Elimko E-48P Series Universal Advanced Digital Controllers User Guide

Contents

Elimko E-48P Series Universal Advanced Digital Controllers

Product Information

Specifications

- **Model:** KY-48P-1123-1
- **Input Types:** Thermocouple / miliVolt 0-20 mA / 4-20 mA, Resistance Thermometer 2-Wire Transmitter Volt
- **Dimensions:** 48×48 mm
- **Display Range:** -1999 to 9999
- **Analog Output:** mA or 0-10 V DC
- **Operating Voltage:** 85-265 V AC / 85-375 V DC
- **Compliance:** Low Voltage Directive EN 61010-1, EMC Directive EN 61326-1

FAQ

- **Q:** What are the dimensions of the E-48P controller?
  - **A:** The dimensions of the E-48P controller are 48×48 mm.
- **Q:** What is the operating voltage range for the E-48P controller?
  - **A:** The operating voltage range for the E-48P controller is 85-265 V AC / 85-375 V DC.
- **Q:** Can I clean the controller with alcohol or solvents?
  - **A:** No, do not use alcohol or other solvents to clean the controller. Use a clean cloth soaked in water tightly squeezed to gently wipe the outer surface of the controller.

Product Usage Instructions

Installation

- The E-48P controller is designed for panel mounting and should be used in an industrial environment. Before installing and operating the controller, please read the user manual thoroughly.
- The installation and configuration of the controller must only be performed by a person qualified in instrumentation.
- Keep the unit away from flammable gases that could cause an explosion.

Cleaning

- Do not use alcohol or other solvents to clean the controller.
- Use a clean cloth soaked in water tightly squeezed to gently wipe the outer surface of the controller.

Limitations

- The E-48P controller is not to be used in medical applications.

EU Directive Compliance

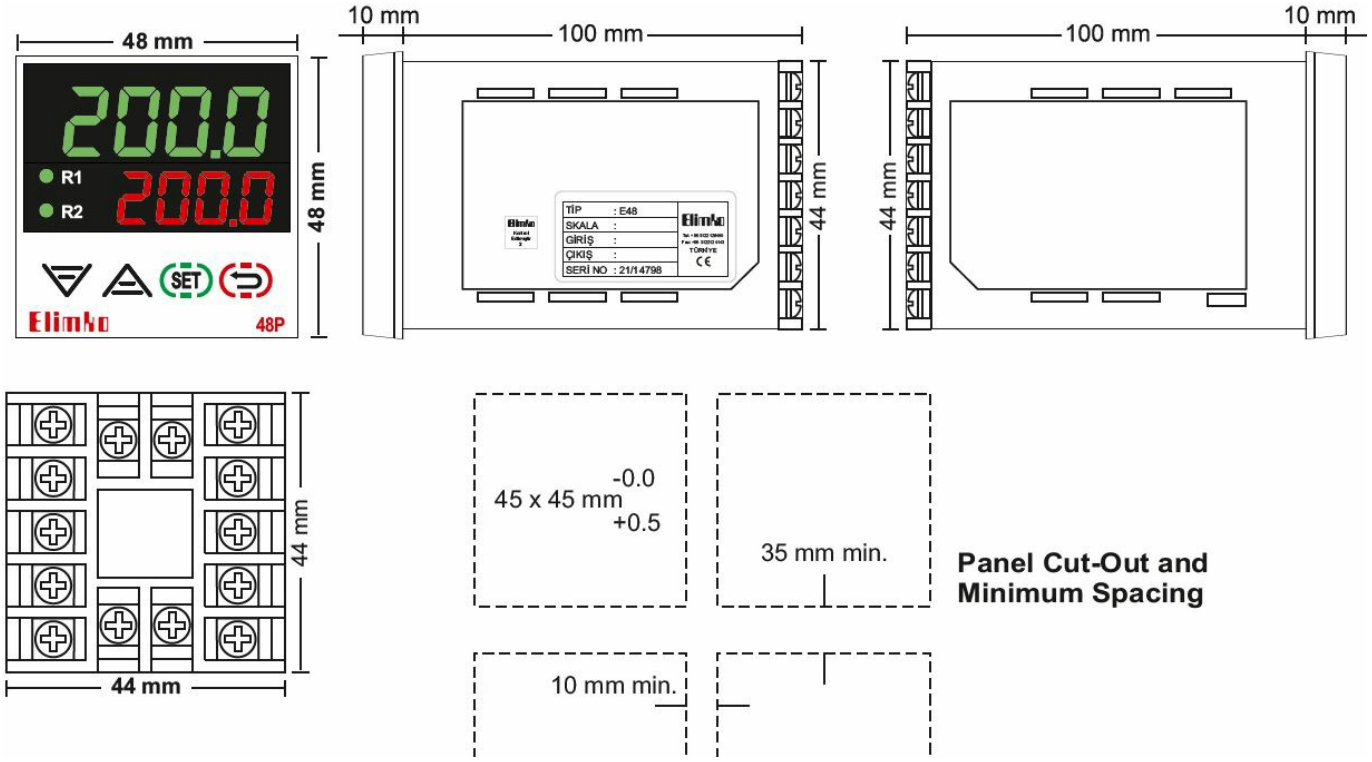
The E-48P controller complies with the following EU directives:

