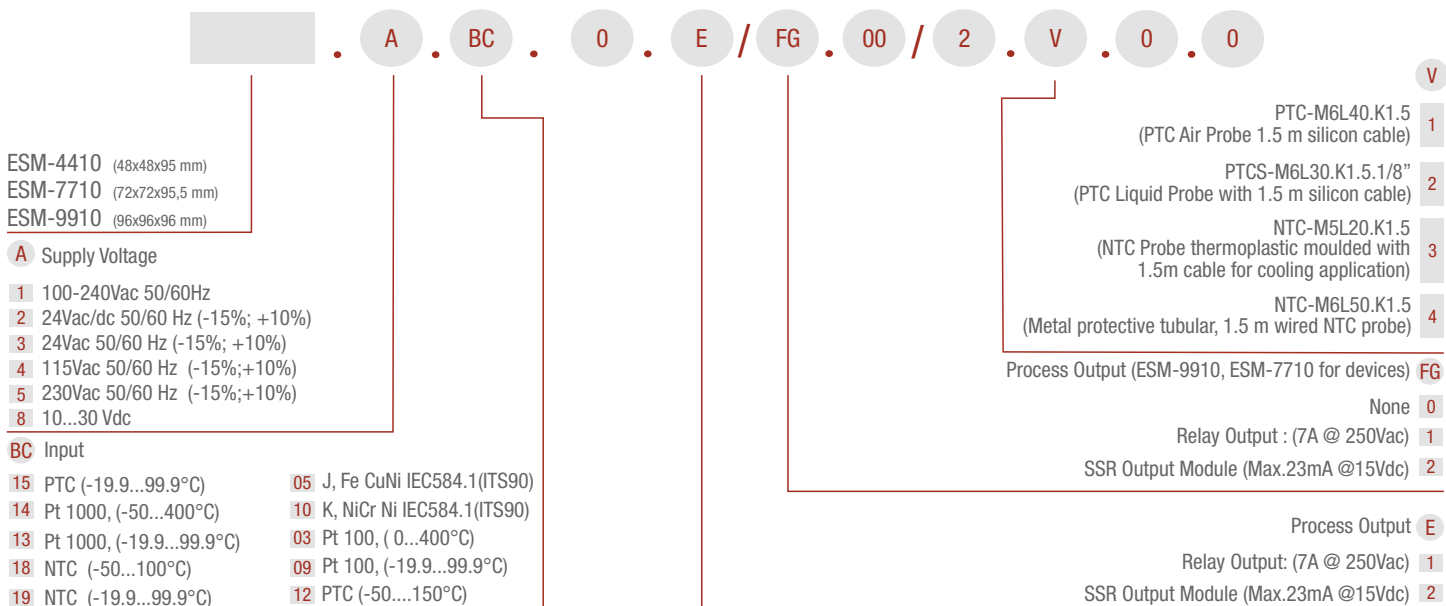
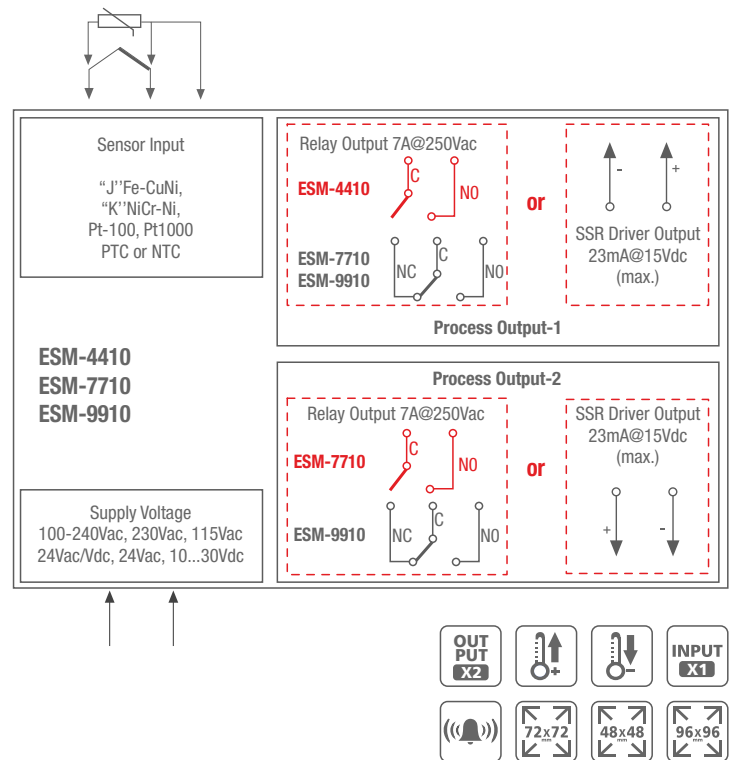
Selectable Heating and Cooling Function

