Product Catalogue

Measurement & Control Instruments

EMKO
www.emkoelektronik.com.tr

DISAI
Automatic Systems
T· 962 448 450 www.disai.net

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Measurement & Control

Index

Comparison Table

Order Code

A	BC	D	E	/	FG	HI	/	U	V	W	Z
	20		1	/			/	0	0	0	0

		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
A	Supply Voltage																
1	100...240Vac (-%15, +%10) 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 Output (0/4...20mAdc or 0...10Vdc)	+	+	+	+	+	-	-	-	-	-	-	+	+	+	+	-
07	Digital Input	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
08	Analogue Input (0/4...20mAdc)	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
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 Output (0/4...20mAdc or 0...10Vdc)	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	-
07	Digital Input	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
08	Analogue Input (0/4...20mAdc)	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
09	CT Input Module (0...5Aac)	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
10	Thermocouple Input (0...50mVdc)	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
11	Pt-100 Input	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
12	Analogue Input (0...10Vdc)	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Specifications																	
"Smart I/O Module" system		+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
"Smart Output Module" 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		+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Dimension																	
77x35mm DIN		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
48x48mm DIN 1/16		+	-	-	-	-	+	-	-	-	-	+	+	-	-	-	-
96x48mm DIN 1/8		-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	-
72x72mm DIN		-	-	+	-	-	-	-	+	-	-	-	-	-	+	-	-
48x96mm DIN 1/8		-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-
96x96mm DIN 1/4		-	-	-	-	+	-	-	-	-	+	-	-	-	-	+	-

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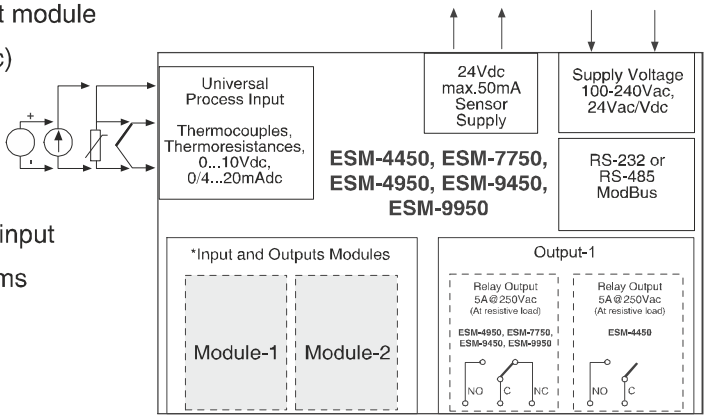
"Smart I/O Module" System RS-232/485 Modbus RTU Serial Communication Process Controller

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

- 4 digits process (PV) and 4 digits set (SV) display
- Programmable heating, cooling and alarm functions for control outputs
- 8 steps profile control (Ramp & Soak) function and start-hold-stop by using logic input module
- Re-transmission of process value or process control by using 0/4...20 mAdc Current Output Module
- Detection of heater failure by using 0 ..5Aac CT input module
- Universal process input (TC, RTD, mVdc, Vdc, mAdc)
- Auto-tune and Self-tune PID
- Bumpless transfer
- Motorized valve control function
- Dual or multi point calibration for dc Voltage/Current input
- Configurable ON/OFF, P, PI, PD and PID control forms



* Input and output modules can be mounted each modules sockets.
* Two input modules can be not be plugged in Module-1 and Module-2 socket at the same time

Specifications

Input

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

Output

Standard Relay Output: 5A@250Vac (at resistive load)

Measurement Range

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

Supply Voltage

100-240Vac 50/60 Hz (-15%;+10%) -6VA Universal
24Vac 50/60 Hz (-15%;+10%) -6VA Optional
24Vdc (-15% ; +10%) -6W Optional
(Must be determined in order)

Input/Output Modules

Two Input / Output Modules can be plugged in sockets.
Output Modules: Relay Output Module, SSR Output Module (Max.20mA @18Vdc), Digital(Transistor) Output Module (Max.40 mA @18Vdc), 0/4...20 mAdc Current Output Module
Input Modules: Digital Input Module, 0/4...20 mAdc Current Input Module, 0...5Aac CT Input Module, TC or 0...50mVdc Input Module, PT-100 Input Module, 0...10Vac Input Module

Dimensions
ESM-4450, 48x48mm, Depth: 116mm
ESM-7750, 72x72mm, Depth: 87,5mm
ESM-9950, 96x96mm, Depth: 87,5mm
ESM-9450, 48x96mm, Depth: 86,5mm
ESM-4950, 96x48mm, Depth: 86,5mm

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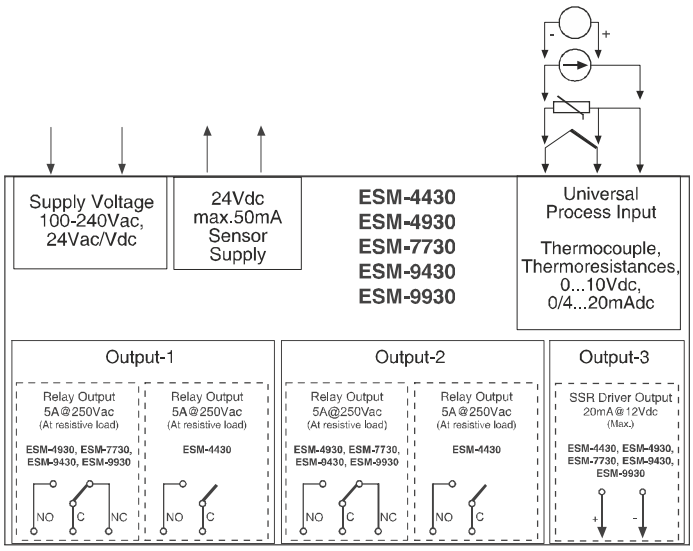
Universal Input Dual SET PID Process Controller

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

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



Specifications

Input

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

Output

Standard Relay Outputs: Two relays. Their rating is 5A@250Vdc
SSR Driver Output: Maximum 20mA @12Vdc

Supply Voltage

100-240 Vac 50/60 Hz (-15%;+10%) 6VA Universal
24Vac 50/60 Hz (-15% ; +10%) 6VA Optional
24Vdc (-15% ; +10%) 6W Optional
(Must be determined in order)

Dimensions

ESM-4430, 48x48mm, Depth:116mm
ESM-7730, 72x72mm, Depth:87,5mm
ESM-4930, 96x48mm, Depth:87,5mm
ESM-9430, 48x96mm, Depth:86,5mm
ESM-9930, 96x96mm, Depth:86,5mm

Measurement Range

Accuracy: ± 0,25% of full scale for thermocouple, thermoresistance, mV, V, ± 0,70% of full scale for mA input
Cold Junction Compensation: Automatically ±0.1°C/1°C
Line Compensation: Maximum 10 Ohm
Sensor break protection: Upscale
Sampling Cycle: 3 samples per second
Input Filter: 0.0 to 900.0 seconds

Environmental Rating and Physical Specifications

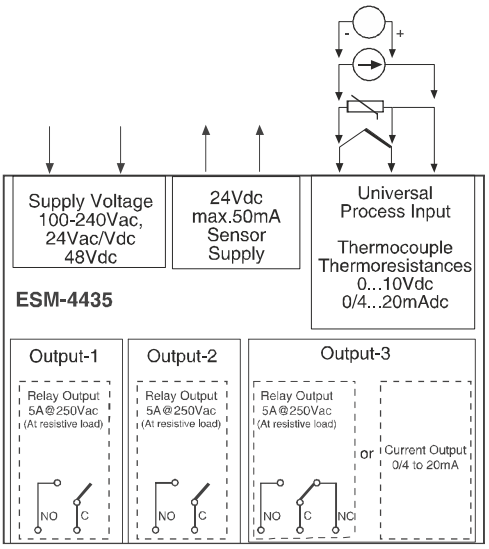
Operating Temperature: 0...50°C
Humidity : 0-90%RH (none condensing)
Protection Class: IP65 at front, IP20 at rear

Your Technology Partner

Universal Input Dual SET PID Process Controller

ESM-4435

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



Specifications

Input

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

Output

Process Output: Relay output 5A@250Vdc (at resistive load) or Current Output 0/4 to 20mA
Standard Relay Outputs: Two relays. Their rating is 5A@250Vdc

Measurement Range

Accuracy: ± 0.25% of full scale for thermocouple, thermoresistance, mV, V, ± 0,70% of full scale for mA input
Cold Junction Compensation: Automatically ±0.1°C/1°C
Line Compensation: Maximum 10 Ohm
Sensor break protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage

100-240 Vac 50/60 Hz (-15%;+10%) Universal
24Vac/Vdc 50/60 Hz (-15% ; +10%) tercihen
48Vdc 50/60 Hz (-15% ; +10%) Optional
(Must be determined in order)

Environmental Rating and Physical Specifications

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

Dimensions

ESM-4435, 48x48mm, Depth: 87,5mm

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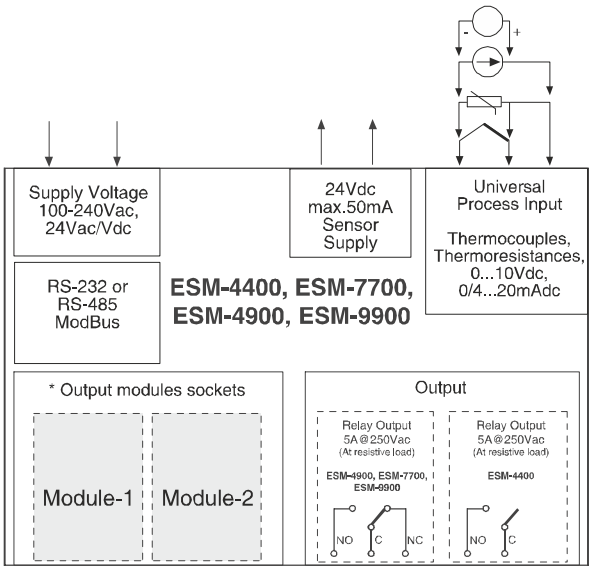
"Smart Output Module" System RS-232/485 Modbus RTU Serial Communication Process Indicator

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

SMART OUTPUT MODULE | OUTPUT X1 | INPUT X1 | ModBus RS-232 RS-485 | 96x48 | 72x72 | 48x48 | 96x96

- 4 digits Process (PV) Display
- Universal Process Input (TC, RTD, mVdc , Vdc , mAdc)
- Dual or Multi Point Calibration for dc Voltage / Current Input
- RS-232 (standard) or RS-485 (optional) Serial Communication with Modbus RTU Protocol
- Smart Output Module System
- Programmable Alarm Functions
- Retransmission of Process Value or Process Control by using 0/4...20 mAdc Current Output Module



* Output modules can be mounted each modules sockets.

