

E-48P Series Universal Advanced Digital Controllers Quick Start Guide

Manufacturer / Technical Support

Elimko Elektronik İmalat ve Kontrol Ltd. Şti.
8. Caddesi 21. Sokak No:16 Emek 06510 Ankara / TÜRKİYE
Telefon: + 90 312 212 64 50 Faks: + 90 312 212 41 43
www.elimko.com.tr • e-mail:elimko@elimko.com.tr

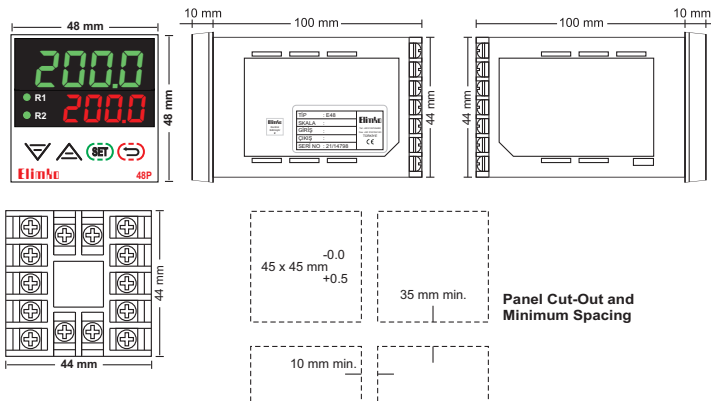


1. DESCRIPTION

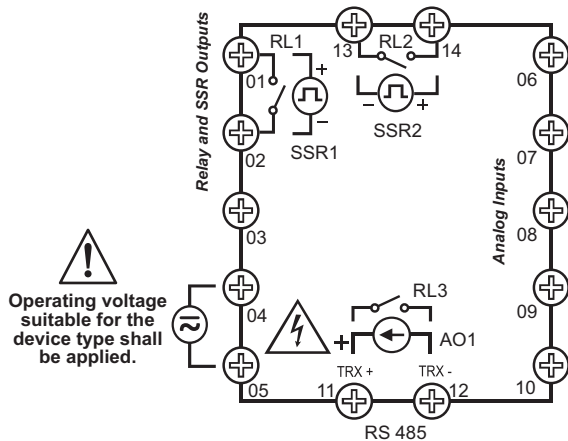
E-48P Series universal process controllers are industrial devices at 48x48 mm IEC/TR 60668 dimensions designed using new generation microcontrollers with on/off, PID and other control forms, where inputs and outputs can be easily programmed by the user.

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.

2. DIMENSIONS and PANEL CUT-OUT



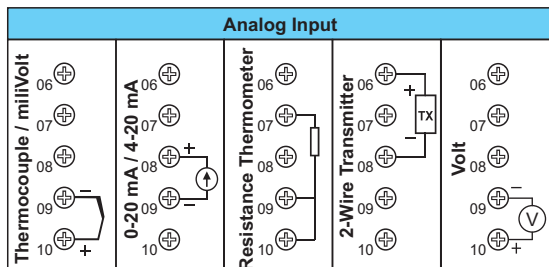
3. CONNECTION DIAGRAM



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.



4. 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 flammable 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

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



TS EN ISO 9001
Quality Management System Certificate

5. TYPE CODING

E-48 Series Universal Advanced Controller

E-48 - W - X - Y - Z

Relay Outputs

- None
- 1 relay (RL1)
- 2 relays (RL1, RL2)
- 3 relays (RL1, RL2, RL3)
- 1 SSR (SSR1)
- 1 SSR (SSR1) + 1 relay (RL2)
- 1 SSR (SSR1) + 2 relay (RL2, RL3)
- 2 SSR (SSR1, SSR2)
- 2 SSR (SSR1, SSR2) + 1 relay (RL3)

Analog Outputs *

- None
- 0-20 / 4-20 mA (AO1)
- 0-10 V DC (AO1)

Communication

- None
- RS-485 **

Operating Voltage

- 85-265 V AC / 85-375 V DC
- 20-60 V AC / 20-60 V DC

* Only one of the relay 3 output, Analogue output and RS485 Modbus options can be coded. For example, only one of the (X) and (Y) options can be coded as 1. Similarly, when the (W) option includes Relay 3 (W=3, 6 or 8) X and Y 1 cannot be selected.

** When E-48 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.

6. 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 (Length) x 48 (Height) x 100 (Width)
Panel Cut-Out (mm)	45 (Length) 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

7. PARAMETER TABLE

Description		Min	Maks	Unit
INPUT SETTINGS	SCnf			
	inP i	Table 1		
	dP	0	3	
	SLo	-199.9	999.9	EU
	SH i	-199.9	999.9	EU
	Un It	0C	0F	
	oF5t	-100.0	100.0	EU
	FLtr	1	15	s
	Snbr	Lo	Hi	
	RdS	1	127	
MODBUS SETTINGS	bRud	[48, 96, 192, 384 kbaud]		
	PrLy	[nonE, odd, EvEn]		