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 Controllers

Dual SET PID

ESM-3720



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

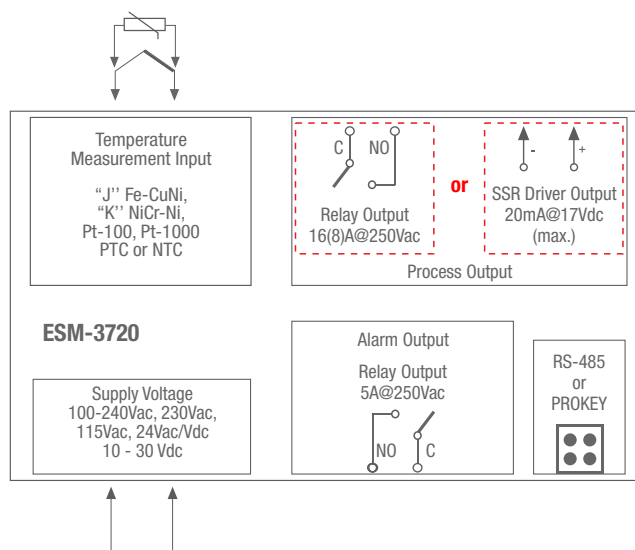
- Password protection for programming section
- Having CE mark according to European Norms
- Adjustable internal buzzer according to sensor defect status

Specifications

4 Digits Display
 NTC Input or PTC Input or
 J type thermocouple Input or Ktype thermocouple Input or
 2-Wire PT-100 Input ori 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 continously,
 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-3720

A . BC . 0 . E / 01 . 00 / . 1 . V . 0 . 0

ESM-3720 (76x34,5x71mm)

- 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)
FG Alarm Output
 5A@250 Vac, 1 NO **01**
E Process Output
 Relay Output: (16(8)A @ 250Vac) **1**
 SSR Driver output (Maximum 20mA @ 17Vdc) **2**

PID Temperature Controllers

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



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

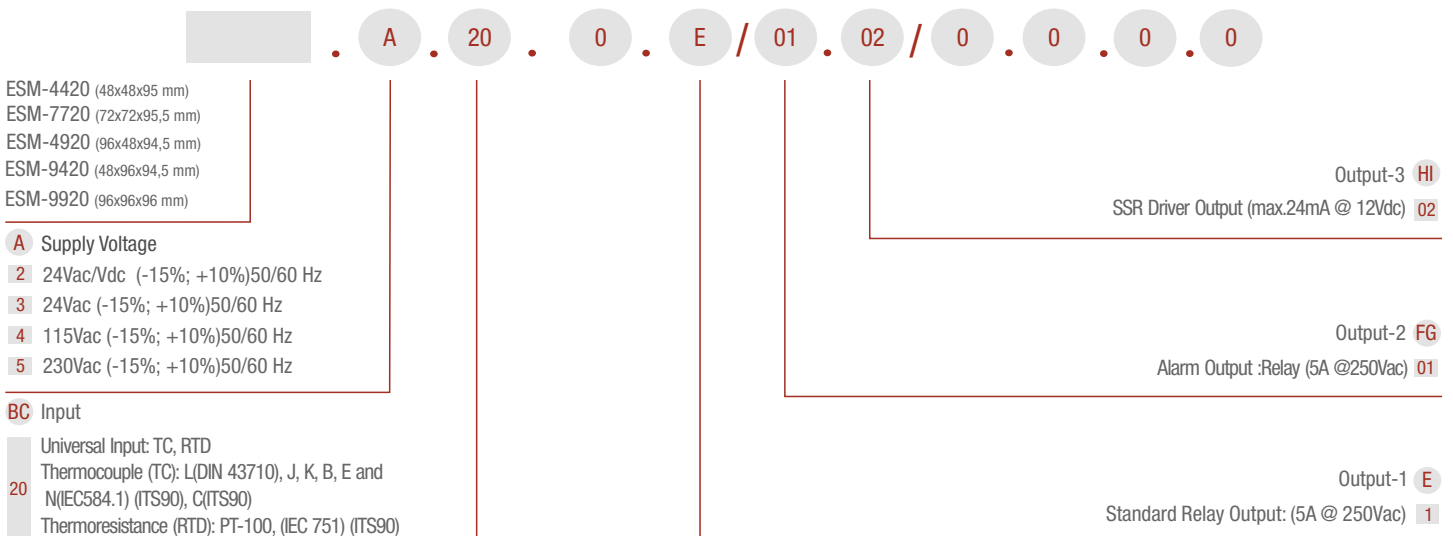
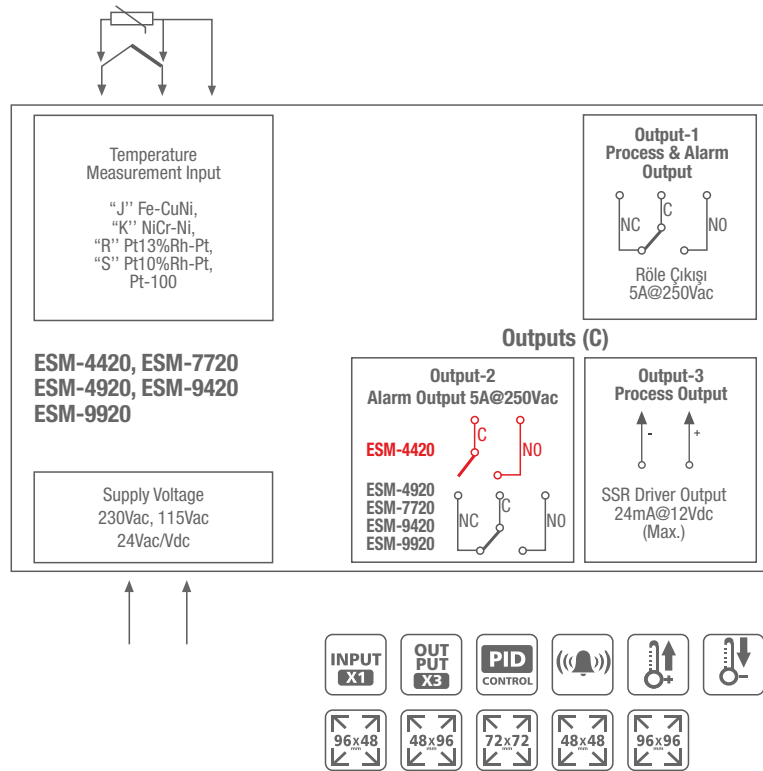
- 2 Relays and 1 SSR drive output
- Soft Start Output For Resistance Durability

