

E-94 Series Universal Advanced Controller Quick Start Guide



Manufacturer / Technical Support :

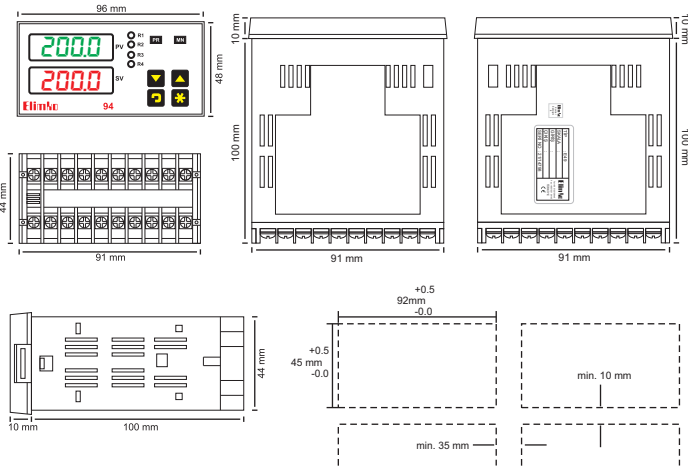
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1. DESCRIPTION

E-94 Series general purpose process controllers are industrial devices in 1/8 DIN (96x48 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.

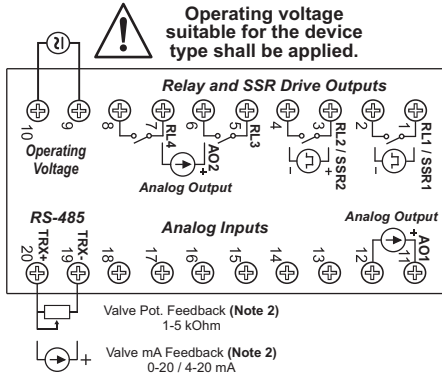
In E-94 Series controllers, set value and measured value can be displayed from -1999 to 9999 on two 4-digit displays and general purpose inputs (T/C, R/T, mV, mA) can be programmed.

2. DIMENSIONS and PANEL CUT-OUT



Panel Cut-Out and Minimum Spacing

3. CONNECTION DIAGRAM

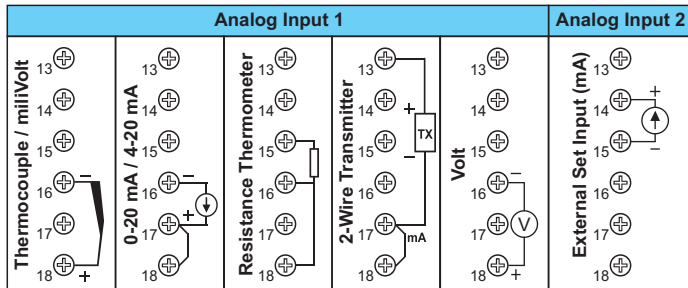


1st and 2nd control outputs can be selected as either Relay (RL1, RL2) or SSR (SSR1, SSR2).

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.



4. WARNINGS

E-94 controller is designed for panel mounting and should be used in an industrial environment.

- The package of E-94 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-94 Series Universal Advanced Controller

E-94 - W - X - Y - Z

Relay Outputs

- 2 relays (RL1, RL2)
- 3 relays (RL1, RL2, RL3)
- 4 relays (RL1, RL2, RL3, RL4)
- 1 SSR (SSR1) + 1 relay (RL2)
- 1 SSR (SSR1) + 2 relays (RL2, RL3)
- 1 SSR (SSR1) + 3 relays (RL2, RL3, RL4)
- 2 SSR (SSR1, SSR2) + 1 relays (RL3)
- 2 SSR (SSR1, SSR2) + 2 relays (RL3, RL4)

Analog Outputs

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

Communication *

- None
- RS-485 **

Operating Voltage

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

* When E-94 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 (Length) x 48 (Height) x 100 (Width)
Panel Cut-Out (mm)	92 (Length) 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.