Specifications

Input

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

Measurement Range

Accuracy: ± 0.25% of full scale for thermocouple, thermoresistance, mV and V, ± 0.70% of full scale for mA
Cold Junction Compensation: Automatically ±0.1°C/1°C
Line Compensation: Maximum 10 Ohm
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Input Filter: 0.0 to 900.0 seconds

Dimensions

ESM-4400, 48x48mm, Depth: 116mm
ESM-7700, 72x72mm, Depth: 87,5mm
ESM-9900, 96x96mm, Depth: 87,5mm
ESM-4900, 96x48mm, Depth: 86,5mm

Output

Standard Relay Output: 5A@250Vac
SSR Output Module (Max.20mA @18Vdc)
Digital(Transistor) Output Module(Max.40mA @18Vdc)
0/4...20 mAdc Current Output Module

Supply Voltage

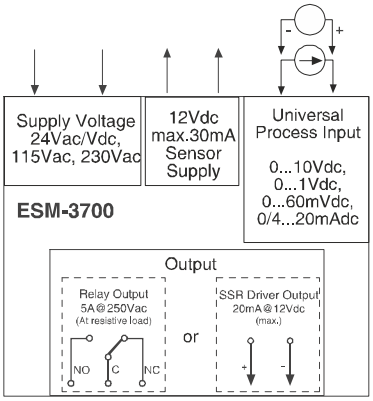
100-240Vac 50/60 Hz (-15%;+10%) -6VA Universal
24Vac 50/60 Hz (-15% ; +10%) -6VA Optional
24Vdc (-15% ; +10%) -6W Optional
(Must be determined in order)

Your Technology Partner

Single SET Process Indicator

ESM-3700

- 4 digits display
- Easily adjustable from front panel
- Configurable display scale between -1999 and 9999
- Adjustable decimal point
- Selectable universal process Input
  (0-10 Vdc, 0-1 Vdc, 0-60 mVdc, 0-20 mAdc, 4-20 mAdc)
- Adjustable input filter
- Maximum and minimum measurement value are registered to the devices memory
- Maximum or minimum measurement value can be shown continuously on the display
- 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



Specifications

Input
Vdc, mAdc

Output
Relay (5@250Vac at resistive load) or
SSR Output Module (Max.20mA @12Vdc)

Measurement Range
Accuracy: ±0,5% of scale
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Environmetal Rating and Physical Specification
Operating Temperature: 0...50 C
Humidity: 0-90%RH (none condensing)
Protection Class: IP65 at front, IP20 at rear
Dimensions: ESM-3700 77x35mm, Depth. :62.5 mm

Dimensions
ESM-3700, 77x35mm, Depth: 62,5mm

Supply Voltage
230Vac (±15%) 50/60 Hz -1.5VA
115Vac (±15%) 50/60 Hz -1.5VA
24Vac (±15%) 50/60 Hz -1.5VA

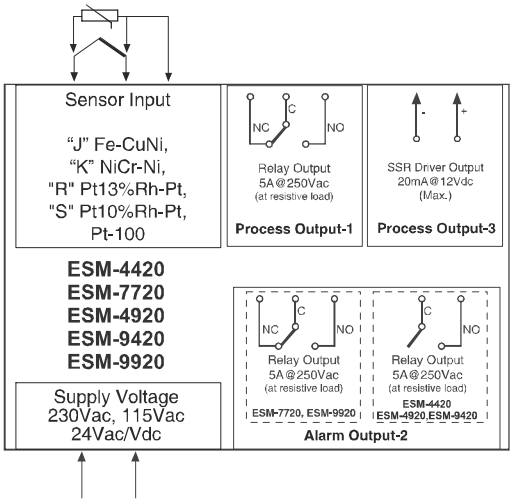
Comparison Table

Order Code		ESM-3710-N	ESM-1510	ESM-4410	ESM-7710	ESM-9910	ESM-4420	ESM-7720	ESM-4920	ESM-9420	ESM-9920	ESM-3711-H	ESM-3712-H	ESM-3712-HC	ESM-3711-CN	ESM-3712-CN
A BC D E / FG HI / U V W Z																
		0		/			/	1		0	0					
A	Supply Voltage															
1	100...240Vac (-%15, +%10) 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	10-30Vdc	+	-	-	-	-	-	-	-	-	-	-	-	-	+	+
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	+	+	-	-	-						+	+	+		
FG	Output-2															
01	Relay Output	-	-	-	+	+	+	+	+	+	+	-	+	+	-	+
02	SSR Driver Output	-	-	-	-	-	-	-	-	-	-	-	+	+		
HI	Output-3															
02	SSR Driver Output or Relay Output	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-
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	48x48	72x72	96x96	48x48	72x72	96x48	48x96	96x96	77x35	77x35	77x35	77x35	77x35
Password protection for programming mode		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Set value boundaries		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adjustable temperature offset		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ON/OFF Temperature control		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adjustable P, PD, PI and 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 vie Prokey		-	-	-	-	-	-	-	-	-	-	-	-	-	+	+
Data collecting & controlling with Modbus RTU		-	-	-	-	-	-	-			-	-	-	-	+	+

PID Temperature Controllers

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

- 4 digits process(PV) and 4 digits set value(SV) display
- Universal process input (TC, RTD)
- Configurable ON/OFF, P, PI, PD and PID control forms
- Adaptation of PID Coefficients to the system with Self-Tune operation (Step Response Tuning)
- Programmable Heating or Cooling Functions for Control Output
- Alarm Functions for Alarm Output
- Soft Start Output For Resistance Durability
- SET Value Limitation For System Protection
- Sensor Break Protection



Specifications

Input

Process Input: TC, RTD
Thermocouple (TC): J, K, R, S and T (IEC584.1)(ITS90)
Thermoresistance (RTD): PT-100 (IEC751)(ITS90)

Output

Process Output : Relay (5A@250Vac at resistive load) and
SSR Driver Output (Maximum 20mA@12Vdc)
Alarm Output : Relay(5A@250Vac at resistive load)

Measurement Range

Accuracy: ± 0.25% of scale for thermocouple and thermoresistance
Cold Junction Compensation: Automatically ±0.1°C/1°C
Line Compensation: Maximum 10 Ohm
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Input Filter: 1.0 second

Supply Voltage:

230Vac (±%15) 50/60 Hz -1.5VA
115Vac (±%15) 50/60 Hz -1.5VA
24Vac (±%15) 50/60 Hz -1.5VA
24Vac/dc (-%15;+%10)50/60 Hz-1.5VA

Dimensions

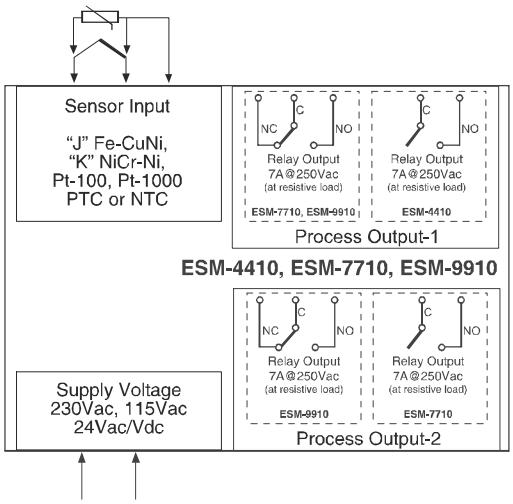
ESM-4420, 48x48mm, Depth:95mm
ESM-7720, 72x72mm, Depth:95,5mm
ESM-4920, 96x48mm, Depth:94,50mm
ESM-9420, 48x96mm, Depth:94,50mm
ESM-9920, 96x96mm, Depth:96mm

EMKO
Your Technology Partner

Digital ON/OFF Temperature Controllers

ESM-4410
ESM-7710
ESM-9910

- PTC, NTC, PT-100, PT-1000 thermoresistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types
- ON/OFF Control Form
- Selectable Heating and Cooling Function
- Operating Type Selection with Hysteresis
- Adjustment of Temperature Offset Value
- Minimum Pulling Time Adjustment for Control Outputs
- Password Protection for Programming Section



Specifications

Input
PTC: PTC (1KOhm @ 25°C)
NTC: NTC (10KOhm @ 25°C)
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Thermoresistance (RTD): 2 or 3-wire PT-100 (IEC 751) (ITS90)

Output
Control Output: Relay (7A@250Vac at resistive load)
Process Output: Relay (7A@250Vac at resistive load)

Measurement Range
-50 °C to 999 °C (refer to ordering information)
Accuracy: ± 1% of full scale
Cold Junction Compensation: Automatically ±0.1°C/1°C
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage
230Vac (±%15) 50/60 Hz -1.5VA
115Vac (±%15) 50/60 Hz -1.5VA
24Vac (±%15) 50/60 Hz -1.5VA
24Vac/dc (-%15;+%10)50/60 Hz-1.5VA

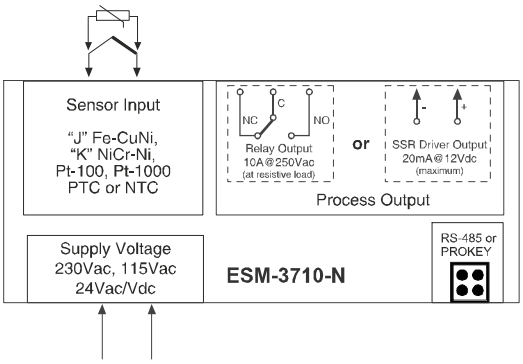
Dimensions
ESM-4410, 48x48mm, Depth: 95mm
ESM-7710, 72x72mm, Depth: 95,5mm
ESM-9910, 96x96mm, Depth:96mm

Your Technology Partner

Single SET Digital On/Off Temperature Controller

ESM-3710-N

- 4 Digits Display
- NTC Input or PTC Input or
J Type thermocouple Input or K Type 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
- Selection of operation with hysteresis
- 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
- Adjustable internal buzzer according to sensor defect status.
- Password protection for programming section
- Installing parameters using Prokey
- Remote access, data collecting and controlling with Modbus RTU



Specifications

Input

PTC: PTC (1KOhm @ 25°C)
NTC: NTC (10KOhm @ 25°C)
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Thermoresistance (RTD): 2 wire PT-100, PT-1000 (IEC 751) (ITS90)

Output

Control Output: Relay (10A@250V "for resistive load") or
SSR Driver output (Maximum 20mA@12Vdc)
ON/OFF hysteresis: It can be configured by the user.

Measurement Range

-50 °C to 999 °C (refer to ordering information)
Accuracy: ±1% of scale
Cold Junction Compensation: Automatically ± 0.1°C/1°C
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage

230Vac (±%15) 50/60Hz -1,5VA
115Vac (±%15) 50/60Hz -1,5VA
24Vac/dc (±%15) 50/60Hz -1,5VA
24Vac (±%15) 50/60Hz -1,5VA
10...30Vdc -1,5VA

Environmental Rating and Physical Specification

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

Dimensions

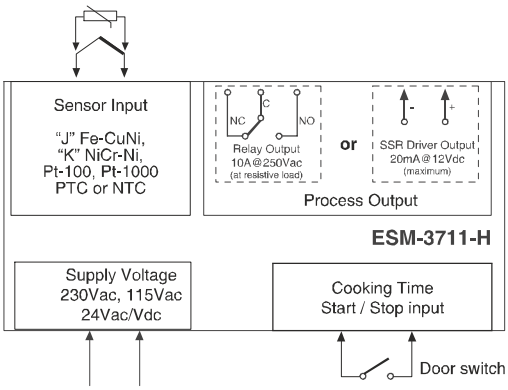
ESM-3710-N, 76x34,5mm, Depth:71mm

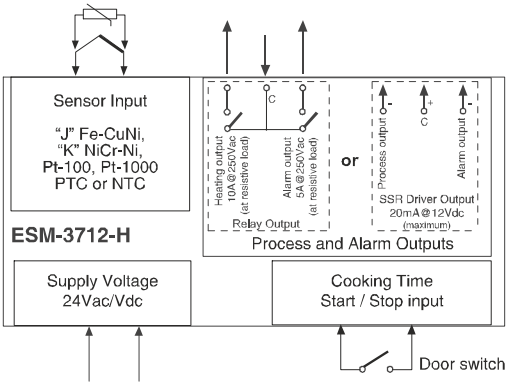
EMKO
Your Technology Partner

Dual SET Digital ON/OFF Heating Controller (SET + ALARM)

ESM-3712-H
ESM-3711-H

- Heating Application
- Alarm Output
- Functional Internal Buzzer
- User can select to start Cooking Time
when Temperature reaches to the Set Value
- 3 digits display
- PTC, NTC, PT-100, Pt-1000 thermoresistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types
- Adjustable Temperature Offset
- Temperature Control Output and Alarm Output
- Relay or SSR Driver Output
- Digital Input (Start/Stop input for Cooking time)
- Adjustable Cooking Time from Front Panel
- Temperature Control according to the Cooking Time
- Adjustable Internal Buzzer According to Cooking Time, Probe Defect and Alarm Status





Specifications

Input
PTC: PTC (1KOhm @ 25°C)
NTC: NTC (10KOhm @ 25°C)
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Termoresistance (RTD): 2 wire PT-100, PT-1000 (IEC 751) (ITS90)

Output
Proses Output: Relay (10A@250Vac at resistive load) or
SSR Driver Output (Maximum 10mA@24Vdc)
Alarm Output: Relay (5A@250Vac at resistive load) or
SSR Driver Output (Maximum 10mA@24Vdc)

Measurement Range
-50 °C to 999 °C (refer to ordering information)
Accuracy: ±%1 of scale
Cold Junction Compensation: Automatically ±0.1°C / 1°C.
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage
24Vac-Vdc (-15%,+10%) 50/60 Hz -1.5VA

Environmental Rating and Physical Specification
Operation Temperature: 0...50°C
Humidity: 0-90%RH (none condensing)
Protection Class: IP65 at front, IP20 at rear