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

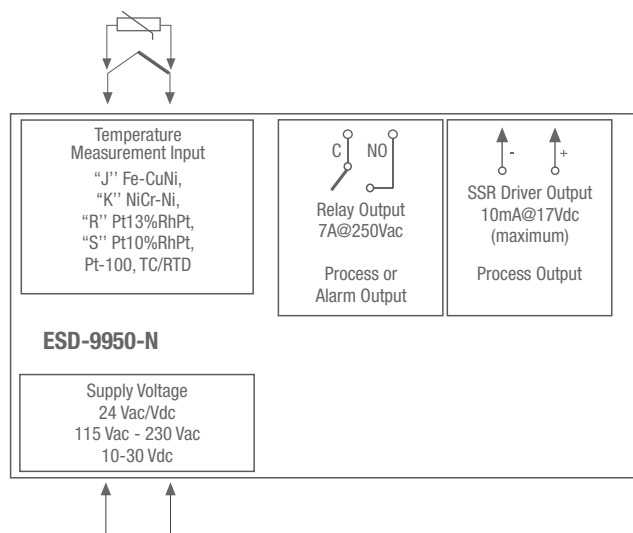
Technical Specification

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 (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																																	
A	BC	D	E	/	FG	HI	/	U	V	W	Z																						
		0		/			/	1		0	0																						
																		ESM-3710-N	ESM-1510-N	ESM-3711-HN	ESM-3711-CN	ESM-3712-CN	ESM-3712-HCN	ESM-4410	ESM-7710	ESM-9910	ESM-3720	ESM-4420	ESM-9420	ESM-7720	ESM-9420	ESM-9920	ESD-9950-N
A Supply Voltage																																	
1	100-240Vac 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-			
2	24Vac/Vdc (-15%, +10%) 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
3	24Vac (-15%, -15%) 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
4	115Vac (-15%, -15%) 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
5	230Vac (-15%, -15%) 50/60Hz											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
8	10 - 30 Vdc											+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	+				
BC Input Type																																	
20	Universal (TC or RTD)											-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+				
05	J, Fe-CuNi, 0...800 °C											+	+	+	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-				
10	K, NiCr-Ni, 0...999 °C											+	+	+	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-				
03	Pt-100, 0...400 °C											-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-				
11	Pt-100 -50...400 °C											+	+	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-				
09	Pt-100, -19.9...99.9 °C											+	+	+	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-				
12	PTC, -50...150 °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											+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-				
19	NTC, -19.9...99.9 °C											-	+	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-				
E Output 1																																	
1	Relay Output											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
2	SSR Driver Output (max. 20mA@12Vdc)											+	+	+	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-				
3	Relay Output (30(15)A@240Vac)											+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
FG Output 2																																	
01	Relay Output											-	-	-	-	+	+	-	+	+	+	+	+	+	+	+	+	+	-				
02	SSR Driver Output (max. 20mA@12Vdc)											-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	+				
HI Output 3																																	
02	SSR Driver Output (max. 20mA@12Vdc)											-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	-				
V PTC and NTC Temperature Sensor Selections																																	
0	Without Sensor											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
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, 1/8’’ fittingnut											+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-				
3	NTC-M5L20.K1,5 Thermoplastic covering for cooling application 1,5 m cable NTC probe											+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-				
Specifications																																	
Dimension (mm)												77x35	DIN Rail	77x35	77x35	77x35	77x35	77x35	48x48	72x72	96x96	77x35	48x48	96x48	72x72	48x96	96x96	96x96					
Password protection for programming mode												+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
Set value boundaries												+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
Adjustable temperature offset												+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
ON/OFF Temperature control												+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
Adjustable P, PD, PI ve PID Control forms												-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+				
Adjustable Compressor delay times												+	+	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-				
Alarm functions for alarm output												-	-	-	-	-	+	-	-	-	-	+	+	+	+	+	+	-					
Adaptation of PID coefficients to the system with Self-Tune operation												-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+					
Universal Thermocouple and thermoresistances process input												-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+					
Programmable Heating or Cooling functions for control outputs												+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+					
Adjustable hysteresis value												+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+					
Adjustable re-activation time for control outputs												+	+	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-					
Functional Internal Buzzer												+	+	+	+	+	+	-	-	-	+	-	-	-	-	-	-	-					
Installing Parameters via Prokey												+	+	+	+	+	+	-	-	-	+	-	-	-	-	-	-	-					
Data collecting & controlling with Modbus RTU												+	+	+	+	+	+	-	-	-	+	-	-	-	-	-	-	-					

