KY-49-0426-1

E-49 Series Universal Advanced Controller Quick Start Guide

Manufacturer / Technical Support :

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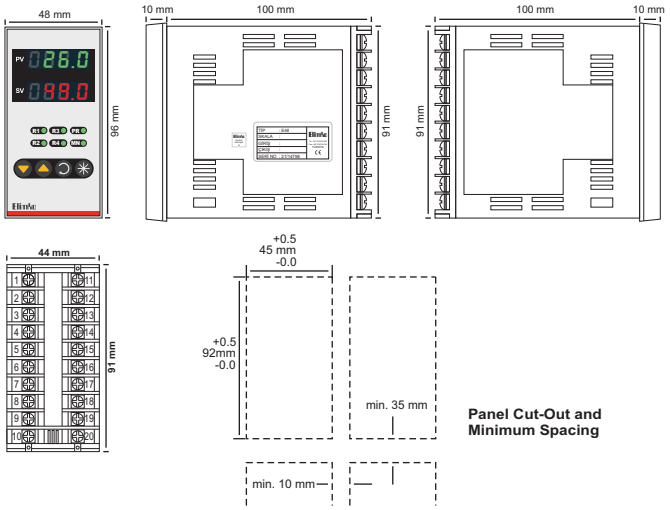
1. DESCRIPTION

E-49 Series general purpose process controllers are industrial devices in 1/8 DIN (48x96 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-49 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

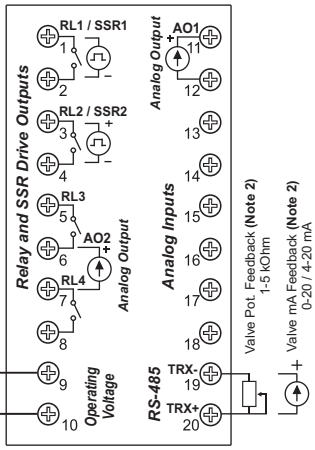
1st and 2nd control outputs can be selected as either Relay (RL1, RL2) orSSR (SSR1, SSR2).

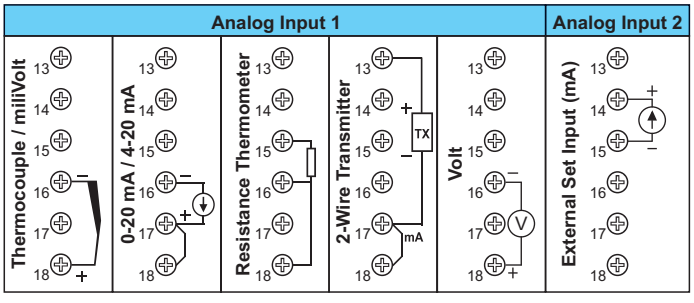
Analog outputs (AO1, AO2) mA or 0-10 V DC can be selected.

If the AO2 option is selected, RL3 and RL4 cannot be given.

Controllers with RS-485 do not have a Valve Feedback input.

Operating voltage suitable for the device type shall be applied.





4. WARNINGS

E-49 controller is designed for panel mounting and should be used in an industrial environment.

- The package of E-49 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

TS EN ISO 9001
Quality Management System Certificate

5. TYPE CODING

E-49 Series Universal Advanced Controller — E-49 - W - X - Y - Z

Relay Outputs (W)

2 relays (RL1, RL2)	2
3 relays (RL1, RL2, RL3)	3
4 relays (RL1, RL2, RL3, RL4)	4
1 SSR (SSR1) + 1 relay (RL2)	5
1 SSR (SSR1) + 2 relays (RL2, RL3)	6
1 SSR (SSR1) + 3 relays (RL2, RL3, RL4)	7
2 SSR (SSR1, SSR2) + 1 relays (RL3)	8
2 SSR (SSR1, SSR2) + 2 relays (RL3, RL4)	9

Analog Outputs (X)

None	0
1 x 0-20 / 4-20 mA (AO1)	1
2 x 0-20 / 4-20 mA (AO1, AO2)	2
1 x 0-10 V DC (AO1)	3
2 x 0-10 V DC (AO1, AO2)	4

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

* When E-49 Series devices 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.
** Controllers with RS-485 do not have a Valve Feedback input.