Dimensions
ESM-3712-H, 77x35mm, Depth:62.5mm
ESM-3711-H, 77x35mm, Depth:62.5mm

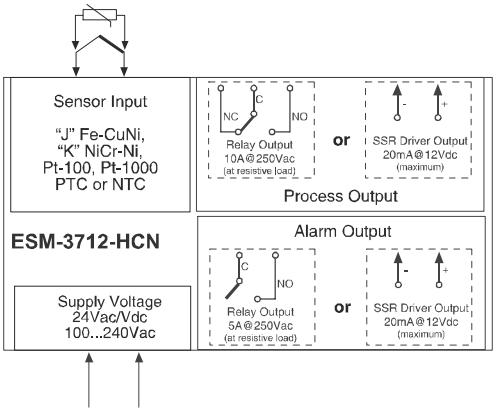
Dual SET Heating and Cooling Controller

ESM-3712-HCN

- 4 Digits Display
- NTC Input or PTC Input (Must be determined in order.)
- ON/OFF temperature control
- 2 output for compressor and alarm controls
- 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
- Installing parameters using Prokey
- Process Set value and Alarm Set value low limit and set value high limit boundaries
- Adjustable Alarm Set Value from front panel

Adjustable internal buzzer according to Sensor prob defect and Alarm status

- Remote access, data collecting and controlling with Modbus RTU



Specifications

Input

PTC: PTC (1KOhm @ 25°C)
NTC: NTC (10KOhm @ 25°C)
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Termoresistance (RTD): 2 wire PT-100, PT-1000 (IEC 751) (ITS90)

Output

Process Output: Relay (10A@250Vac at resistive load) or
SSR Driver Output (Maximum 10mA@24Vdc)
Alarm Output: Relay (5A@250Vac at resistive load) or
SSR Driver Output (Maximum 10mA@24Vdc)

Measurement Range

-50 °C to 999 °C (refer to ordering information)
Accuracy: ±%1 of scale
Cold Junction Compensation: Automatically ±0.1°C / 1°C.
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage

100...240Vac (+15%; -10%) 50/60 Hz -2VA
24Vac-Vdc (-15%,+10%) 50/60 Hz -1.5VA

Environmental Rating and Physical Specification

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

Dimensions

ESM-3712-HCN, 76x34,5mm, Depth:71mm

EMKO

Your Technology Partner

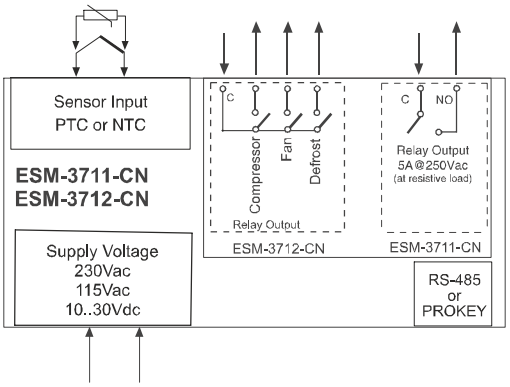
Digital ON/OFF Single SET & Dual SET Cooling Control

ESM-3711-CN
ESM-3712-CN

With Buzzer

INPUT X1 | OUTPUT X3 | ModBus RS-485 | 77x35

CE EAC



- Cooling Application
- NTC Input or PTC Input (Must be determined in order.)
- ON / OFF Control
- Adjustable °C and °F
- Set value boundaries
- 3 output for compressor, defrost and fan controls
- 2 sensor input for cabinet and evaporator (ESM-3712-CN)
- 1 sensor input for cabinet and evaporator
- Configurable digital input
- Separately adjustable 2 offset value for cabinet and evaporator sensor
- Selectable defrost function (hot gas or electric)
- Adjustable defrost time from front panel
- Fan can be operated depending on compressor and defrost
- Fan can be operated depending on evaporator temperature or (cabinet - evaporator) temperature
- Defrost time and/or manual defrost and/or temperature set value protection
- Operation selection of compressor operate continuously,stops or operates periodically in case of cabinet probe defect
- Installing parameters using Prokey
- Remote access, data collecting and controlling with Modbus RTU
- Password protection for programming mode

Specifications

Input
PTC: PTC (1KOhm @ 25°C)
NTC: NTC (10KOhm @ 25°C)

Output
Compressor Output : Relay 16A@250Vac at resistive load)
Defrost Output : Relay (5A@250Vac at resistive load)
Fan Output : Relay (5A@250Vac at resistive load)

Dimension
ESM-3711-CN & ESM-3712-CN : 76x34.5mm, Depth:71mm

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

Supply Voltage:
230Vac (±%15) 50/60 Hz -1.5VA
115Vac (±%15) 50/60 Hz -1.5VA
24Vac (±%15) 50/60 Hz -1.5VA
24Vac/dc (-%15;+%10)50/60 Hz-1.5VA
10...30Vdc 1.5Va

Environmental Rating and Physical Specification
Operation Temperature: 0...50°C
Humidity: 0-90%RH (none condensing)
Protection Class: IP65 at front, IP20 at rear

Your Technology Partner

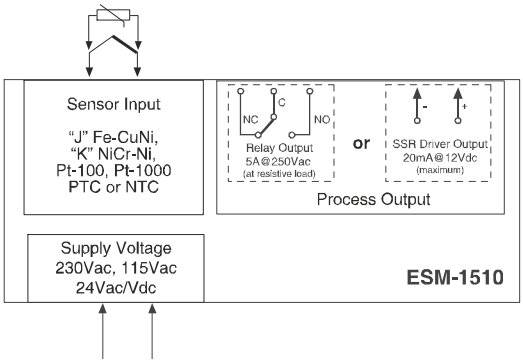
DIN Rail Panel Montage Type Digital ON/OFF Temperature Controller

ESM-1510

DIN RAIL | INPUT X1 | OUTPUT X1

CE EAC

- Heating / Cooling Applications
- DIN RAIL Mounting
- 3 digits display
- PTC, NTC, PT-100, PT-1000 thermoresistances input types
- Fe-Const (J), NiCr-Ni (K) thermocouples input types
- ON/OFF Temperature Control
- Selectable Heating or Cooling Function
- 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



Specifications

Input
NTC: NTC (10KOhm @ 25°C)
PTC: PTC (1KOhm@25°C)
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Thermoresistance (RTD): 2-wire PT-100, PT-1000 (IEC 751)(ITS90)

Output
Relay (5A@250Vac at resistive load) or
SSR Driver Output (Maximum 20mA@12Vdc)

Measurement Range
-50 °C to 999 °C (refer to ordering information)
Accuracy: ±1% of scale
Cold Junction Compensation: Automatically ±0.1°C/1°C
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second

Supply Voltage
230Vac (±%15) 50/60 Hz -1.5VA
115Vac (±%15) 50/60 Hz -1.5VA
24Vac (±%15) 50/60 Hz -1.5VA
24Vac/dc (-%15;+%10)50/60 Hz-1.5VA

Environmental Rating and Physical Specification
Operation Temperature: 0...50°C
Humidity: 0-90%RH (none condensing)

Dimensions
ESM-1510, 86x35mm, Depth: 59mm

Comparison Table

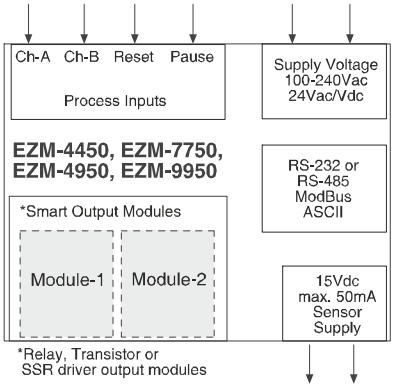
Order Code		EZM-4450	EZM-7750	EZM-4950	EZM-9950	EZM-4430	EZM-7730	EZM-4930	EZM-9930	EZM-4931	EZM-4435	EZM-7735	EZM-4935	EZM-9935	ERM-3770
A BC D E / FG HI / U V W Z															
[ ] 00 [ ] [ ] / [ ] [ ] / 0 0 0 0															
A	Supply Voltage														
1	100-240Vac (-%15, +%10) 50/60Hz	+	+	+	+	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	+	+	+	+	+	+	+	+	+	+
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 Output (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
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	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		-	-	-	+	-	-	-	+	-	-	-	-	+	-

Your Technology Partner

Multifunctional Programmable Timer and Counter

EZM-7750 EZM-4450
EZM-9950 EZM-4950

- 6 digits process (PV) and 6 digits Set (SV) Value Display
- Reset , Pause and ChA-ChB Counting Inputs
- Configurable Counter, Totalizer Counter, Batch Counter, Timer, Chronometer, Frequencymeter and Tachometer
- Programmable Time Bases for Timer and Chronometer
- Operation with Automatic and Manual Reset
- Multiplication Coefficient and Decimal Point Position
- 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



Specification

Input

Counting Inputs: Ch-A, Ch-B (Switch, proximity, capacitive sensor or encoder can be connected.)
Reset Input: Switch, proximity or capacitive sensor
Pause Input: Switch, proximity or capacitive sensor
Input Type Selection: It can be selected NPN/PNP with DIP switch that is located on the device.
Reset Function: Automatic or manual
Count Input Types: INC, DEC, INC/DEC, INC/INC, UP/DOWN, x1 / x2 / x4 phase shifting (for incremental encoder) counting

Supply Voltage

100-240Vac (-%15;+10%) 50/60 Hz-6VA
24Vac (-%15;+10%) 50/60 Hz-6VA
24Vdc (-%15;+10%) -6W

Environmental Ratings and Physical Specification

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

Dimensions

EZM-4450, 48x48mm, Depth: 116mm
EZM-7750, 72x72mm, Depth: 87,5mm
EZM-9950, 96x96mm, Depth: 87,5mm
EZM-4950, 96x48mm, Depth: 86,5mm

Output

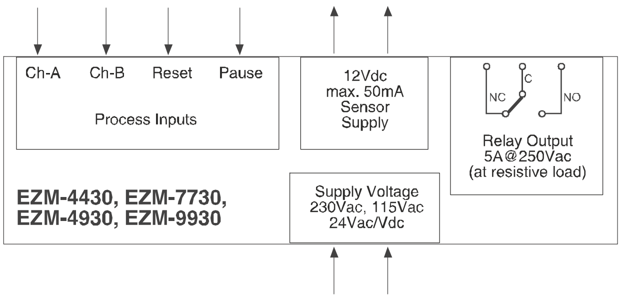
Output Modules: There are two module sockets for plugging the output modules.
-Relay Output Module
-SSR Output Module (Max.20mA @18Vdc)
-Digital(Transistor) Output Module(Max.40 mA @18Vdc)

Your Technology Partner

Single SET Programmable Counters

EZM-4430 EZM-7730
EZM-4930 EZM-9930

- 6 digits process (PV) and 6 digits Set (SV) Value Display
- Operation with 1 Set Value
- Reset, Pause and ChA-ChB Counting Inputs
- NPN/PNP Type Operation
- Operation with Automatic and Manual Reset
- INC, DEC, INC/INC, INC/DEC,UP/DOWN, x1 / x2 / x4 Counting with Phase Shifting Property
- Multiplication Coefficient and Decimal Point Position



Specification

Input

Counting Inputs(Ch-A, Ch-B): Switch, proximity, capacitive sensor or encoder can be connected.
Reset Input: Switch, proximity or capacitive sensor can be connected.
Pause Input: Switch, proximity or capacitive sensor can be connected.
Sensor Type Selection: NPN or PNP can be selected.
Reset Function: Automatic or Manual
Count Input Types and Maximum Frequency:
INC, DEC, INC/DEC, INC/INC, UP/DOWN Max. 20kHZ.
x1 / x2 / x4: phase shifting (for encoder) counting; Maximum 10KHz.