Order Code		Eco LITE	Eco PID	Eco HR
A	B C D E			
4	48x48mm	+	+	+
5	230Vac (-15%, +10%) 50/60Hz	+	+	+
6	10-30Vdc	+	+	+
3	115Vac (-15%, +10%) 50/60Hz	+	+	+
1R	1xRelay Output (NO+C) 5A@250Vac	+	+	+
2R	2xRelay Output (NO+C) 5A@250Vac	+	+	+
S	SSR driver output (Maks. 10mA, 12Vdc)	-	+	+
0	Without Communication	+	+	+
485	RS-485 ModBus	-	+	+
DI	Digital Input (220Vac) for secondary set value	-	-	+
Specifications				
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		-	-	+

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

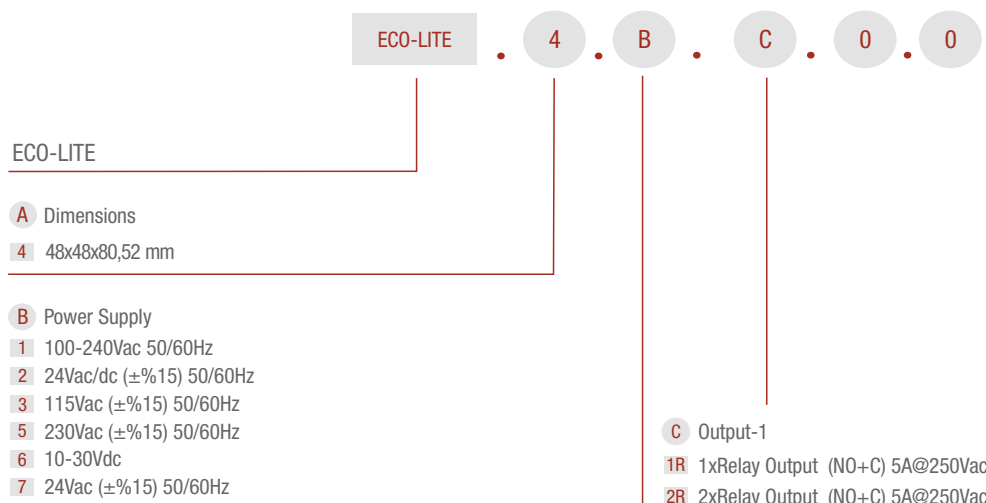
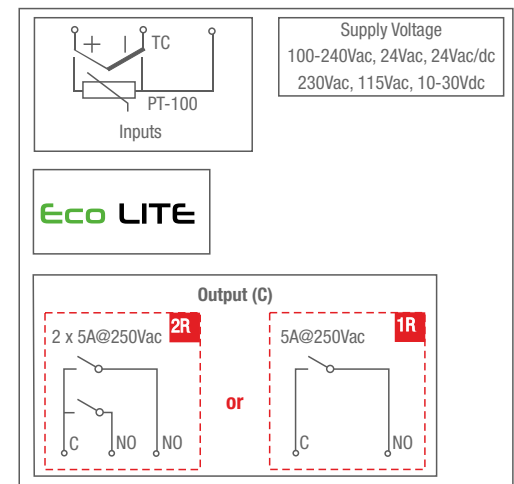
- Saving and Recovery of user parameters
- Return to Factory Settings

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



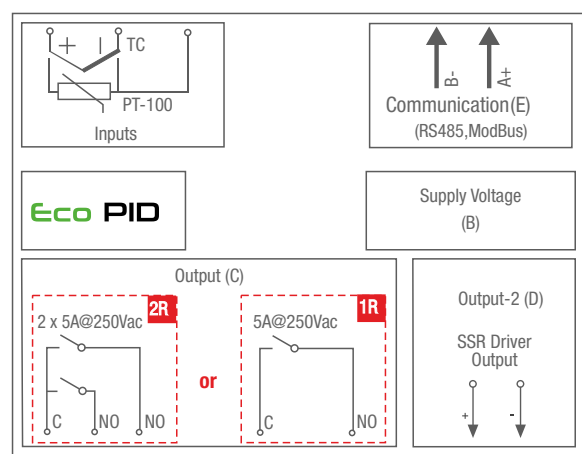


- ▶ High Resolution Sensitive PID control
- ▶ TC (J,K,R,S,T Input Types) and RTD inputs selectable by parameter
- ▶ Low Power Consumption, Energy saving and Environmentally Friendly with 2VA