- Low Voltage Directive EN 61010-1
- EMC Directive EN 61326-1

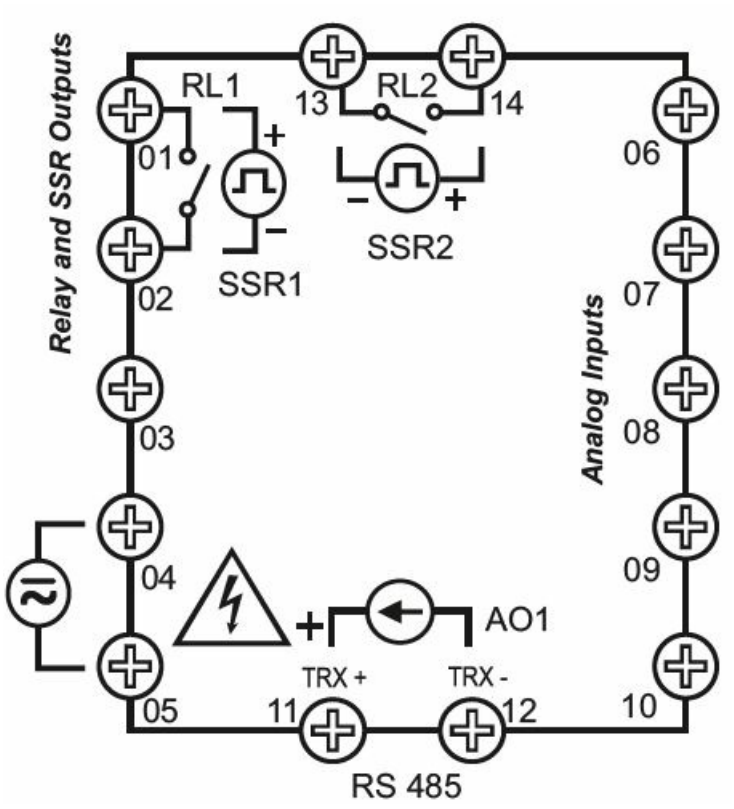
DESCRIPTION

- E-48P Series universal process controllers are industrial devices at 48×48 mm IEC/TR 60668 dimensions designed using new generation microcontrollers with on/off, PID and other control forms, where inputs and outputs can be easily programmed by0 the user.
- In E-48P Series controllers, the set value and measured value can be displayed from -1999 to 9999 on two 4-digit displays; general purpose inputs (T/C, R/T, mV, mA) can be programmed.