CONTROL SET SETTINGS	SP5r	Control Set Point Source	Table 2	
	SPLL	Control Set Point Lower Limit	-199.9	5PHL EU
	SPHL	Control Set Point Upper Limit	5PLL	999.9 EU
	SPrr	Control Set Point Ramping Rate	oFF	60.0 EU/min
	S- i	1. Step Set Value	5PLL	5PHL EU
	t- i	1. Step Time	oFF	999.9 min
	S-2	2. Step Set Value	5PLL	5PHL EU
	t-2	2. Step Time	oFF	999.9 min
	S-3	3. Step Set Value	5PLL	5PHL EU
	t-3	3. Step Time	oFF	999.9 min

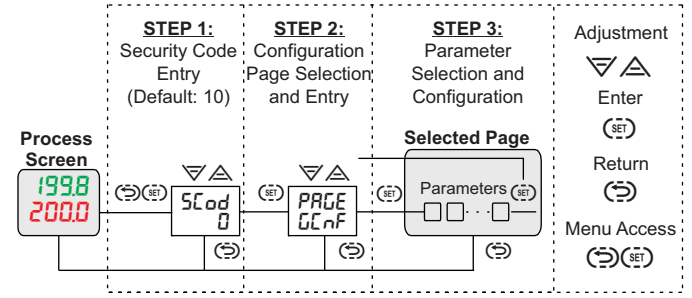
ALARM SETTINGS	R iLP	Alarm 1 Type	Table 3	
	R iSP	Alarm 1 Set Point	-199.9	999.9 EU
	R iHY	Alarm 1 Hysteresis	0.0	999.9 EU
	R iLt	Alarm 1 Lock	d5b	Enb
	R2LP	Alarm 2 Type	Table 3	
	R2SP	Alarm 2 Set Point	-199.9	999.9 EU
	R2HY	Alarm 2 Hysteresis	0.0	999.9 EU
	R2Lt	Alarm 2 Lock	d5b	Enb
	R3LP	Alarm 3 Type	Table 3	
	R3SP	Alarm 3 Set Point	-199.9	999.9 EU
ALARM SETTINGS	R3HY	Alarm 3 Hysteresis	0.0	999.9 EU
	R3Lt	Alarm 3 Lock	d5b	Enb

OUTPUTS	CLYP	Control Type	Table 4	
	CFrñ	Control Form [d Ir, rEu]	d Ir	rEu
	CPrd	Control Period	1	250 s
	ñnPr	Manual Mode Selection	d5b	Enb
	trtñ	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 %
	oñr	Control Output Manual Reset	oLL	oHL %
	PonC	PID Power On Behaviour	0	4
OUTPUTS	trLL	Retransmission Scale Lower Value	-199.9	trHL EU
	trHL	Retransmission Scale Upper Value	trLL	999.9 EU
	rL id	Relay 1 Function	Table 5	
	rL2d	Relay 2 Function	Table 5	
	rL3d	Relay 3 Function	Table 5	
	Ro id	Analog Output 1 Function	Table 6	
	Ro ir	Analog Output 1 Type	Table 7.1 ve Table 7.2	

PID SETTINGS	RLt	PID Auto Tune	oFF	on
	P id	PID Parameter Type	5td	Rdu
	Pb- i	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
	dItH	Derivative Time +	oFF	2500 s
	dItC	Derivative Time -	oFF	2500 s
	HY5	Hysteresis	0.0	999.9 EU

SECURITY	SCod	Security Code	0	9999
	dPrL	Parameter Access Level	0	9
	RP rL	Parameter Setting Level	0	9
	FC5t	Factory Settings [oFF, LoRd, SRuE, dFLt]		

8. ACCESSING PARAMETERS



9. APPLICATION EXAMPLES

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

inP i	R iLP	R iSP	R2LP	R2SP	CLYP	rL id	rL2d	Ro id	Ro ir
Pt	Lo	50.0	Hi	55.0	SCo	RL- i	RL-2	Co- i	4-20

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

inP i	R2LP	R2SP	CLYP	rL id	rL2d
J	Hi	350.0	SCo	do- i	RL-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 i	SP5r	S- i	t- i	S-2	t-2	CLYP	trLL	trHL	rL id	rL2d	Ro id	Ro ir
K	PrFL	400	10.0	400	60.0	SCo	0	1200	Co- i	RL-2	PuTr	4-20

Table 1. Input Type Options

b	Type B Thermocouple
E	Type E Thermocouple
J	Type J Thermocouple
K	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- i	0-1 V
0.2- i	0.2-1 V
0- i0	0-10 V (*)
2- i0	2-10 V (*)

(*) Custom specified volt input

Table 2. Control Set Options

InE	Internal adjustment with keys
PrFL	With Profile Control

Table 3. Alarm Options

oFF	Off
Lo	Low Alarm
Hi	High Alarm
Lo d	Low Deviation
Hi d	High Deviation
Lo b	Band Alarm (In)
Hi b	Band Alarm (Out)

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

Co- i	PID + (Heating)
Co-2	PID - (Cooling)
do- i	On-Off + (Heating)
do-2	On-Off - (Cooling)
RL- i	Alarm 1
RL-2	Alarm 2
RL-3	Alarm 3
RL-4	Alarm 4

Table 6. Analog Output Options

Co- i	PID + (Heating)
Co-2	PID - (Cooling)
PuTr	Process Value
SPTr	Control Set Value

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

0- i0	0-10 V
i0-0	10-0 V
2- i0	2-10 V
i0-2	10-2 V

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.