- ▶ Saving and Recovery of user parameters
- ▶ RS-485 Modbus (RTU) communication option
- ▶ Return to Factory Settings

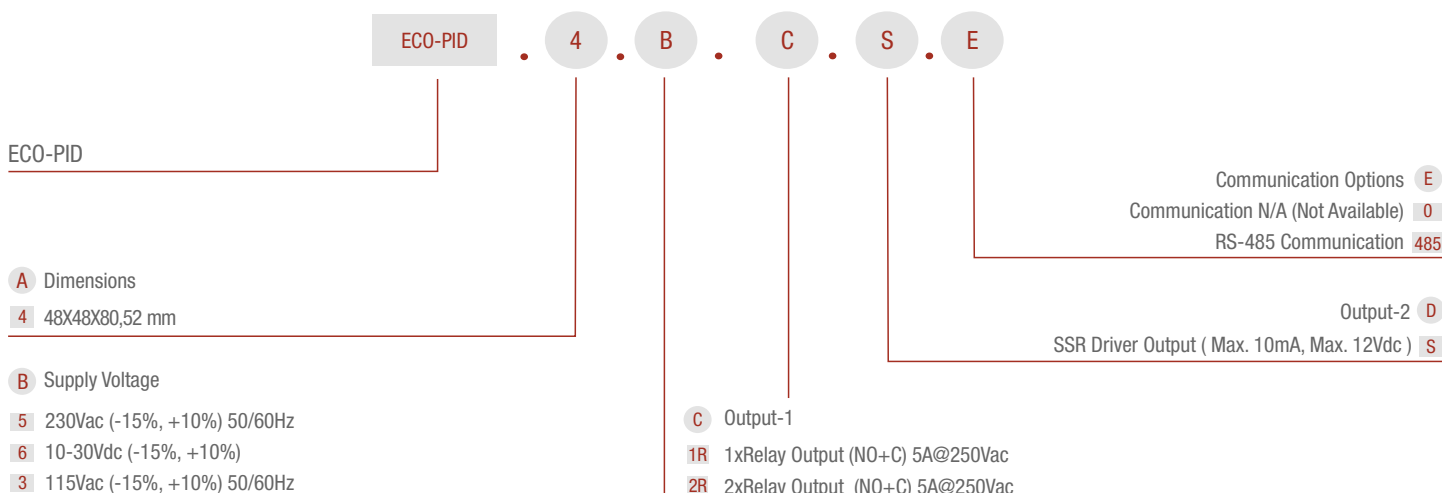
Specifications

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 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



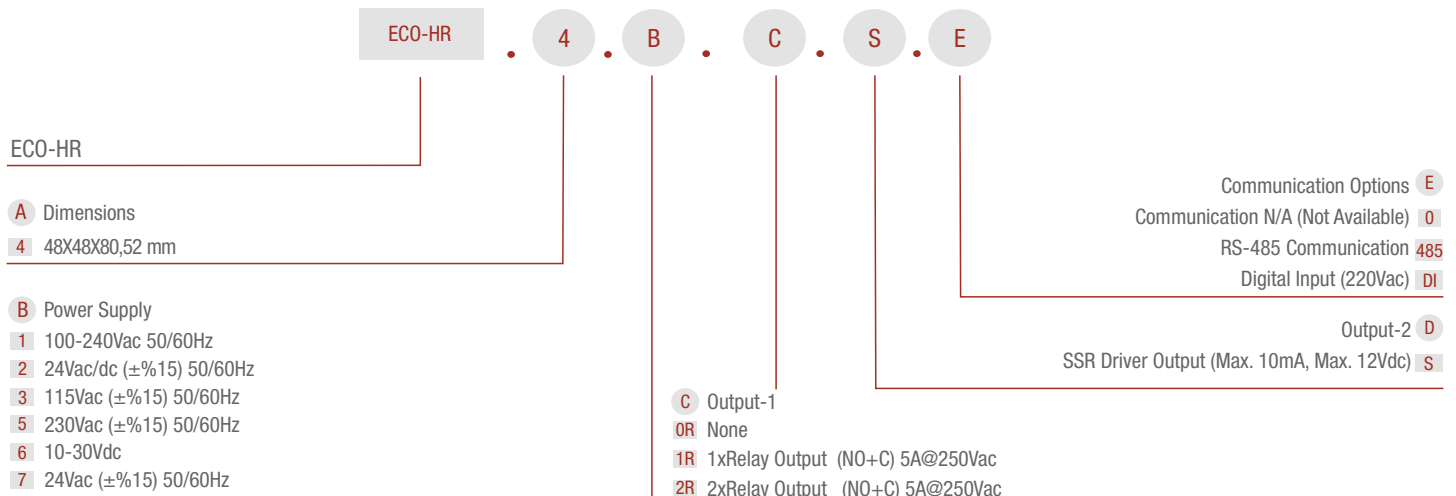
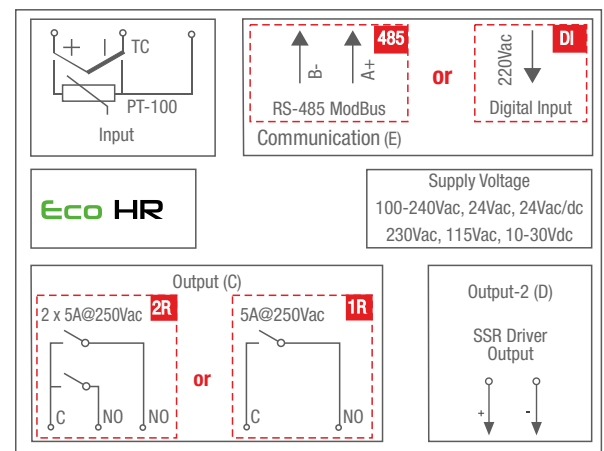
- High Resolution Sensitive PID control
- TC (J,K,R,S,T Input Types, PT-100) selectable by parameter
- Low Power Consumption, Energy saving and Environmentally Friendly with 2VA
- Activate 2nd Set Value by front panel
- Saving and Recovery of user parameters
- RS-485 Modbus (RTU) communication option
- 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