DIMENSIONS and PANEL CUT-OUT



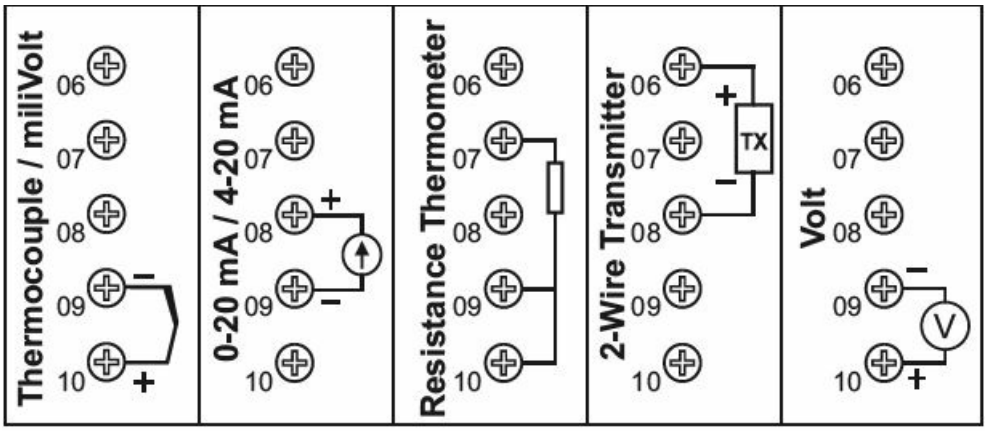
CONNECTION DIAGRAM



Warning: Operating voltage suitable for the device type shall be applied.

- 1st and 2nd control outputs can be selected as either Relay (RL1, RL2) or SSR (SSR1, SSR2).
- Only one of analog output (AO1) and RS-485 can be selected.
- Analog output (AO1) mA or 0-10 V DC can be selected.

Analog Input



PRECAUTIONS

WARNINGS

E-48P controller is designed for panel mounting and should be used in an industrial environment.

- The package of E-48P controller contains; Controller, 2 pieces of mounting clamps, User manual and Guarantee certificate.
- After opening the package, please check the contents with the above list. If the delivered product is wrong type, any item is missing or there are visible defects, contact the vendor from which you purchased the product.
- Before installing and operating the controller, please read the user manual thoroughly.
- The installation and configuration of the controller must only be performed by a person qualified in instrumentation.
- Keep the unit away from flamable gases, that could cause explosion.
- Do not use alcohol or other solvents to clean the controller. Use a clean cloth soaked in water tightly squeezed to gently wipe the outer surface of the controller.
- It is not used in medical applications.

EU DIRECTIVE COMPLIANCE

K - Q
TSE-ISO-EN
9000

TS EN ISO 9001
Quality Management System Certificate

- Low Voltage Directive EN 61010-1
- EMC Directive EN 61326-1

TYPE CODING

E-48P Series Universal Advanced Controller		E-48P - W - X - Y - Z
Relay Outputs		
	None	0
	1 relay (RL1)	1
	2 relays (RL1, RL2)	2
	Reserved	3
	1 SSR (SSR1)	4
	1 SSR (SSR1) + 1 relay (RL2)	5
	Reserved	6
	2 SSR (SSR1, SSR2)	7
	Reserved	8
Analog Outputs *		
	None	0
	0-20 / 4-20 mA (AO1)	1
	0-10 V DC (AO1)	2
Communication		
	None	0
	RS-485 **	1
Operating Voltage		
	85-265 V AC / 85-375 V DC	0
	20-60 V AC / 20-60 V DC	1

- Only one of the analog output and RS-485 options can be coded. For example, only one of the options (X) and (Y) can be coded as 1.
- When E-48P Series controllers are ordered with communication, the E-IB-11 USB-RS485 converter can be used for PC connection. There are various control and monitoring software provided by Elimko.