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	4 x SPST - NO 250 V AC 5 A relays or 24 V DC 25 mA (SSR) drives
Dimensions (mm)	96 (Lenght) x 48 (Height) x 100 (Width)
Panel Cut-Out (mm)	92 (Lenght) X 45 (Height)
Analog Output	2 x 0..20 / 4..20 mA or 0..10 V DC optional
Analog Input	Universal **(Note 1),** 1 x External set point (mA)
Communication (RS-485)	Available **(Note 2)**
Digital Input	None
Valve Feedback	Available **(Note 2)**
Transmitter Supply	Available
Weight	220 g
Power Consumption	Max. 7 W (10 VA)
Operating Temperature	- 10 °C ... 55 °C
Storage Temperature	- 25 °C ... 65 °C
Memory	Max. 100.000 write
Protection Class	IP-65 Front Panel, IP-20 Rear Case

Notes:

(1) Universal Input :

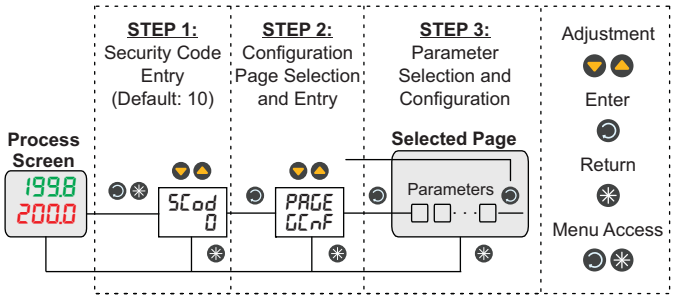
Thermocouple	: B, E, J, K, L, N, R, S, T, U
Resistance Thermometer	: Pt-100
Current	: 0-20 mA, 4-20 mA (Linear)
Voltage	: 0-50 mV, 0-1 V, 0.2- 1 V (Linear), 0-10 V DC, must be specified in the order.
Resolution	: 16 bit
Accuracy	: Thermocouple, Max. ±1.0 °C (Conversion and CJC error) Resistance Thermometer, Max. ±0.5 °C (Conversion and wire resistance compensation) Linear Input, Max. % 0.1

(2) Valve Feedback are supplied as potentiometer input in standard controllers. If the feedback type is requested as mA, it must be specified in the order. Controllers with RS-485 do not have a Valve Feedback input.

7. PARAMETER TABLE

		Description	Min	Maks	Unit
INPUT SETTINGS	GEnF	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	H I	
		inP2	Analog Input 2 Type	0-20	4-20	
		S2Lo	Analog Input 2 Linear Scale Lower Value	-199.9	999.9	EU
		S2H 1	Analog Input 2 Linear Scale Upper Value	-199.9	999.9	EU
		S2br	Analog Input 2 Sensor Broken Behaviour	Lo	H I	
		Adr S	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, 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	ALnF	A 1tP	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	
		A3tP	Alarm 3 Type	Table 3		
		A3SP	Alarm 3 Set Point	-199.9	999.9	EU
		A3HY	Alarm 3 Hysteresis	0.0	999.9	EU
		A3Lt	Alarm 3 Lock	dSb	Enb	
		A4tP	Alarm 4 Type	Table 3		
		A4SP	Alarm 4 Set Point	-199.9	999.9	EU
		A4HY	Alarm 4 Hysteresis	0.0	999.9	EU
		A4Lt	Alarm 4 Lock	dSb	Enb	
OUTPUT SETTINGS	oCnF	CtYP	Control Type	Table 4		
		CFrñ	Control Form [d Ir, rEv]	d Ir	rEv	
		CPrd	Control Period	1	250	s
		ñnPr	Manual Mode Selection	dSb	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	
		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		
		rL4d	Relay 4 Function	Table 5		
		Ao Id	Analog Output 1 Function	Table 6		
		Ao Ir	Analog Output 1 Type	Table 7.1 ve Table 7.2		
		Ao2d	Analog Output 2 Function	Table 6		
		Ao2r	Analog Output 2 Type	Table 7.1 ve Table 7.2		
		SruL	Feedback Valve Fully-Closed Position			
		SruH	Feedback Valve Fully-Open Position			
PID SETTINGS	tUnE	At	PID Auto Tune	oFF	on	
		P id	PID Parameter Type	Std	Adv	
		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, SAvE, 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	A 1tP	A 1SP	A2tP	A2SP	CtYP	rL Id	rL2d	Ao Id	Ao Ir
Pt	Lo	50.0	H I	55.0	Co	RL-1	RL-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 Id	rL2d
J	H I	350.0	Co	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 1	SPSr	S- 1	t- 1	S-2	t-2	CtYP	trLL	trHL	rL Id	rL2d	Ao Id	Ao Ir
r	PrFL	400	10.0	400	60.0	Co	0	1200	Co-1	RL-2	Putr	4-20

4) Input: 4-20 mA, **Scale:** 0-600, **External Set Point:** 4-20 mA, **Scale:** 0-600,
Floating Valve Control (Travel Time 30 s), **Relay1:** Valve Open, **Relay2:** Valve Close

inP 1	SCLo	SCH 1	inP2	S2Lo	S2H 1	CtYP	trtñ	rL Id	rL2d
4-20	0.0	600.0	4-20	0.0	600.0	bnd	30	Co-1	Co-2

Table 1. Input Type Options	
b	Type B Thermocouple
E	Type E Thermocouple
J	Type J Thermocouple
r	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
Ert	External adjustment with AIN2 external input

Table 3. Alarm Options	
oFF	Off
Lo	Low Alarm
H I	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
PFb	Feedback 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)
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.

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