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

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

Specifications

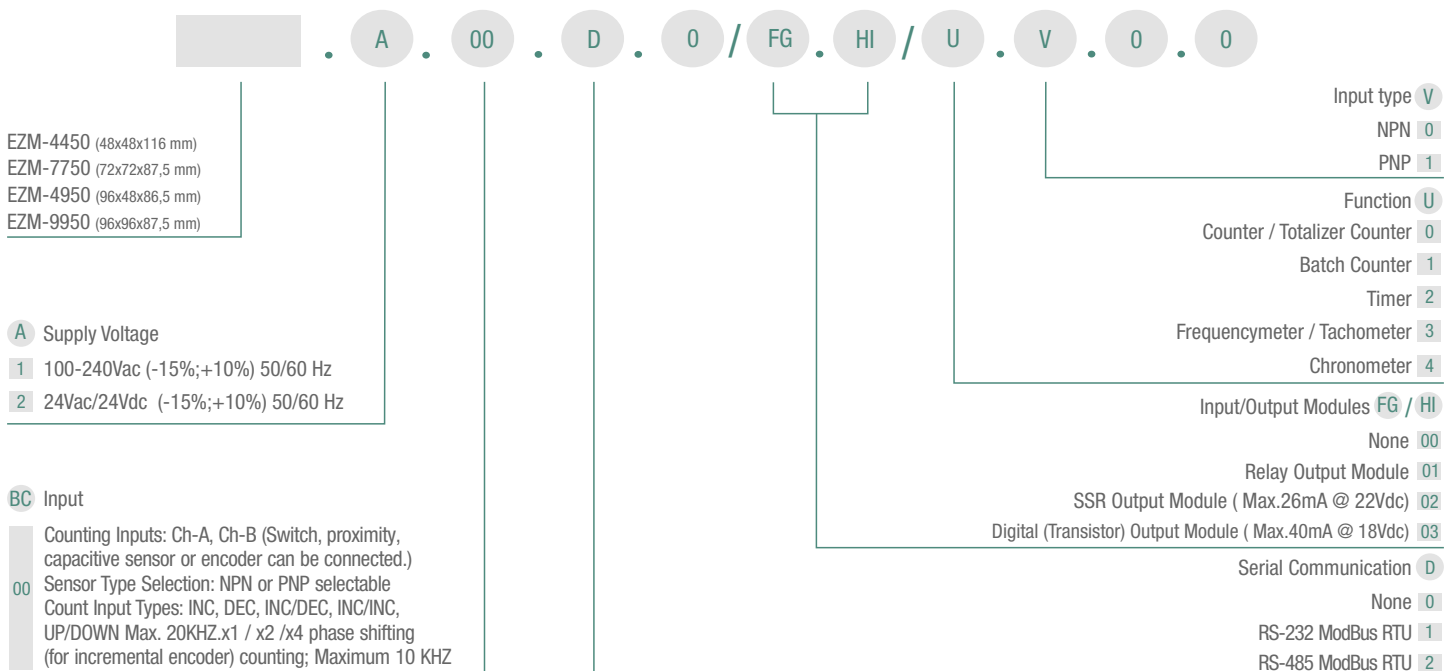
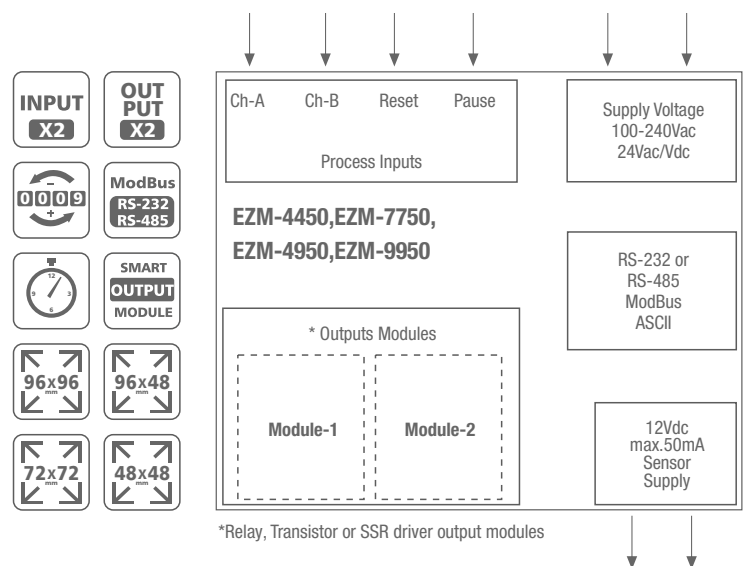
6 Digits display
 Reset, Pause and ChA-ChB Counting Inputs
 Absolute or Offset Operation in Counter Function
 Different Alarm Alternatives in Frequencymeter and Cycle Measuring Functions
 INC, DEC, INC/INC, INC/DEC, UP/DOWN,
 x1 / x2 / x4 Counting with Phase Shifting Property in Counter
 RS-232 (standard)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