TECHNICAL SPECIFICATIONS

Parameter	Description
Control Type	On/Off, PID, Heat/Cool, Floating and Feedback Control of Valves
Operating Voltage	20..60 V AC / 20..60 V DC or 85..265 V AC / 85..375 V DC
Relays / SSR	2 pieces SPST – NO 250 V AC 5A relays or 24 V DC 25 mA (SSR) drives
Dimensions (mm)	48 (Lenght) x 48 (Height) x 100 (Width)
Panel Cut-Out (mm)	45 (Lenght) x 45 (Height)
Analog Output	1 x 0..20 / 4..20 mA or 0..10 V DC optional
Analog Input	Universal **(Note 1),**
Communication (RS-485)	Available (RS-485)
Digital Input	None
Valve Feedback	None
Transmitter Supply	Available
Weight	115 g
Power Consumption	Max. 7 W (10 VA)
Operating Temperature	– 10 °C … 55 °C
Storage Temperature	– 25 °C … 65 °C
Memory	Maks. 100.000 write
Protection Class	IP-65 Front Panel, IP-20 Rear Case

Notes

- (1) Universal Input:
  - **Thermocouple:** B, E, J, K, L, N, R, S, T, U
  - **Resistance Thermometer:** Pt-100
  - **Current:** 0-20 mA, 4-20 mA (Linear)
  - **Voltage:** 0-50 mV, 0-1 V, 0.2- 1 V (Linear),
    - 0-10 V DC, must be specified in the order.
  - **Resolution:** 16 bit
  - **Accuracy:** Thermocouple, Max. ±1.0 °C (Conversion and CJC error)
    - Resistance Thermometer, Max. ±0.5 °C

- (Conversion and wire resistance compensation)
- Linear Input, Max. % 0.1

PARAMETER TABLE

		Description	Min	Maks	Unit
INPUT SETTINGS	InP 1	Analog Input 1 Type	Table 1		
	dP	Decimal Point	0	3	
	SCLo	Analog Input 1 Linear Scale Lower Value	-199.9	999.9	EU
	SCH 1	Analog Input 1 Linear Scale Upper Value	-199.9	999.9	EU
	Un It	Temperature Unit	°C	°F	
	oFSt	Analog Input 1 Offset Value	-100.0	100.0	EU
	FLtr	Analog Input 1 Filter	1	15	s
	Snbr	Analog Input 1 Sensor Broken Behaviour	Lo	HI	
	AdrS	Modbus Adress	1	127	
	bAUd	Modbus Baud Rate [4.8, 9.6, 19.2, 38.4 kbaud]	4.8	38.4	
	PrtY	Modbus Parity [nonE, odd, EuEn]			

CONTROL SET SETTINGS	SPSr	Control Set Point Source	Table 2		
	SPLL	Control Set Point Lower Limit	-199.9	SPHL	EU
	SPHL	Control Set Point Upper Limit	SPLL	999.9	EU
	SPrr	Control Set Point Ramping Rate	oFF	60.0	EU/min
	S- 1	1. Step Set Value	SPLL	SPHL	EU
	t- 1	1. Step Time	oFF	999.9	min
	S-2	2. Step Set Value	SPLL	SPHL	EU
	t-2	2. Step Time	oFF	999.9	min
	S-3	3. Step Set Value	SPLL	SPHL	EU
	t-3	3. Step Time	oFF	999.9	min