Output

Process Output: Relay (5A@250Vac) Resistive Load

Supply Voltage

230 Vac (-%15;+10%) 50/60 Hz - 2.3VA
115 Vac (-%15;+10%) 50/60 Hz - 2.3VA
24 Vac (-%15;+10%) 50/60 Hz - 2.3VA
24 Vac/dc (-%15;+10%) 50/60 Hz - 2.3VA
(Must be determined in order)

Environmental Ratings and Physical Specification

Operating Temperature: 0...50°C
Humidity: 0-90%RH (non condensing)
Protection Class: IP65 at Front, IP20 at rear

Dimensions

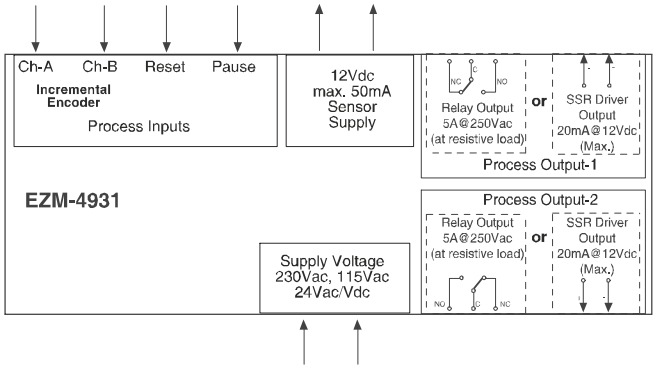
EZM-4430, 48x48mm, Depth: 116mm
EZM-7730, 72x72mm, Depth: 87,5mm
EZM-9930, 96x96mm, Depth: 87,5mm
EZM-4930, 96x48mm, Depth: 86,5mm

Your Technology Partner

200KHz Programmable Fast Counter

EZM-4931

- Incremental Encoder Input
- Operation with 2 SET Values
- 6 digits process (PV) and 6 digits SET (SV) Value Display
- Reset, Pause and ChA-ChB Counting Inputs
- Operation with Automatic and Manuel Reset
- NPN/PNP Input Types
- x1 / x2 / x4 Phase Shifting Property
- Multiplication Coefficent, Division Coefficient and Point Position
- Parametric, Two Point (Low Scale - High Scale) and Multiplication - Division Coefficient
- RS-232 Serial Communication with ModBus RTU Protocol
- Input Frequency Max. 200KHz
- Maximum Input Frequency Selection
- Password Protection for Program Parameters



Specification

Inputs

Reset Input: Switch, proximity or capacitive sensor can be connected.
Pause Input: Switch, proximity or capacitive sensor can be connected.
Encoder Input: Incremental
Sensor Type Selection: NPN or PNP can be selected.

Output

Process Output: Relay (5A@250Vac at resistive load)
SSR Output (10mA@5Vdc)

Environmental Ratings and Physical Specification

Operating Temperature: 0...50°C
Humidity : 0-90%RH (non condensing)
Protection Class: Ip65 at Front, Ip20 at rear

Dimensions

EZM-4931, 96x48mm, Depth: 86,5mm

Supply Voltage

230 Vac (-15%;+10%) 50/60 Hz - 2.3VA
115 Vac (-15%;+10%) 50/60 Hz - 2.3VA
24 Vac (-15%;+10%) 50/60 Hz - 2.3VA
(Must be determined in order)
Encoder Supply Voltage:
5Vdc or 12 Vdc (Max. 50mA)

EMKO

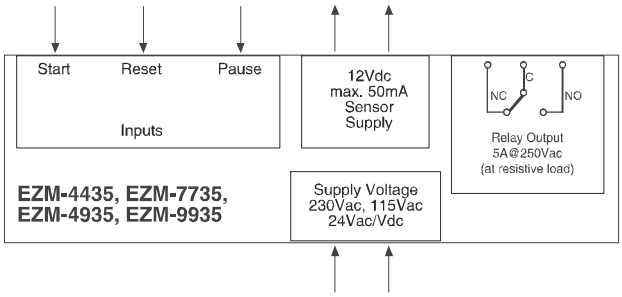
Your Technology Partner

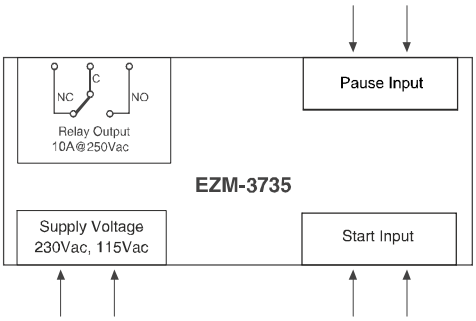
Single SET Programmable Timer

EZM-3735 EZM-7735
EZM-4435 EZM-9935
EZM-4935

INPUT X2 | OUTPUT X1 | 77x35 | 96x48 | 72x72 | 48x48 | 96x96

- 6 digits Process (PV) and 6 digits Set (SV) Value Display
- 4 Digits Display (Only for EZM-3735)
- Reset, Pause and Start Inputs
- NPN/PNP Type Operation
- Operation with Automatic or Manual Reset
- Programmable Time Bases (Second, Minute, Hour)
- Single Contact Output for Timing control (ON /OFF)
- External Start Input
- Start and Stop Possibility by front Panel
- Display can be adjusted to show Second, Minute and Hour
- Adjustable internal buzzer according to Timer Stop status.(Only for EZM-3735)
- Password protection for programming section





Specification

Input

Reset Input: Switch, proximity or capacitive sensor can be connected.
Pause Input: Switch, proximity or capacitive sensor can be connected.
Start Input: Switch, proximity or capacitive sensor can be connected.
Sensor Type Selection: NPN or PNP can be selected.
Reset Function: Automatic or Manual
Reset, Pause and Start Inputs Filter: 2-250 ms. (can be adjusted in parameter.)

Output

Process Output: Relay (5A@250Vac at resistive load)

Supply Voltage

230 Vac (-15%;+10%) 50/60 Hz - 2.3VA
115 Vac (-15%;+10%) 50/60 Hz - 2.3VA
24 Vac (-15%;+10%) 50/60 Hz - 2.3VA
24 Vac/dc (-15%;+10%) 50/60 Hz - 2.3VA
10...30Vdc (Only for EZM-3735)
(Must be determined in order)

Environmental Ratings and Physical Specification

Operating Temperature: 0...50°C
Humidity : 0-90%RH (non condensing)
Protection Class: IP65 at Front, IP20 at rear

Dimensions

EZM-4435, 48x48mm, Depth: 95mm
EZM-7735, 72x72mm, Depth: 95,5mm
EZM-9935, 96x96mm, Depth: 96mm
EZM-4935, 96x48mm, Depth: 96mm
EZM-3735, 77x35mm

Your Technology Partner

Digital Tachometer

ERM-3770

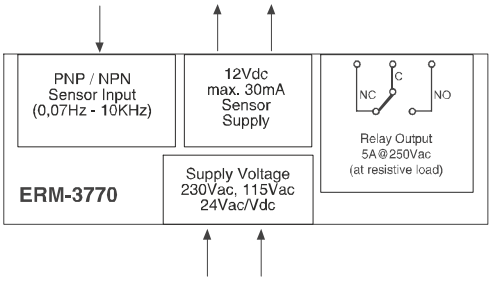
INPUT X1 | OUTPUT X1 | 77x35

CE EAC

- 4 Digits Display
- NPN or PNP input type
- Working with Process Set and Alarm Set value
- Alarm output / Relay or SSR driver output and Alarm Set value boundary
- Adjustable decimal point
- Division rate
- 0,07Hz to 10000Hz input signal
- Automatic sampling (1 sec. to 16 sec.)

Applications:

- Tachometer
- Frequency measurement
- Band speed measurement
- Linear or circular movement
- Instantaneous flow rate



Specification

Input

Sensor Input: Pulse between 5Vdc to 30Vdc
Sensor Input Type and Maximum Frequency:
- NPN or PNP type sensor
- Between 0.07 Hz to 10000 Hz frequency measuring .
Sampling Time: Sampling time automatically adjusting minimum 1 second and maximum 16 second according to input frequency

Output

Sensor Supply Output: 12Vdc, maximum 30mA
Alarm Output: Relay output (5A@250Vac Resistive Load)
(It must to power supply in order)

Supply Voltage

230Vac (+/-15%) 50/60 Hz -1.5VA
115Vac (+/-15%) 50/60 Hz -1.5VA
24Vac (+/-15%) 50/60 Hz -1.5VA
24Vac / 24Vdc (+/-15%) 50/60 Hz -1.5VA

Environmental Rating and Physical Specification

Operating Temperature: 0...50°C
Humidity: 0-90%RH (non consending)
Protective Class: IP65 at front, IP20 at rear

Dimensions

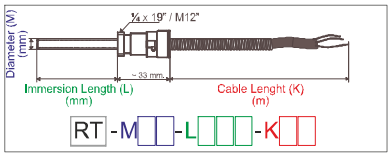
ERM-3770, 77x35mm, Depth:62.5mm.

Thermoresistances & Thermocouples

Resistance Thermometers are used widely from -200 to +850°C in different processes. Especially at low temperature, resistance thermometers are preferred since their accuracy is much better than thermocouples. Up to 400°C standard types and between 400 - 850°C special types are used. The maximum immersion length of the resistance thermometers should be determined by considering the measurement errors that may be caused by heat transfer occurring along the protecting tube and R/T element. The fluid speed where the resistance thermometer is immersed is a factor affecting the measurement sensitivity. In general, R/T should be perpendicular to the flow direction. Copper conductive cables are used between resistance thermometer head and the instruments. Up to 10 meters, 2x1.5 mm copper cable, up to 150 meters 3x1.5 mm copper cable, after 150 meters 4x1.5 mm copper cable are used.

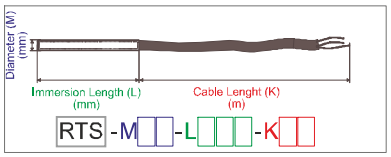
Straight Thermocouple with metal and ceramic protecting tubes are widely used in a variety of processes between -200°C and 1600°C The maximum operating temperatures given in the catalogue apply to the air where there are no corrosive gases. In general the thermowells chosen for the installation is governed mainly by the corrosion conditions the well will face. The high polish given to all stainless wells provides maximum corrosion resistance. Occasionally, the material consideration is one of the strength rather than corrosion resistance.

RT (Bayonet Type)



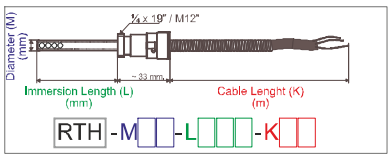
Diameter: Min: 4mm Max: 8mm

RTS (Bayonet Bore Type)



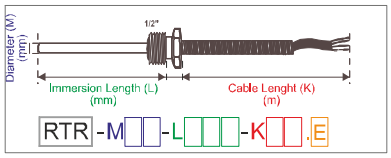
Diameter: Min: 5mm Max: 8mm

RTH (Bayonet Air Type)



Diameter: Standard: 6mm

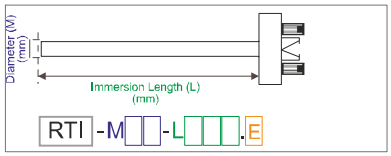
RTR (Bayonet Type with Fittingnut)



Diameter: Min: 4mm Max: 12mm

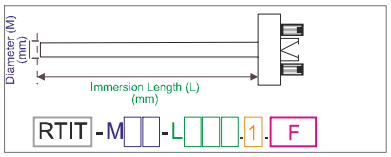
Max. operating temperature : 400°C for braided wire, 200°C for silicone
Standard cable types : Fiber glass + fiber glass + braided wire, 3x0,22 mm^2
Silicone + Silicone, 3x0,22 mm^2 ("Si+Si" is added to order code)
Standard cable length (K) : K01 = 1 m, K02 = 2 m, K03 = 3 m, K04 = 4 m, K05 = 5 m.
Sensor type : DIN/EN60751 Class "B" 1xPt-100 (E=1) or 2xPt-100 (E=2) (RTR)
Protection tube material : Nickel coated brass (RT) or AISI304 (DIN1.4301)
"316" is added to order code for AISI316 (RTR)
Connector : ¼ x 19" (selectable as M12" on ordering)
Fittingnut (RTR) : ½" fittingnut is used for standard production

RTI (Inset Type)



Diameter: Min: 5mm Max: 8mm

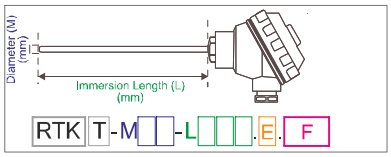
RTIT (Inset Type with Transmitter)



Diameter: Min: 5mm Max: 8mm

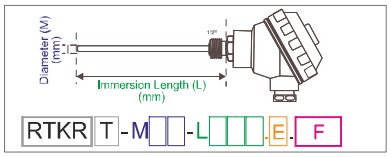
Max. operating temperature : 600°C
Protection tube material : AISI304 (DIN1.4301)
"316" is added to order code for AISI316
Sensor type : DIN/EN60751 Class "A" 1xPt-100 E=1 (RTIT)
DIN/EN60751 Class "B" 2xPt-100 E=2
Transmitter (RTIT) : 4...20mA current output, serial connection, (Loop Powered) transmitter.
F = Calibration scale must be described on ordering