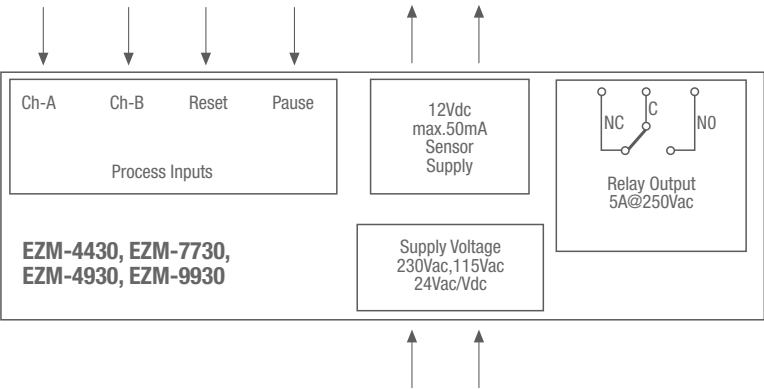


Reset, Pause and ChA-ChB Counting Inputs

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
- Humidity: 0-90%RH (none condensing)
- Protection: Ip65 at front, Ip20 at rear.



- EZM-4430 (48x48x95 mm)
- EZM-4930 (96x48x96 mm)
- EZM-7730 (72x72x95,5 mm)
- EZM-9930 (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
Counting Inputs: Ch-A, Ch-B (Switch, proximity, capative sensor or encoder can be connected.)
Sensor Type Selection: NPN or PNP selectable.
Count Input Types: INC, DEC, INC/DEC, INC/INC, UP/DOWN Max. 20KHZ.
x1 / x2 /x4 phase shifting(for incremental encoder); Maximum 10 KHZ



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)

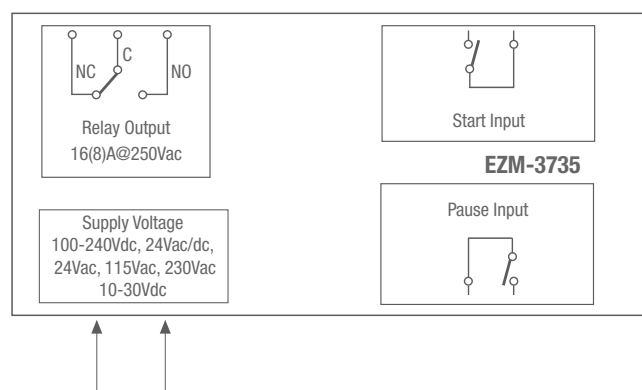
Pause possibility by front Panel

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



EZM-3735 . A . 00 . 0 . 1 / 07 . 07 / 1 . 0 . 0 . 0

EZM-3735 (76x34,5x71 mm)

Process Output E

Relay Output: (16(8)A @ 250Vac) 1

A Supply Voltage

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

Timer Relays

EZM-XX35

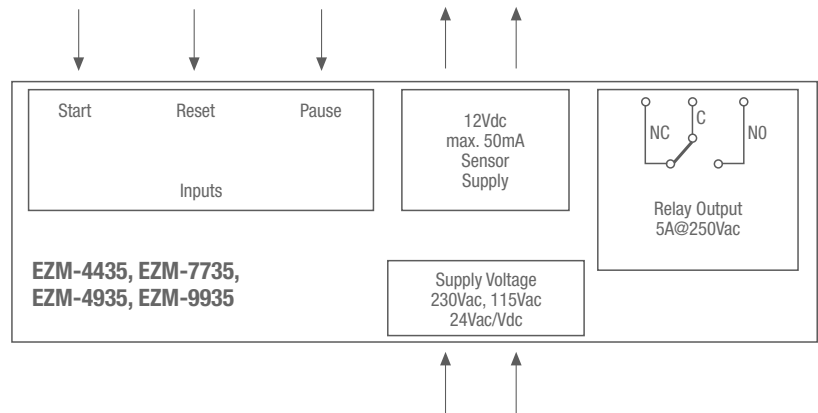


Operation with Automatic and Manuel Reset

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)

