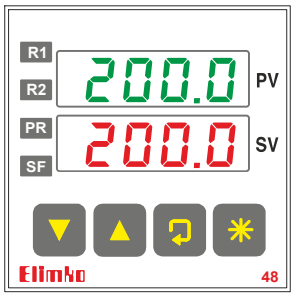
KY-48-0324-1



E-48 Series Universal Advanced Controller Quick Start Guide

Manufacturer / Technical Support :
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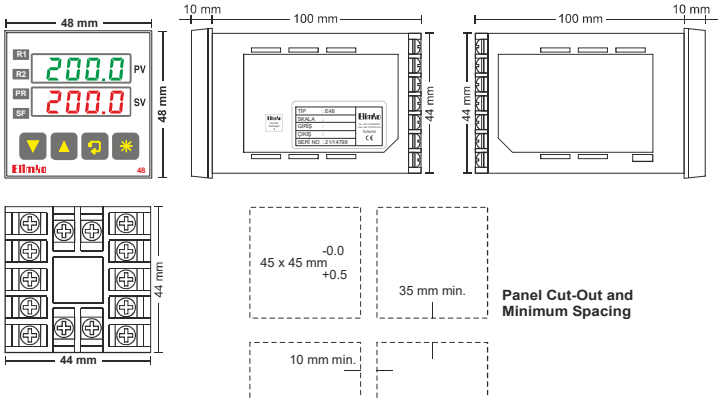
1. DESCRIPTION

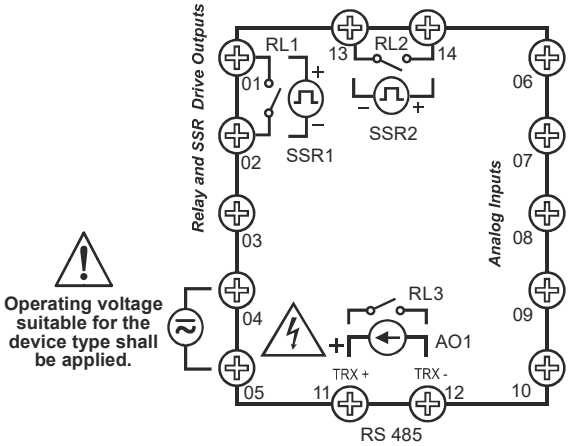
E-48 Series general purpose process controllers are industrial devices in 1/16 DIN (48x48 mm IEC/TR 60668) dimensions designed by using new generation microcontrollers with on/off, PID and other control forms. Inputs and outputs can be easily programmed by the user.

In E-48 Series controllers, set value and measured value can be displayed from -1999 to 9999 on two 4-digit displays and general purpose inputs (T/C, R/T, mV, mA) can be programmed.

2. DIMENSIONS and PANEL CUT-OUT



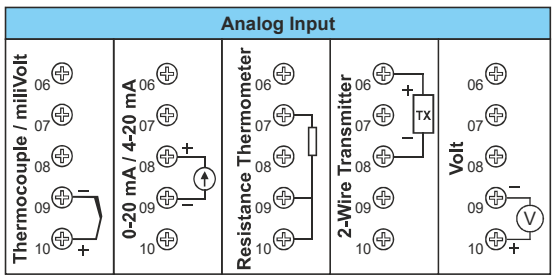
3. CONNECTION DIAGRAM



1st and 2nd control outputs can be selected as either Relay (RL1, RL2) or SSR (SSR1, SSR2).

Only one of the relay 3 output, Analogue output and RS485 Modbus options can be coded.

Analog output (AO1) mA or 0-10 V DC can be selected.



4. WARNINGS

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

- The package of E-48 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

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

K - Q TSE-ISO-EN 9000
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

	W
None	0
1 relay (RL1)	1
2 relays (RL1, RL2)	2
3 relays (RL1, RL2, RL3)	3
1 SSR (SSR1)	4
1 SSR (SSR1) + 1 relay (RL2)	5
1 SSR (SSR1) + 2 relay (RL2, RL3)	6
2 SSR (SSR1, SSR2)	7
2 SSR (SSR1, SSR2) + 1 relay (RL3)	8

Analog Outputs *

	X
None	0
0-20 / 4-20 mA (AO1)	1
0-10 V DC (AO1)	2

Communication

	Y
None	0
RS-485 **	1

Operating Voltage

	Z
85-265 V AC / 85-375 V DC	0
20-60 V AC / 20-60 V DC	1

* 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 (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:

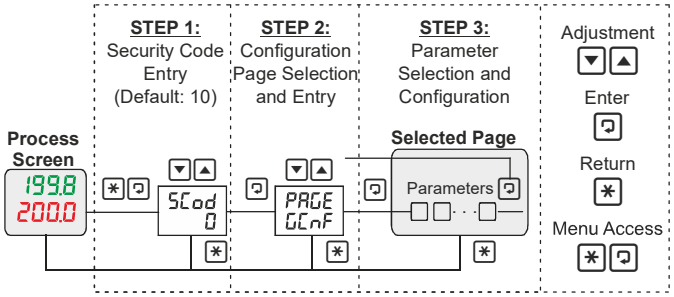
(1) Universal Input :

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

7. PARAMETER TABLE

		Description	Min	Maks	Unit
INPUT SETTINGS	ICnF	Analog Input 1 Type	Table 1		
		Decimal Point	0	3	
		Analog Input 1 Linear Scale Lower Value	-199.9	999.9	EU
		Analog Input 1 Linear Scale Upper Value	-199.9	999.9	EU
		Temperature Unit	°C	°F	
		Analog Input 1 Offset Value	-100.0	100.0	EU
		Analog Input 1 Filter	1	15	s
		Analog Input 1 Sensor Broken Behaviour	Lo	Hi	
		Modbus Adress	1	127	
		Modbus Baud Rate [4.8, 9.6, 19.2, 38.4 kbaud]	4.8	38.4	
		Modbus Parity [nonE, odd EuEn]			
CONTROL SET SETTINGS	SEtP	Control Set Point Source	Table 2		
		Control Set Point Lower Limit	-199.9	SPHL	EU
		Control Set Point Upper Limit	SPLL	999.9	EU
		Control Set Point Ramping Rate	oFF	60.0	EU/min
		1. Step Set Value	SPLL	SPHL	EU
		1. Step Time	oFF	999.9	min
		2. Step Set Value	SPLL	SPHL	EU
		2. Step Time	oFF	999.9	min
		3. Step Set Value	SPLL	SPHL	EU
		3. Step Time	oFF	999.9	min
ALARM SETTINGS	AlnF	Alarm 1 Type	Table 3		
		Alarm 1 Set Point	-199.9	999.9	EU
		Alarm 1 Hysteresis	0.0	999.9	EU
		Alarm 1 Lock	dSb	Enb	
		Alarm 2 Type	Table 3		
		Alarm 2 Set Point	-199.9	999.9	EU
		Alarm 2 Hysteresis	0.0	999.9	EU
		Alarm 2 Lock	dSb	Enb	
		Alarm 3 Type	Table 3		
		Alarm 3 Set Point	-199.9	999.9	EU
		Alarm 3 Hysteresis	0.0	999.9	EU
		Alarm 3 Lock	dSb	Enb	
OUTPUTS	oCnF	Control Type	Table 4		
		Control Form [d ir, rEu]	d ir	rEu	
		Control Period	1	250	s
		Manual Mode Selection	dSb	Enb	
		Floating Control Valve Travel Time	10	2500	s
		Dead Band	0.1	25.0	%
		Control Output Lower Limit	0.0	oHL	%
		Control Output Upper Limit	oLL	100.0	%
		Control Output Manual Reset	oLL	oHL	%
		PID Power On Behaviour	0	4	
		Retransmission Scale Lower Value	-199.9	trHL	EU
		Retransmission Scale Upper Value	trLL	999.9	EU
		Relay 1 Function	Table 5		
		Relay 2 Function	Table 5		
		Relay 3 Function	Table 5		
		Analog Output 1 Function	Table 6		
		Analog Output 1 Type	Table 7.1 ve Table 7.2		
PID SETTINGS	tUnE	PID Auto Tune	oFF	on	
		PID Parameter Type	Std	Rdu	
		Proportional Band +	0.1	999.9	EU
		Proportional Band -	0.1	999.9	EU
		Integral Time +	oFF	9999	s
		Integral Time -	oFF	9999	s
		Derivative Time +	oFF	2500	s
		Derivative Time -	oFF	2500	s
		Hysteresis	0.0	999.9	EU
SECURITY	PrtC	Security Code	0	9999	
		Parameter Access Level	0	9	
		Parameter Setting Level	0	9	
		Factory Settings [oFF, LoAd, SAuE, 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 1	A1tP	A1SP	A2tP	A2SP	CtyP	rL 1d	rL2d	Ao 1d	Ao 1r
Pt	Lo	50.0	Hi	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	Hi	350.0	SCo	do-1	AL-2

3) Input: TC 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
K	PrFL	400	10.0	400	60.0	SCo	0	1200	Co-1	AL-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
0.0-1	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	
Int	Internal adjustment with keys
PrFL	With Profile Control

Table 3. Alarm Options	
oFF	Off
Lo	Low Alarm
Hi	High Alarm
Lod	Low Deviation
H id	High Deviation
Lob	Band Alarm (In)
H ib	Band Alarm (Out)

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

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	
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.

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