RTK (Terminal Block Type)
RTKR (Terminal Block with Fittingnut Type)



Diameter: Min: 5mm Max: 16mm

RTKT (Terminal Block with Transmitter Type)
RTKRT (Terminal Block with Fittingnut and Transmitter Type)

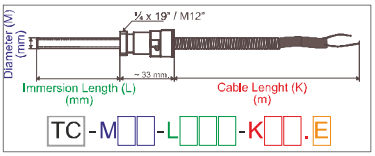


Diameter: Min: 5mm Max: 16mm

Max. operating temperature : 600°C
Protection tube material : AISI304 (DIN1.4301)
"316" is added to order code for AISI316
Sensor type : DIN/EN60751 Class "A" 1xPt-100 for E=1 (RTKT, RTKRT)
DIN/EN60751 Class "B" 2xPt-100 for E=2
Transmitter (RTKT, RTKRT): 4...20mA current output, serial connection, (Loop Powered) transmitter.
F = Calibration scale must be described on ordering

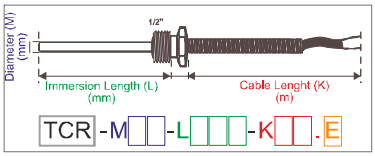
Thermocouples

(TC) Bayonet Type



Diameter: Min: 3mm Max: 8mm

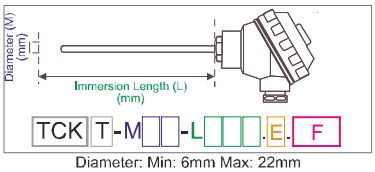
(TCR) Bayonet Type with fittingnut



Diameter: Min: 4mm Max: 12mm

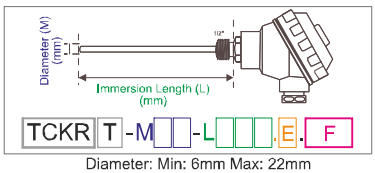
Max. operating temperature : 400°C for braided wire
200°C for silicone
Standard cable types : Fiber glass + fiber glass + braided wire,2x0,22 mm^2
Silicone + Silicone, 2x0,22 mm^2
("Si+Si" is added to order code)
Standard cable length (K) : K01 = 1 m, K02 = 2 m, K03 = 3 m,
K04 = 4 m, K05 = 5 m.
Sensor type : DIN/IEC-584 "J" FeCu-Ni E=J,
DIN/IEC-584 "K" NiCr-Ni E=K
Protection tube material : Nickel coated brass or AISI304 (DIN1.4301)
Connector (TC) : ¼ x 19" (selectable as M12" on ordering)
Fittingnut (TCR) : ½" fittingnut is used for standard production

TCK (Terminal Block Type)
TCKR (Terminal Block with Fittingnut Type)



Diameter: Min: 6mm Max: 22mm

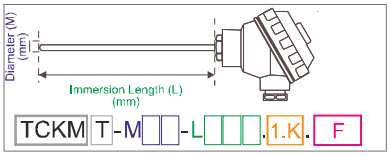
TCKT (Terminal Block with Transmitter Type)
TCKRT (Terminal Block with Fittingnut and Transmitter Type)



Diameter: Min: 6mm Max: 22mm

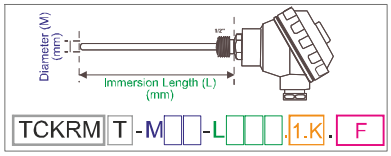
Max. operating temperature : "K" type 1200°C (M22), 900°C (M16), 800°C (M10)
"K and J type" 600°C (M06, M08)
Protection tube material : AISI304 (DIN1.4301)
"316" is added to order code for AISI316
Sensor type : DIN/IEC-584 "J" FeCu-Ni E=1.J,
DIN/IEC-584 "K" NiCr-Ni E=1.K,
DIN/IEC-584 2x"J" FeCu-Ni E=2.J (TCK, TCKR),
DIN/IEC-584 2x"K" NiCr-Ni E=2.K (TCK, TCKR)
Transmitter (TCKT or TCKRT) : 4...20mA current output, serial connection, (Loop Powered) transmitter.
F = Calibration scale must be described on ordering.

TCKM (Terminal Block Type)
TCKMT (Terminal Block with Transmitter Type)



Diameter: Standard: 6mm

TCKRM (Terminal Block with Fittingnut Type)
TCKRMT (Terminal Block with Fittingnut and Transmitter Type)

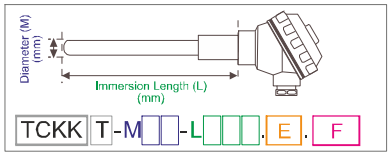


Diameter: Standard: 6mm

Max. operating temperature: 1200°C
Protection tube material : AISI310 (DIN1.4841)
"inconel" is added to order code for INCONEL600
Sensor type : DIN/IEC-584 "K" NiCr-Ni E=1.K,
Transmitter : 4...20mA current output, serial connection,
(TCKMT ve TCKRMT) (Loop Powered) transmitter.
F = Calibration scale must be described on ordering

Your Technology Partner

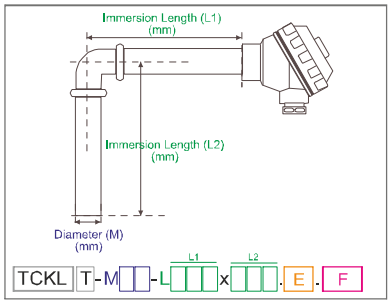
(TCKK) Terminal Block Type
(TCKKT) Terminal Block with Transmitter Type



Diameter: Min: 15mm Max: 24mm

Max. operating temperature: 1200°C for "K" NiCr-Ni
1600°C for "S" Pt10%Rh-Pt
1600°C for "R" Pt13%Rh-Pt
Wire Diameter : 3,00mm for "K" type
0,35mm for "S" and "R" type
Protection tube material : KER610 Ceramic
Sensor type : DIN/IEC-584 "K" NiCr-Ni E=1.K,
DIN/IEC-584 "S" Pt10%Rh-Pt E=1.S,
DIN/IEC-584 "R" Pt13%Rh-Pt E=1.R,
2x"K" NiCr-Ni E=2.K (TCKK),
2x"S" Pt10%Rh-Pt E=2.S (TCKK),
2x"R" Pt13%Rh-Pt E=2.R (TCKK)
Transmitter (TCKKT) : 4...20mA current output, serial connection, (Loop Powered) transmitter.
F = Calibration scale must be described on ordering

(TCKL) Terminal Block Type "L" Type
(TCKLT) Terminal Block Type "L" Type, Transmitter Type



Diameter: Min: 16mm Max: 22mm

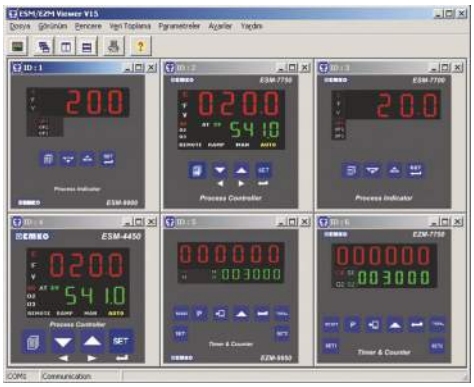
Max. operating temperature: 700°C
Protection tube material : AISI304 Stainless steel
Sensor type : DIN/IEC-584 "J" FeCu-Ni E=1.J,
DIN/IEC-584 "K" NiCr-Ni E=1.K,
2x"J" FeCu-Ni E=2.J (TCKK)
2x"K" NiCr-Ni E=2.K (TCKK)
Transmitter (TCKKT) : 4...20mA current output, serial connection, (Loop Powered) transmitter.
F = Calibration scale must be described on ordering

Compensation Cable

Silicone + fiber glass + braided wire, 2 x 1,50 mm2 IEC584 "J" FeCu-Ni
Silicone + fiber glass + braided wire, 2 x 1,50 mm2 IEC584 "K" NiCr-Ni
Silicone + fiber glass + braided wire, 2 x 1,50 mm2 IEC584 "S" Pt10%Rh-Pt
Silicone + fiber glass + braided wire, 2 x 1,50 mm2 IEC584 "R" Pt13%Rh-Pt

Viewer
Data Logging Software

- Monitoring up to 32 devices at the same time on the screen
- Data of Process, Output, Alarm and Status
- Real-time graphic support
- Data types selection for monitoring
- Visual alarm set and monitoring
- Data logging as Text or Excel files
- Compatible with Windows Operating Systems
- Saving device parameters, download and upload
- Turkish and English language selection
- Selectable communication ports between COM1...COM9
- ModBus RTU communication protocol
- RS-485 or RS-232 connection
- Adjustable data logging interval
- Stop or pause of data logging
- Total counting monitoring for timer and counter controllers
- Export a Text or Excel file with determined frequency and file name
- Password protection for parameter selections



Usage of the Software:

When the program runs for the first time, com port settings must be done. There is no need to do the com port setting if there is no fault or changes.

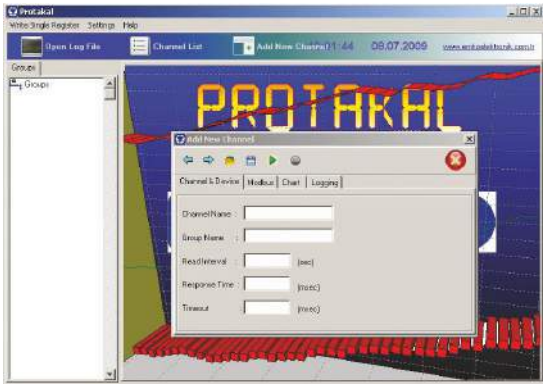
Data Logging:

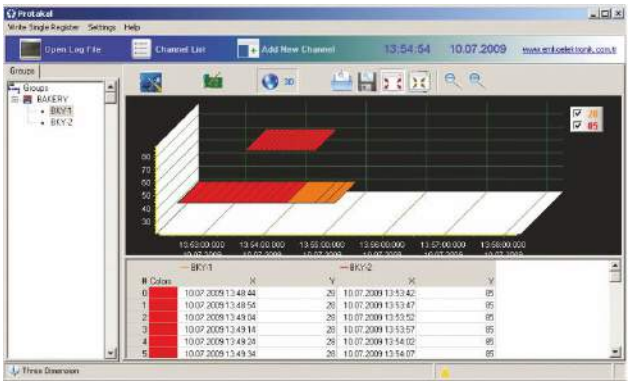
Data logging is done for 32 units. For ESM-XX50 series units; process value, set value, 2nd sensor value (if exists), for ESM-XX00 series units process value, for EZM-XX50 series units process value, set1 value, set2 value, total value (If the unit operates in totalizer counter mode) can be selected to log. Logged datas are saved into an excel or text formatted file. While data logging continues, logged data are shown on data logging graphic screen for 10 units.

Protakal
data logging software

Protakal
Data Logging Software

- Suitable for data logging from all types of devices which uses
- MODBUS RTU/ASCII protocols.
- Channels can be defined from Unlimited Serial ports
- Software starts automatically after Computer turns on. Only one time configuration.
- Change parameters of the devices
- Enables graphic visualisation for very fast processes. Possible to log data for every 50ms.
- Every channel has its own graphical screen. Channels can be displayed in the same graphical screen when necessary.
- Channels are grouped in the main screen according to their group names.
- Data logging in Excel, XML, HTML and Delimited ASCII formats
- Create files in configurable time intervals during data logging.
- Graphics saved in JPEG, PNG, GIF, PCX, VML, PostScript and PDF formats.