Process Output E

Relay Output: (5A @ 250Vac) 1

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

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

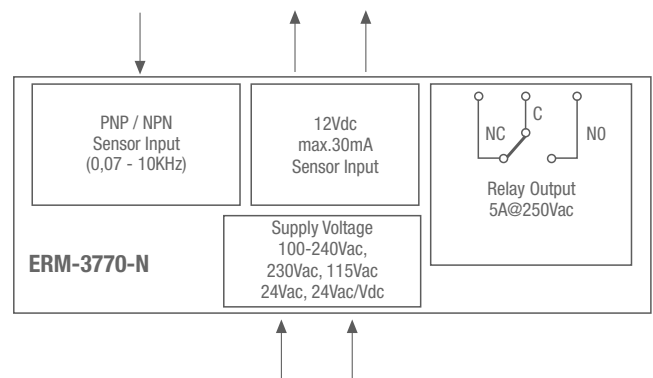
NPN or PNP input type

Alarm output

Relay or SSR driver output (It must be determined in order.)

Alarm Set value boundary

Programming mode password protection



Technical Specification

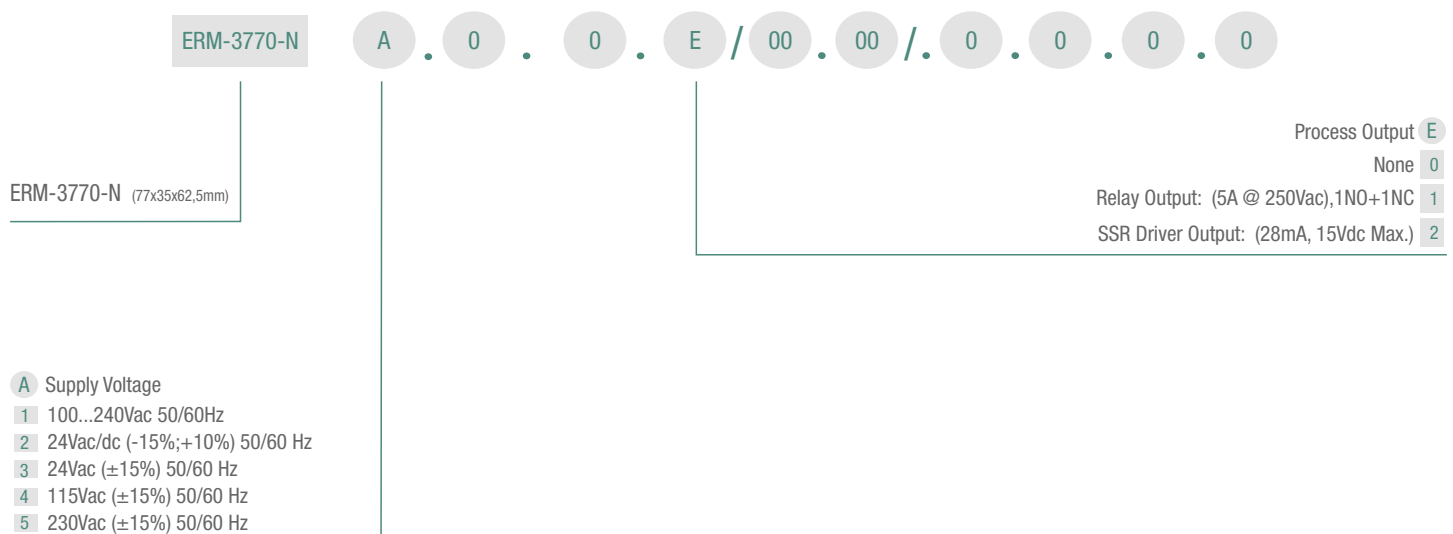
Accuracy: 0.01% of scale

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												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	
A	BC	D	E	/	FG	HI	/	U	V	W	Z																
	00			/			/	0	0	0	0																
A	Supply Voltage																										
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											-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
D	Serial Communication																										
0	None															+	+	+	+	+	+	+	+	+	+	+	
1	RS-232 ModBus ASCII											+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	
2	RS-485 ModBus ASCII											+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
E	Process Output-1																										
0	None											+	+	+	+					+					+		
1	Relay Output											-	-	-	-	+	+	+	+	-	+	+	+	+	+	+	+
FG	Modules Output-1																										
00	None											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
01	Relay Output											+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	
02	SSR Driver Output (max. 20mA@12Vdc)											+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	
03	Digital (Transistor) Output (max. 40mA@18Vdc)											+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	
HI	Modules Output-2																										
00	None											+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
01	Relay Output											+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	
02	SSR Driver (max. 20mA@12Vdc)											+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	
03	Digital (Transistor) Output (max. 40mA@18Vdc)											+	+	+	+	-	-	-	-	-	-	-	-	-	-		
Specifications																											
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	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													+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Dimension																											
77x35mm DIN													-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
48x48mm DIN 1/16													+	-	-	-	+	-	-	-	+	-	-	-	-	-	-
72x72mm DIN													-	+	-	-	-	+	-	-	-	-	+	-	-	-	-
96x48mm DIN 1/8													-	-	+	-	-	-	+	-	+	-	-	+	-	-	-
96x96mm DIN 1/4													-	-	-	+	-	-	-	+	-	-	-	-	+	-	-



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