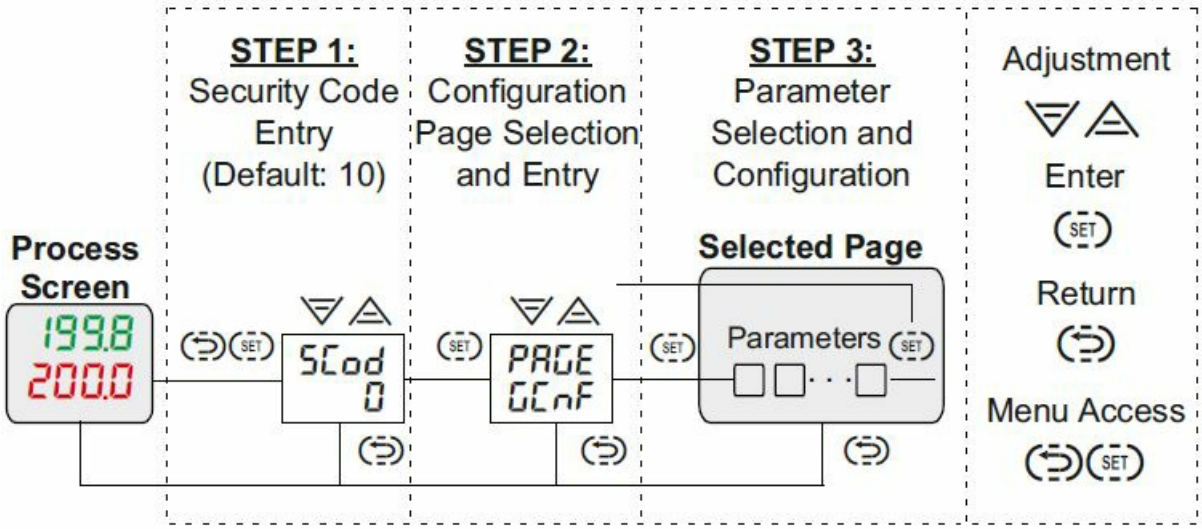
ALARM SETTINGS	A1tP	Alarm 1 Type	Table 3		
	A 1SP	Alarm 1 Set Point	-199.9	999.9	EU
	A 1HY	Alarm 1 Hysteresis	0.0	999.9	EU
	A 1Lt	Alarm 1 Lock	dSb	Enb	
	A2tP	Alarm 2 Type	Table 3		
	A2SP	Alarm 2 Set Point	-199.9	999.9	EU
	A2HY	Alarm 2 Hysteresis	0.0	999.9	EU
	A2Lt	Alarm 2 Lock	dSb	Enb	

OUTPUTS	oCnF	CtYP	Control Type	Table 4		
		CFrn	Control Form [d Ir, rEu]	d Ir	rEu	
		CPrd	Control Period	1	250	s
		nnPr	Manual Mode Selection	dSb	Enb	
		trtn	Floating Control Valve Travel Time	10	2500	s
		dbnd	Dead Band	0.1	25.0	%
		oLL	Control Output Lower Limit	0.0	oHL	%
		oHL	Control Output Upper Limit	oLL	100.0	%
		onr	Control Output Manual Reset	oLL	oHL	%
		PonC	PID Power On Behaviour	0	4	
		trLL	Retransmission Scale Lower Value	-199.9	trHL	EU
		trHL	Retransmission Scale Upper Value	trLL	999.9	EU
		rL 1d	Relay 1 Function	Table 5		
		rL2d	Relay 2 Function	Table 5		
		Ro 1d	Analog Output 1 Function	Table 6		
		Ro Ir	Analog Output 1 Type	Table 7.1 ve Table 7.2		

PID SETTINGS	tUnE	At	PID Auto Tune	oFF	on	
		P 1d	PID Parameter Type	Std	Rdu	
		Pb- 1	Proportional Band +	0.1	999.9	EU
		Pb-2	Proportional Band -	0.1	999.9	EU
		itH	Integral Time +	oFF	9999	s
		itC	Integral Time -	oFF	9999	s
		dtH	Derivative Time +	oFF	2500	s
		dtC	Derivative Time -	oFF	2500	s
		HYS	Hysteresis	0.0	999.9	EU

SECURITY	PrtC	SCod	Security Code	0	9999	
		dPrL	Parameter Access Level	0	9	
		APrL	Parameter Setting Level	0	9	
		FCSt	Factory Settings [oFF, LoAd, SAuE, dFLt]			

ACCESSING PARAMETERS



APPLICATION EXAMPLES

1. **Input:** Pt-100 Relay / Alarm1: 50 °C Low, Relay2 / Alarm2: 55 °C High AO1: 4-20 mA PID Control Output