EMKO

Your Technology Partner

Humidity & Temperature Sensors

Pronem mini
Pronem midi

Pronem midi

Pronem midi

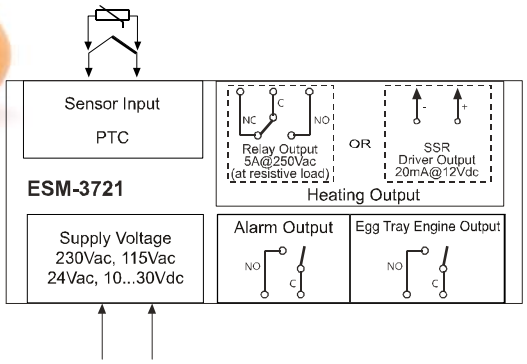
- 2 analog outputs for temperature and humidity
- Calibrated Temperature + Humidity sensor, single-chip
- High output accuracy
- Long time stability
- Check the low thermal drift
- Small and useful design
- The output signal can be selected separately for each 2 output

	Pronem mini	Pronem midi
Performance		
Measuring range (RH)	0...100 %RH	0...100 %RH
Measuring range (T)	-20°C ...+80°C	-20°C ...+80°C
Accuracy (RH)	+/-2 %RH (Typ) @23°C	+/-2 %RH (Typ) @23°C
Accuracy (T)	+/-0,3°C (Typ) @23°C	+/-0,1°C (Typ) @23°C
Stability (RH)	<1 %RH/year (Typ)	<1 %RH/year (Typ)
Stability (T)	<0,04°C/year (Typ)	<0,04°C/year (Typ)
Hysteresis (RH)	+/-1 %RH	+/-1 %RH
Hysteresis (T)	+/-0,1°C	+/-0,1°C
Electrical Properties		
Supply Voltage	16...32Vdc	16...32Vdc
Output Signal	0-10V, 4-20mA	0-10V, 4-20mA
Working Conditions		
Operating Temperature Range	-40°C ...+85°C	-40°C ...+85°C
Height	2000m. Until	2000m. Until
Communication Option	N/A	RS-485 Communication Interface

Your Technology Partner

Single SET
Digital Incubators Control

ESM-3721



- 4 Digit Display
- PTC input
- 3 Outputs
  * Heating Control Output
  * Egg Tray Turning Output
  * Alarm Control Output
- Temperature ON / OFF and PID Control Selectable
- Auto-Tune PID
- Set Value Boundaries
- Egg Tray manuel operation from front panel
- 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 Specifications

Input
PTC: PTC (1KOhm 25°C)

Output
Heating control: Relay (5A@250Vac "at resistive load") or
SSR Driver output (Maximum 20mA@12Vdc)
Alarm or humidification control: Relay (3A@250Vac "at resistive load")
Egg Tray turning engine control: Relay (3A@250Vac "at resistive load")

Measuring range
0°C...100°C
Accuracy: ±1% of scale
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Control form: ON/OFF, PID

Supply Voltage
230Vac (±%15) 50/60Hz -1,5VA
115Vac (±%15) 50/60Hz -1,5VA
24Vac (±%15) 50/60Hz -1,5VA
10...30Vdc -1,5VA

Environmental conditions and physical properties
Working temperature: 0...50°C
Humidity: %0-90 RH (non-condensing)

Dimensions: 76 x 34.5 mm, Depth: 71 mm

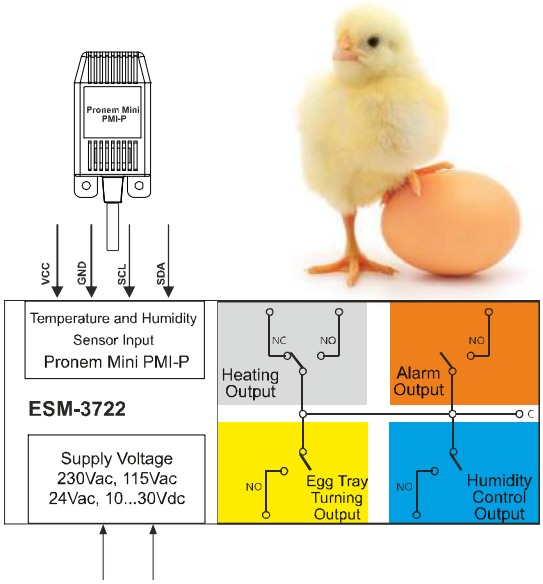
EMKO
Your Technology Partner

Dual SET
Digital Incubators Control

ESM-3722

CE EAC

- 4 Digit Temperature and 4 Digit Humidity Display
- Pronem PMI-P Temperature Sensor Input
- Pronem Mini PMI-P Humidity Sensor Input
- 4 Output
  * Temperature Control Output * Egg Tray Turning Output
  * Humidity Control Output * Alarm Control Output
- PID or ON / OFF Selectable Temperature Control
- Auto-Tune PID
- Temperature and Humidity Set Value Boundaries
- Egg Tray manuel operation from front panel
- 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 Specifications

Input
Pronem Mini PMI-P Temperature + Humidity Sensor

Output
Heating control: Relay (5A@250Vac "at resistive load") or
SSR Driver output (Maximum 20mA@12Vdc)
Alarm control: Relay (3A@250Vac "at resistive load")
Humidity control: Relay (3A@250Vac "at resistive load")
Egg Tray turning engine control: Relay (3A@250Vac "at resistive load")

Measuring range
0°C...100°C
Accuracy: ±1% of scale
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Control form: ON/OFF, PID

Supply Voltage
230Vac (±%15) 50/60Hz -1,5VA
115Vac (±%15) 50/60Hz -1,5VA
24Vac (±%15) 50/60Hz -1,5VA
10...30Vdc -1,5VA

Environmental conditions and physical properties
Working temperature: 0...50°C
Humidity: %0-90 RH (non-condensing)

Dimensions: 76 x 34.5 mm, Depth: 71 mm

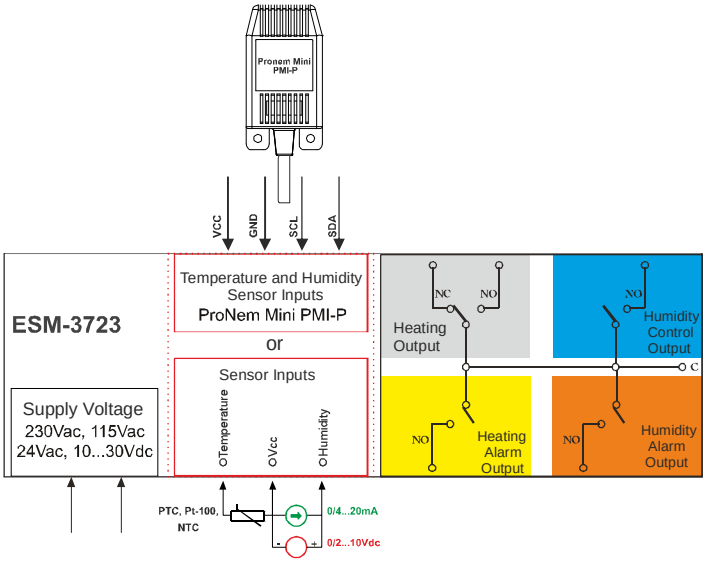
EMKO

Your Technology Partner

Dual SET
PID Process Control

ESM-3723

- 4 Digit Temperature and 4 Digit Humidity Display
- Temperature Sensor Input
  (NTC, PTC, PT-100 or ProHumidity Mini PMI-D)
  (It must be determined in order.)
- Humidity Sensor Input
  (0/2..10V, 0/4..20mA or ProHumidity Mini PMI-D)
  (It must be determined in order.)
- 4 Output
  Heating Control Output
  Heating Alarm Output
  Humidity Control Output
  Humidity Alarm Output
- PID or ON / OFF Selectable Temperature Control
- Auto-Tune PID
- 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 Specifications

Input

Pronem Mini PMI-P Temperature + Humidity Sensor
Temperature Input: PTC (1KOhm @25°C), NTC (10KOhm @25°C), Pt-100
Humidity Control Input: 0/4...20mAdc, 0/2...10Vdc

Output

Heating Control: Relay (5A@250Vac "at resistive load") or
SSR Driver Output (Maximum 20mA@12Vdc)
Temperature Alarm Control: Relay (3A@250Vac "at resistive load")
Humidity Control: Relay (3A@250Vac "at resistive load")
Humidity Alarm Control: Relay (3A@250Vac "at resistive load")

Measuring range

0°C...100°C (PTC, NTC, Pt-100),
-50°C...400°C (Pt-100),
-20°...80°C (Pronem Mini PMI-P)
Accuracy: ±1% of scale
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Control form: ON/OFF, PID

Supply Voltage

230Vac (±%15) 50/60Hz -1,5VA
115Vac (±%15) 50/60Hz -1,5VA
24Vac (±%15) 50/60Hz -1,5VA
10...30Vdc -1,5VA

Environmental conditions and physical properties

Working temperature: 0...50°C
Humidity: %0-90 RH (non-condensing)

Dimensions: 76 x 34.5 mm, Depth: 71 mm

EMKO
Your Technology Partner

Cooking Controllers

ESM-9944
ESM-9945

With Buzzer

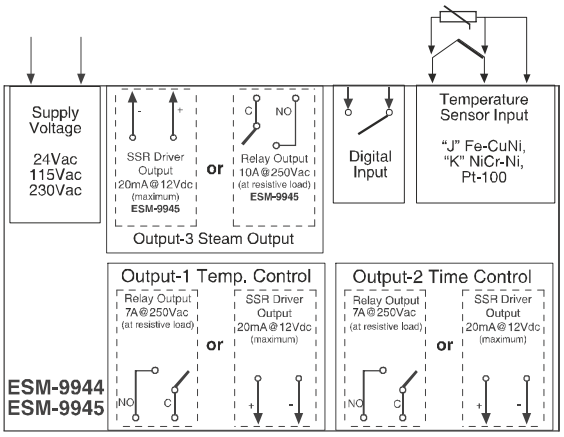
INPUT X1 | OUT PUT X3 | 96x96

CE EAC

- J type thermocouple, K type thermocouple, Pt-100 2-wire or 3-wire temperature input.
- On/Off or Proportional control form selection,
- Working time selection in minutes or seconds,
- Hysteresis adjustment,
- Audible alarm by internal buzzer,
- Door switch input,
- Steam output (ESM-9945)

Applications:

- Bakery Applications
- Fermentation Cabinets
- Ceramics and Glass ovens
- Grain drier cabinet
- Industrial frier



Specifications

Input
Thermocouple (TC): J, K (IEC 584.1) (ITS90)
Thermoresistance (RTD): 2 or 3 wire PT 100 (IEC 751) (ITS90)

Output
Temperature Control Output:
Relay (7A@250Vac @ resistive load) or optional
SSR Driver Output (Maximum 20mA @12Vdc)
Time Output:
Relay (7A@250Vac @ resistive load) or optional
SSR Driver Output (Maximum 20mA @12Vdc)
Steam Output(ESM-9945):
Relay (7A@250Vac @ resistive load) or optional
SSR Driver Output (Maximum 20mA @12Vdc)

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

Supply Voltage
230 Vac (±15%) 50/60 Hz - 3VA ,
115 Vac (±15%) 50/60 Hz - 3VA ,
24 Vac (±15%) 50/60 Hz - 3VA

Dimensions
ESM-9944, 96x96 mm, Depth:96 mm
ESM-9945, 96x96 mm, Depth:96 mm

EMKO

Your Technology Partner

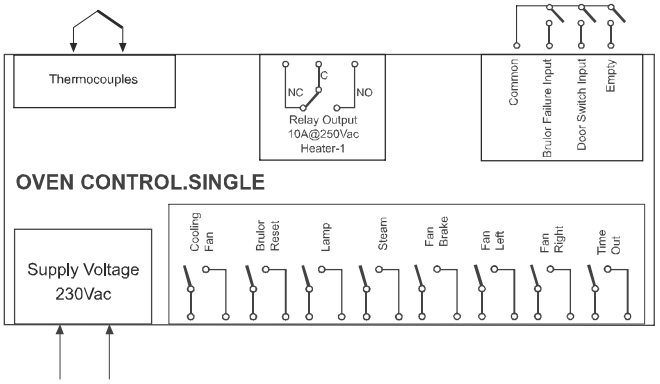
Oven Controller

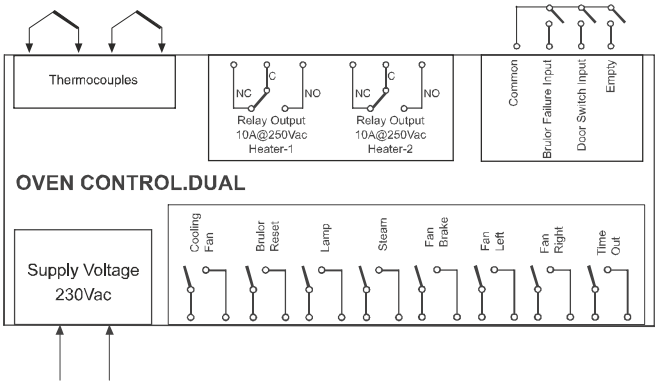
OVEN CONTROL.SINGLE
OVEN CONTROL.DUAL

With Buzzer

CE EAC

- 4 displays which has 3 digits and 2 diplays which has 4 digits (For clock)
- 2 isolated thermocupl input - J or K (It must be determined in order)
- Relay outputs to control 2 Heaters(no/nc), 4 Fans, Brulor, Steam,Lamp and Time-Out
- 1 door status input and 1 brulor failure input
- ON / OFF temperature control for 2 areas
- Limitation of set value
- For failure and set status internal buzzer
- 8 buttons to making different programs
- Selection of operation with hysteresis
- Adjustable temperature offset
- Auto-start feature with real time
- Password protection for programming mode





