



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

Manufacturer / Technical Support

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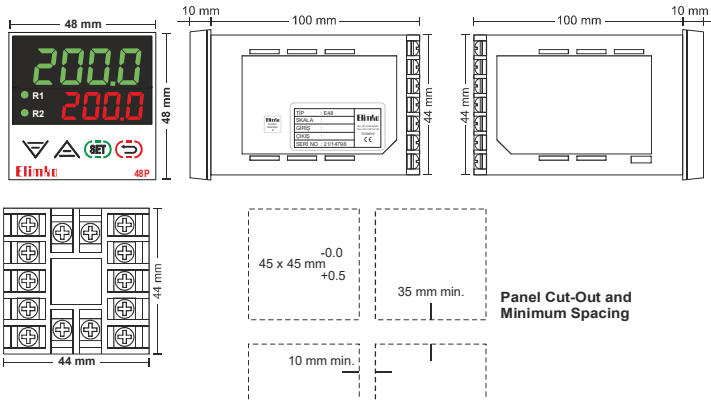


1. DESCRIPTION

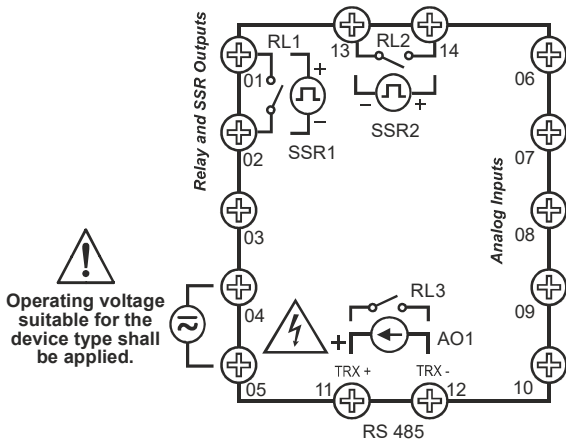
E-48P Series universal process controllers are industrial devices at 48x48 mm IEC/TR 60668 dimensions designed using new generation microcontrollers with on/off, PID and other control forms, where inputs and outputs can be easily programmed by the user.

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



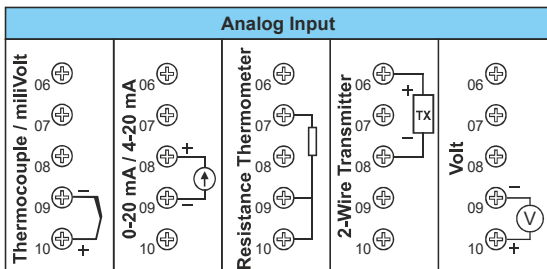
3. CONNECTION DIAGRAM



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 GEnF	inP i Analog Input 1 Type	Table 1		
	dP Decimal Point	0	3	
	SLo Analog Input 1 Linear Scale Lower Value	-199.9	999.9	EU
	SCH i Analog Input 1 Linear Scale Upper Value	-199.9	999.9	EU
	Un it Temperature Unit	oC	oF	
	oF5t Analog Input 1 Offset Value	-100.0	100.0	EU
	FLt r Analog Input 1 Filter	1	15	s
	Snbr Analog Input 1 Sensor Broken Behaviour	Lo	Hi	
	Rd r S Modbus Address	1	127	
	bRid Modbus Baud Rate [48, 96, 192, 384 kbaud]	48	384	
Pr t Y Modbus Parity [nonE, odd EvEn]				

CONTROL SET SETTINGS SEtP	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

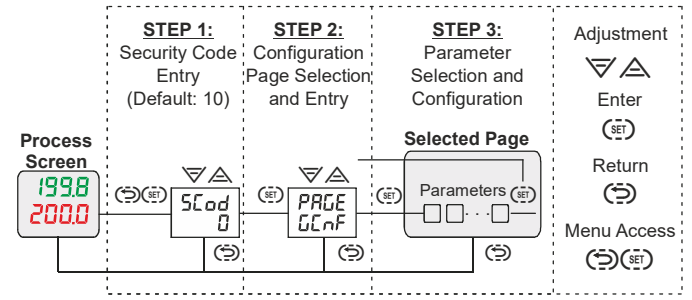
ALARM SETTINGS REnF	R1tP Alarm 1 Type	Table 3		
	R1SP Alarm 1 Set Point	-199.9	999.9	EU
	R1HY Alarm 1 Hysteresis	0.0	999.9	EU
	R1Lk Alarm 1 Lock	d5b	Enb	
	R2tP Alarm 2 Type	Table 3		
	R2SP Alarm 2 Set Point	-199.9	999.9	EU
	R2HY Alarm 2 Hysteresis	0.0	999.9	EU
	R2Lk Alarm 2 Lock	d5b	Enb	
	R3tP Alarm 3 Type	Table 3		
	R3SP Alarm 3 Set Point	-199.9	999.9	EU
R3HY Alarm 3 Hysteresis	0.0	999.9	EU	
R3Lk Alarm 3 Lock	d5b	Enb		

OUTPUTS oEnF	CEtYP Control Type	Table 4		
	CFr n Control Form [d Ir, rEu]	d Ir	rEu	
	CP r d Control Period	1	250	s
	n nPr Manual Mode Selection	d5b	Enb	
	t r t n 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	%
	o n r Control Output Manual Reset	oLL	oHL	%
	Pa n C PID Power On Behaviour	0	4	
t r LL Retransmission Scale Lower Value	-199.9	t r HL	EU	
t r HL Retransmission Scale Upper Value	t r LL	999.9	EU	
rL id Relay 1 Function	Table 5			
rL 2d Relay 2 Function	Table 5			
rL 3d 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 EUnE	Rt PID Auto Tune	oFF	on	
	P id PID Parameter Type	St d	Rd u	
	Pb + i Proportional Band +	0.1	999.9	EU
	Pb - 2 Proportional Band -	0.1	999.9	EU
	itH Integral Time +	oFF	9999	s
	itL Integral Time -	oFF	9999	s
	dtH Derivative Time +	oFF	2500	s
	dtL Derivative Time -	oFF	2500	s
	HY5 Hysteresis	0.0	999.9	EU

SECURITY Pr t L	SLod Security Code	0	9999	
	dPrL Parameter Access Level	0	9	
	RP r L 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	R1tP	R1SP	R2tP	R2SP	CEtYP	rL id	rL 2d	Ro id	Ro ir
Pt	Lo	50.0	Hi	55.0	SLo	RL-1	RL-2	Co-1	4-20

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

inP i	R2tP	R2SP	CEtYP	rL id	rL 2d
J	Hi	350.0	SLo	do-1	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	SPSr	S-1	t-1	S-2	t-2	CEtYP	t r LL	t r HL	rL id	rL 2d	Ro id	Ro ir
K	PrFL	400	10.0	400	60.0	SLo	0	1200	Co-1	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
00-1	0-1 V
02-1	0.2-1 V
0-10	0-10 V (*)
2-10	2-10 V (*)

(*) Custom specified volt input

Table 2. Control Set Options

Ink	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
SLo	Single (Heat)
dLo	Double (Heat/Cool)
bnd	Floating Control of Valve

Table 5. Relay Output Options

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

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

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

0-10	0-10 V
10-0	10-0 V
2-10	2-10 V
10-2	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.