InP 1	A 1tP	A 1SP	A2tP	A2SP	CtYP	rL 1d	rL2d	Ao 1d	Ao 1r
Pt	Lo	50.0	H 1	55.0	SCo	AL - 1	AL -2	Co - 1	4-20

2. **Input:** TC Type J, Relay1: On-Off Control Output, Relay2 / Alarm2: 350 °C High

InP 1	A2tP	A2SP	CtYP	rL 1d	rL2d
J	H 1	350.0	SCo	do - 1	AL -2

3. **Input:** TC Type K, Profile Control (Ramp up to 400°C in 10 minutes and wait for 60 minutes), Relay1: PID Control Output, AO1: Retransmission Output (4-20 mA, 0-1200 °C)

InP 1	SPSr	S - 1	t - 1	S -2	t -2	CtYP	trLL	trHL	rL 1d	rL2d	Ao 1d	Ao 1r
F	PrFL	400	10.0	400	60.0	SCo	0	1200	Co - 1	AL -2	Putr	4-20

Table 1. Input Type Options

Table 1. Input Type Options	
b	Type B Thermocouple
E	Type E Thermocouple
J	Type J Thermocouple
F	Type K Thermocouple
L	Type L Thermocouple
n	Type N Thermocouple
r	Type R Thermocouple
S	Type S Thermocouple
t	Type T Thermocouple
U	Type U Thermocouple
Pt	Pt-100
0-20	0-20 mA
4-20	4-20 mA
0-50	0-50 mV
0.0- 1	0-1 V
0.2- 1	0.2-1 V
0- 10	0-10 V (*)
2- 10	2-10 V (*)

- (*) Custom specified volt input

Table 2. Control Set Options

Table 2. Control Set Options	
Int	Internal adjustment with keys
PrFL	With Profile Control

Table 3. Alarm Options

Table 3. Alarm Options	
oFF	Off
Lo	Low Alarm
HI	High Alarm
Lod	Low Deviation
HId	High Deviation
Lob	Band Alarm (In)
HIb	Band Alarm (Out)

Table 4. Control Type Options

Table 4. Control Type Options	
oFF	No Control
SCo	Single (Heat)
dCo	Double (Heat/Cool)
bnd	Floating Control of Valve

Table 5. Relay Output Options

Tablo 5. Relay Output Options	
Co-1	PID + (Heating)
Co-2	PID - (Cooling)
do-1	On-Off + (Heating)
do-2	On-Off - (Cooling)
AL-1	Alarm 1
AL-2	Alarm 2
AL-3	Alarm 3
AL-4	Alarm 4

Table 6. Analog Output Options

Table 6. Analog Output Options	
Co-1	PID + (Heating)
Co-2	PID - (Cooling)
Putr	Process Value
SPtr	Control Set Value

Table 7.1. Analog Output Range

Table 7.1. Analog Output Range	
0-20	0-20 mA
20-0	20-0 mA
4-20	4-20 mA
20-4	20-4 mA

Table 7.2. Analog Output Range

Table 7.2. Analog Output Range	
0- 10	0-10 V
10-0	10-0 V
2- 10	2-10 V
10-2	10-2 V

Scan

For detailed information, you can access the comprehensive user manual of the device under the heading “User Manuals” at www.elimko.com.tr.
You can also use the QR Code on the front for this.

Contact

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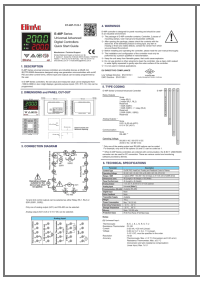
Documents / Resources

	Elimko E-48P Series Universal Advanced Digital Controllers [pdf] User Guide E-48P Series, E-48P Series Universal Advanced Digital Controllers, Universal Advanced Digital Controllers, Advanced Digital Controllers, Digital Controllers, Controllers

References

- Elimko - Otomatik Kontrol'da Güvenilir İsim
- User Manual