Specifications

Input

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

Output

Temperature Control Output :
Relay 10A@250Vac at resistive load) for heating
Control Output :
Relay (8A@250Vac at resistive load)
for Fan, Steam, Lamb, Time, Cooling

Measurement Range

Accuracy: ± 1% of full scale
Cold Junction Compensation: Automatically ±0.1°C/1°C
Sampling Cycle: 3 samples per second

Supply Voltage

230 Vac (±15%) 50/60 Hz

Dimension : 300x140mm

Environmental Ratings and Physical Specification

Operating Temperature: 0...50 °C
Humidity: 0-90%RH (none condensing)

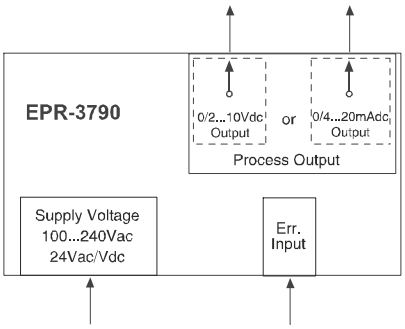
EMKO
Your Technology Partner

Digital Power Regulator

EPR-3790

CE EAC

- 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
- Error Input
- 0/2...10Vdc Voltage output or
  0/4...20mAdc Current output
  (It must be determined in order.)
- Password protection for programming and adjustment sections



Specifications

Input
Digital Input :Error Input (maks. 3mA@30Vdc)
Resolution : 12 bit
Fluctuation : Maks. 30mV
Scale : Configurable between -1999 and 9999

Output
Analogue Output:
0/2...10Vdc Voltage Output (Max. 10mA) or
0/4...20mAdc Current Output

Supply Voltage
100...240Vac (+15%; -10%) 50/60 Hz -2VA
24Vac/dc (+15%; -10%) 50/60 Hz -2VA
(It must be determined in order)

Environmental Ratings and Physical Specification
Operating Temperature: 0...50°C
Humidity : 0-90%RH (non condensing)
Protection Class: IP65 at Front, IP20 at rear

Dimension
EPR-3790 : 77x35mm, Depth:62.5mm

Your Technology Partner

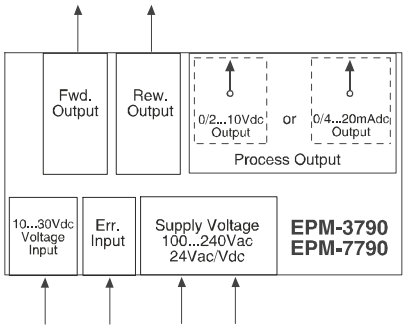
Digital Potentiometer for Motor Speed Control Drivers

EPM-3790
EPM-7790

INPUT X2 | OUTPUT X3 | 77x35 | 72x72

CE EAC

- Operation at Adjustable Set Value
- Ramp Function
- Economical
- Easy to Use
- 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
- Forward, Reverse direction outputs and error input for V/F Speed Controller
- 0/2...10Vdc Voltage output or 0/4...20mAdc Current output
  (It must be determined in order.)
- Password protection for programming and adjustment sections



Specifications

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

Output
Analogue Output:
0/2...10Vdc Voltage Output (Max. 10mA) or
0/4...20mAdc Current Output
Digital Outputs:
Forward Output (Max. 5mA@30Vdc)
Reverse Output (Max. 5mA@30Vdc)

Supply Voltage
100...240Vac (+15%; -10%) 50/60 Hz -2VA
24Vac/dc (+15%; -10%) 50/60 Hz -2VA
(It must be determined in order)

Dimensions
EPM-3790, 77x35 mm, Depth : 62.5 mm
EPM-7790, 72x72 mm, Depth : 95.5 mm

EMKO

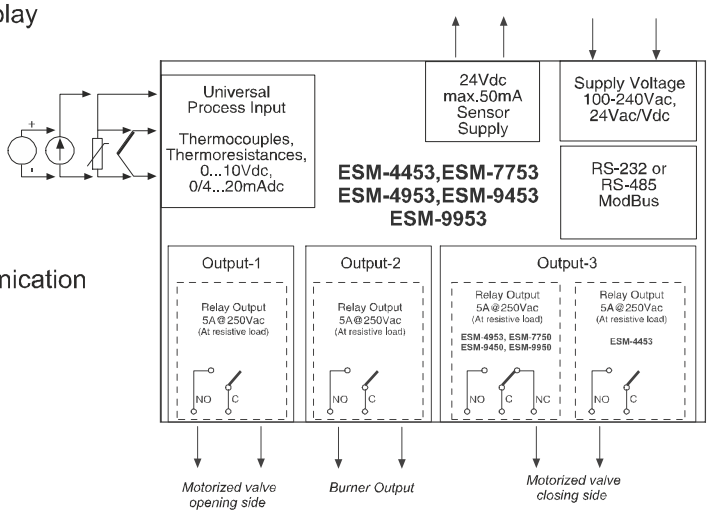
Your Technology Partner

Burner Controller

ESM-4453 ESM-9453
ESM-7753 ESM-9953
ESM-4953

CE EAC

- Universal Input PID Burner Controller
- 4 digits display (PV) and 4 digits process set (SV) display
- Universal process İnput (TC, RTD, mV, V, mA)
- Configurable P, PI, PD and PID
- 3 relay outputs
- Auto-tune
- Motorised valve control function
- RS-232 (standard) or RS-485 (optional) serial communication with modbus RTU protocol
- Set value the upper limit and lower limit boundaries
- Easy to use
- Password protection for programming section



Specifications

Input
Universal input, TC, RTD, ñVoltage/Current
Thermocouple (TC) : L(DIN 43710) ,J , K , R , S , T , B and E
Thermoresistance (RTD): PT-100 (IEC751)(ITS90)
ñ Input : mV, V, mA

Output
Relay (5A@250Vac "at resistive load")
Standard Relay Output : 5A@250Vï (Motorized Valve Closing Side Out)
(Electrical Life : 100.000 Operation (Full Load))

Output Modules
-Module 1 : Motorized Valve Openning Side Out (Relay Output)
-Module 2 : Burner Out (Relay Output)3A@250Vï (at Resistive Load)

Measuring range
- Universal
- Accuracy: ± 0,25% of full scale for thermocouple, thermoresistance and voltage

Supply Voltage
230Vac (±%15) 50/60Hz -1,5VA

Environmental conditions and physical properties
Working temperature: 0...50°C
Humidity: %0-90 RH (non-condensing)

Dimensions:48x48mm Depth:86,5 mm
72x72mm Depth:86,5 mm
48x96mm Depth:86,5 mm
96x48mm Depth:86,5 mm
96x96mm Depth:86,5 mm

Your Technology Partner

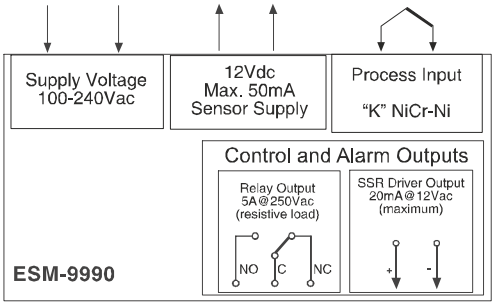
Heat Treatment Controller

ESM-9990

- 4 digits Process and 4 digits Process Set
- Process input (TC K type -200 to 1300 °C)
- ON/OFF control forms
- Heating function for control outputs
- 4 steps profile control (Ramp & Soak function and Start-Pause-Stop)
- Power off Back-up

Applications:

- Glass Industry
- Plastic Industry
- Petrochemical Industry
- Automative Industry
- Textile Industry
- Machine Manufacturing



Specifications

Input

Thermocouple (TC): K type (-200 to 1300 °C)
(IEC 584.1) (ITS90)

Output

Standard Relay Output: 5A@250Vac (at resistive load)
(It can be configured as control or alarm output)
Output Modules: SSR output module (max.20mA@18Vdc)

Measurement Range

Accuracy: + 0.25% of full scale
Cold Junction Compensation: Automatically + 0.1°C/1°C
Line Compensation: Maximum 10 Ohm
Sensor Break Protection: Upscale
Sampling Cycle: 3 samples per second
Input Filter: 0.0 to 900.0 seconds

Supply Voltage

100 - 240 Vac 50/60Hz (-15%; +10%) -6VA Universal

Environmental Ratings and Physical Specification

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

Dimensions

ESM-9990, 96x96 mm, Depth: 87,5 mm

EMKO

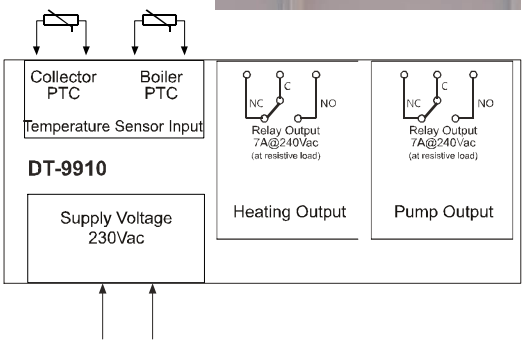
Your Technology Partner

Differential Controller for Solar Energy Applications

DT-9910

CE EAC

- Differential control device for Solar energy heating system
- 3 digit display
- PTC temperature sensors for collector and boiler water temperature
- Differential (Delta-T) control
- 2 relay outputs
- Set value the upper limit and lower limit boundaries
- Configurable hysteresis working
- Boiler water over temperature protection
- Collector water frost protection
- Easy to use
- Password protection for programming section



Technical Specifications

Input
PTC: PTC (1KOhm 25°C)

Output
Relay (7A@250Vac "at resistive load")

Measuring range
-50°C...150°C
Accuracy: ±1% of scale

Supply Voltage
230Vac (±%15) 50/60Hz -1,5VA

Environmental conditions and physical properties
Working temperature: 0...50°C
Humidity: %0-90 RH (non-condensing)

Dimensions:96x96mm Depth:84mm

Your Technology Partner

Poultry Automation Control

EPC-N

Easy Access to Control Process for:

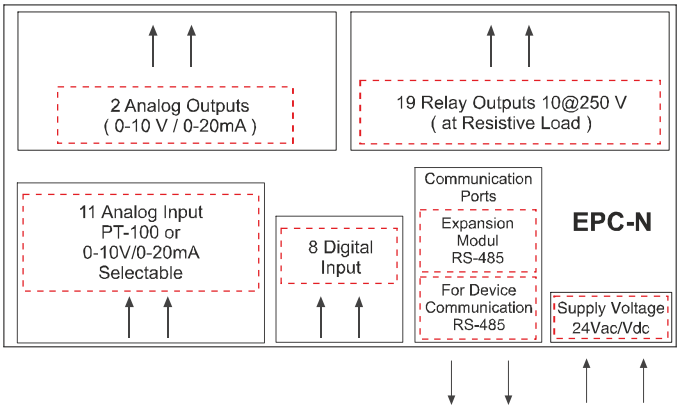
Layer; Egg production

Broiler; Chicken productions for excellent quality meat

Breeder; Mother and father growth for broiler and layer

Control and Measurements:
- Heating
- Cooling
- Ventilation
- Humidity
- CO2 and ammonia
- Feeding
- Lighting
- Weight measurement
- Consumption calculation
- Age curve

Analog Input Functions:
- Poultry Internal Temperature Sensor
- Static Pressure
- Humidity
- CO2
- NH3
- Shutters Feedback
- Ambient Temperature Sensor
- Feed the measurement sensor



Relay Functions:
-Fan
-Heater
-Cooler
-Opening Cooling the Shutter
-Closing Cooling Shutters
-Opening Shutters
-Closing Shutters
-Lighting
-Feeding
-Watering
-Alarms
-Humidity

Modular Structure:
-HMI
-The main control board
-11 units Analog Input
-8 units Digital Inputs
-19 units Relay Output
-2 units Analog Output

Expansion control card :
-Expansion control card (Max. 4 units)
-11 units Analog Input
-8 units Digital Inputs
-19 units Relay Output
-2 units Analog Output
-Weight Measurement Module
-6 units 0 .10 V / 0 .. 20mA
-LoadCell Input

Digital Input Functions:
-Power failure
-Electricity Consumption
-Water Consumption
-Feed Consumption
-Reverse Pressure
-External Alarm

Analog Output Functions:
-Lighting
-Fan
-Heating

Broiler
Chicken productions for excellent quality meat

Layer
Egg production

Breeder
Mother and father growth for broiler and layer

EMKO

Your Technology Partner

Technical Specifications

EPLC-96

CE EAC

- We do the PLC programming for you,
- PLC + HMI in one unit,
- Data logging by USB memory and PC software,
- Network communication by Ethernet,
- Serial communication by RS-232 or RS-485,
- Standard ModBus RTU communication protocol,
- Networking between multiple devices with Master/Slave option,
- Custom design front panel overlay, buttons and screen views,
- 96x96 mm panel mounting type,
- Easy adaptation to different applications by selectable I/O modules,
- 6 input and 7 output modules to select for customizing the device,
- Remote programming via Ethernet,
- Communicates with external HMI panels,
- Customizing for different applications,

CHANNEL 8
8 Channel Scanner

PID Quadro
4 Zone PID Controller

Confreez
Chiller Controller

turnstile
Spooling Machine Controller

USB

Data logging by USB 2.0,
Logging selected process values,
Logging in determined sample periods.

ModBus

RS-485 serial network,
Networking between multiple devices by RS-485 serial communication.

ModBus

RS-232 standard ModBus RTU serial communication,
Visualizing and programming from PC software.

ETHERNET

Remote Management via Ethernet,
ModBus Over TCP-IP protocol,
Static and Dynamic IP,
Remote management via Internet, Intranet or Local Network,
Can be integrated to different SCADA softwares.

CANBus

Expandable via CanBus,
Additional I/O expansion modules can be connected to the device in order to increase the number of the I/O 's on the device.

Application Specific Industrial PLC's

Unlimited Applications for Machinery Manufacturers

EPLC-96

Outputs

T type Output Module,
- 11 x Insulated PNP (source) transistor outputs
- 2 x PWM Outputs

U type Output Module,
- 11 x Insulated PNP (source) transistor outputs
- 2 x PWM Outputs
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

V type Output Module,
- 11 x Insulated PNP (source) transistor outputs
- 2 x PWM Outputs
- 2 x 0-10Vdc or 0-20mAdc Analogue Outputs

W type Output Module,
- 2x5 NO Relay Outputs (Common connection)

X type Output Module,
- 2x5 NO Relay Outputs (Common connection)
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

Y type Output Module,
- 6 x NO Relay Outputs

Z type Output Module,
- 5 x NO Relay Outputs
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

Inputs

A type Input Module,
- 12 x Insulated NPN/PNP selectable Digital Inputs
- 2 x Fast Counter Inputs

B type Input Module,
- 9 x Insulated NPN/PNP selectable Digital Inputs
- 2 x Fast Counter Inputs
- 1 x Universal Analogue Input

C type Input Module,
- 4 x Insulated NPN/PNP selectable Digital Inputs
- 1 x Fast Counter Input
- 4 x Insulated Thermocouple Inputs

E type Input Module,
- 4 x Insulated NPN/PNP selectable Digital Inputs
- 1 x Fast Counter Input
- 4 x Analogue Inputs selected by dip-switch

G type Input Module,
- 3 x Insulated NPN/PNP selectable Digital Inputs
- 1 x Fast Counter Input
- 8 x 2wire Pt-100 Inputs

H type Input Module,
- 3 x Insulated NPN/PNP selectable Digital Inputs
- 1 x Fast Counter Input
- 8 x Analogue Inputs selected by dip-switch

Specifications

Dimensions	: 96 x 96 x 87,5mm 1/4 DIN 43700 panel montage type, 92 x92mm panel cut-out
Protection class	: NEMA 4X (front IP65, rear IP20)
Weight	: 400g.
Working temperature	: Between 0 to +50°C
Storing temperature	: Between -20°C to +70°C
Relative Humidity cond.	: max. 90% (non condensing)
Power consumptions	
for Input modules	: 5W (24Vdc, +/-%15)
for Output modules	: 2W (12 or 24Vdc), Additional 24W power consumption for each transistor output type
Analogue Inputs	: TC, RTD, Voltage/Current
Thermocouple Inputs	: L (DIN43710), J,K,R,S (IEC584.1, ITS90), C (ITS90) Pt-100 (IEC751, ITS90)
Vdc Voltage Inputs	: 0...50mVdc, 0...10Vdc
mAdc Current Inputs	: 0...20mAdc
Accuracy	: +/-0,25% of full scale for Thermocouple, Thermoresistance and Voltage measurement 0,70% of full scale for Current measurement
Cold junction compen.	: +/- 0,1°C/1°C automatic
Line compensation	: Max. 10 Ohms
Sensor break protec.	: Up to scale
Reading period	: 30ms (for each channel)
Reading period for Fast Counting input	: 30kHz single channel counter 20kHz double, encoder 30kHz frequency reading
Digital outputs	: Insulated transistor and relay outputs
Transistor outputs	: 500V insulated PNP, max. 1A@24Vdc
Relay outputs	: 3A@250Vac resistive at load (W & X type outputs) 5A@250Vac resistive at load (Y & Z type outputs)
Analogue outputs	: 0...20mAdc and/or 0...10Vdc (max. 10mA)
Communication ports	: 500V Insulated RS-485 (ModBus RTU) 1500V Insulated Ethernet (ModBus RTU)
Display	: 128x64 pixel graphic LCD

EPLC-96 (96x96 DIN Size)

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

A	**Supply Voltage**
1	100-240Vac (50/60Hz)
2	24Vac/dc 50/60Hz
E	**Optional Communications**
0	None
1	USB
2	RS485
3	Ethernet
4	Ethernet + USB
5	RS-485 + USB
FG	**Input Module**
A0	A type Input Module
B0	B type Input Module
C0	C type Input Module
E0	E type Input Module
G0	G type Input Module
H0	H type Input Module
HI	**Output Module**
T0	T type Output Module
U1	U type Output Module, (0-10Vdc)
U2	U type Output Module, (0-20mAdc)
V1	V type Output Module, (0-10Vdc)
V2	V type Output Module, (0-20mAdc)
V3	V type Output Module, (0-10Vdc + 0-20mAdc)
W0	W type Output Module
X1	X type Output Module, (0-10Vdc)
X2	X type Output Module, (0-20mAdc)
Y0	Y type Output Module
Z1	Z type Output Module, (0-10Vdc)
Z2	Z type Output Module, (0-20mAdc)

EMKO

Your Technology Partner

4 zone PID Controller & 8 Channel Scanner

EPLC-96

PIDQuadro
4 Zone PID Controller

4 x Universal thermocouple inputs, SET value for each zones, 2 x Relay or Transistor output for each zone, low, high alarms for each zones, optional analogue output for each zones, data logging by USB memory, network between multiple devices by RS-485 serial communication.

Applications:

Tunnel oven with convertor, Packing machines, Extruder, Textile RAM machine, Sterilization and Pasteurization applications, Steam control by Motorized valve.

CHANNEL 8
8 Channel Scanner

8 x Pt-100 inputs, different SET values for each channels, Relay or Transistor Alarm outputs for each channels, Low, High and Range alarms for each channels, Data logging by USB memory, Networking between multiple devices by RS-485 serial communication.

Applications:

Visualising temperature for 8 different zones, Data logging applications, HVAC, Heating/Cooling, Cold and Drying room automations.

CHANNEL 8A
8 Channel Scanner

8 x Analogue inputs, different SET values for each channels, Relay or Transistor Alarm outputs for each channels, Low, High and Range alarms for each channels, Data logging by USB memory Networking between multiple devices by RS-485 serial communication

Applications:

Visualising temperature for 8 different zones, Data logging applications, HVAC, Heating/Cooling, Cold and Drying room automations.

ISO 9000 Quality Management System Certificate


10332

KALİTE YÖNETİM SİSTEMİ BELGESİ
QUALITY MANAGEMENT SYSTEM CERTIFICATE

Partner of IQNet

TÜRK STANDARDLARI ENSTİTÜSÜ

TURKISH STANDARDS INSTITUTION

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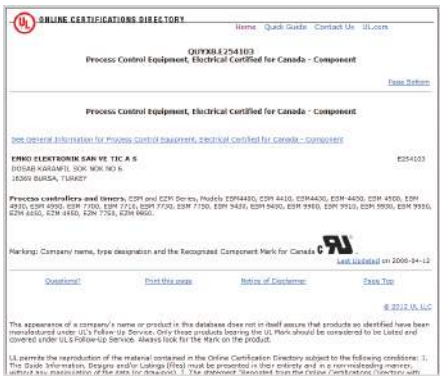
TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION

Underwriters Laboratory Certificate (UL)


ONLINE CERTIFICATIONS DIRECTORY

QUYX2.E254103
Process Control Equipment, Electrical - Component

Process Control Equipment, Electrical - Component


ONLINE CERTIFICATIONS DIRECTORY

QUYX8.E254103
Process Control Equipment, Electrical Certified for Canada - Component

Process Control Equipment, Electrical Certified for Canada - Component

K - Q
TSE-ISO-EN
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EAC Certificate


ТАМОЖЕННЫЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ


ТАМОЖЕННЫЙ СОЮЗ
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CE

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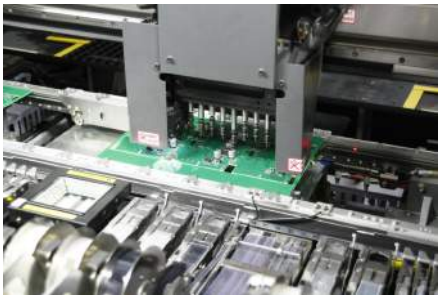
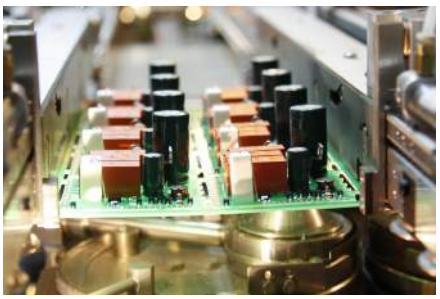
Company Information





EMKO ELEKTRONIK A.S. has been engaged in the desing, manufacture and marketing of Measurement and Control Instruments and Temperature Sensors, as well as in providing the relevant before and after sales technical service since 1986. Giving the most importance to the customer-oriented approach and to product functionality and quality, we have carried out the design and manufacture of programmable multi-function process-control instruments, counters, time-relays, thermocouples and thermoresistances, control and protection generating system; gen-set controls, automatic transfer switching, manual-keystarts.

Our product range and service meet the needs of the textile, food, plastic, glass, automotive, chemicals, iron and steel, cement, machinery production, energy and other sectors, with regard to the automation and process-control materials and services that they require. Thanks to the quality policy and procedures issued by the management of our company, which processes in the TS ISO EN9001 Quality System Certificate, complete customer satisfaction in the areas of design, production and service is quaranteed. The design and manufacture of control devices conformed to the directives covered by the CE brand by performing the EMI, ESD, EFT, PQF, Surge, LVD, Environmental Conditions tests on new product designs in the test laboratories on our factory premises.

The following design issues are experimented with in our company:

- Process measurement and control instruments which conform to industrial standards
- The measurement conversion and control of process parameters in such areas as temperature, pressure, weight, flow, level, speed, humidity, number, time, voltage and current etc.
- Temperature sensors, thermocouples and thermoresistances
- Control and protection generating systems; Gen-Set controls, Automatic Transfer Switchings, Manual-keystarts

Our "Customer Support Service" provides pleasant, cheerful and sincere approach to ensure that our customers select the most suitable products by providing satisfactory and correct technical information before the sale and if the orders are delivered correctly on time by keeping track of orders within the company. Also, guarantees customer satisfaction at all times, in all places and under all circumstances by supplying them with speedy and reliable information through our authorized dealer and service network.

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