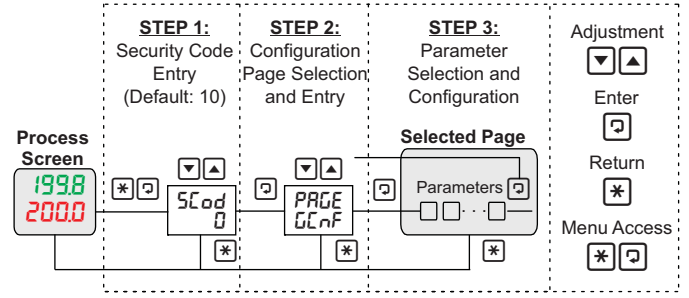
If the feedback type is requested as mA, it must be specified in the order.

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

7. PARAMETER TABLE

Description		Min	Maks	Unit
INPUT SETTINGS	SCnf			
	InP1	Table 1		
	dP	0	3	
	SLo	-199.9	999.9	EU
	SHi	-199.9	999.9	EU
	UnIt	oC	oF	
	oFSt	-100.0	100.0	EU
	FLtF	1	15	s
	Snbr	Lo	Hi	
	InP2	0-20	4-20	
	SLo	-199.9	999.9	EU
	SHi	-199.9	999.9	EU
CONTROL SET SETTINGS	SCtP			
	SP5r	Table 2		
	SPLL	-199.9	SPHL	EU
	SPHL	SPLL	999.9	EU
	SPrr	oFF	60.0	EU/min
	S-1	SPLL	SPHL	EU
	t-1	oFF	999.9	min
	S-2	SPLL	SPHL	EU
	t-2	oFF	999.9	min
	S-3	SPLL	SPHL	EU
	t-3	oFF	999.9	min
ALARM SETTINGS	ALnf			
	Al1P	Table 3		
	Al1SP	-199.9	999.9	EU
	Al1HY	0.0	999.9	EU
	Al1Lt	d5b	Enb	
	Al2P	Table 3		
	Al2SP	-199.9	999.9	EU
	Al2HY	0.0	999.9	EU
	Al2Lt	d5b	Enb	
	Al3P	Table 3		
	Al3SP	-199.9	999.9	EU
OUTPUT SETTINGS	ALnf			
	Al3HY	0.0	999.9	EU
	Al3Lt	d5b	Enb	
	Al4P	Table 3		
	Al4SP	-199.9	999.9	EU
	Al4HY	0.0	999.9	EU
	Al4Lt	d5b	Enb	
OUTPUT SETTINGS	ALnf			
	CTYP	Table 4		
	CFrñ	dIr	rEu	
	CPrr	1	250	s
	ñnPr	d5b	Enb	
	trtñ	10	2500	s
	dbnd	0.1	25.0	%
	oLL	0.0	oHL	%
	oHL	oLL	100.0	%
	oñr	oLL	oHL	%
	PonC	0	4	
	trLL	-199.9	trHL	EU
PID SETTINGS	ALnf			
	trHL	trLL	999.9	EU
	RL1d	Table 5		
	RL2d	Table 5		
	RL3d	Table 5		
	RL4d	Table 5		
	Ro1d	Table 6		
	Ro1r	Table 7.1 ve Table 7.2		
	Ro2d	Table 6		
	Ro2r	Table 7.1 ve Table 7.2		
	SrUL			
	SrUH			
SECURITY	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			
	ALnf			

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

InP1	Al1P	Al1SP	Al2P	Al2SP	CTYP	RL1d	RL2d	Ro1d	Ro1r
Pt	Lo	50.0	Hi	55.0	SCo	RL-1	RL-2	Co-1	4-20

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

InP1	Al2P	Al2SP	CTYP	RL1d	RL2d
J	Hi	350.0	SCo	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)

InP1	SP5r	S-1	t-1	S-2	t-2	CTYP	trLL	trHL	RL1d	RL2d	Ro1d	Ro1r
K	PrFL	400	10.0	400	60.0	SCo	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

InP1	SLo	SHi	InP2	SLo	SHi	CTYP	trtñ	RL1d	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
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

InC	Internal adjustment with keys
PrFL	With Profile Control
ErC	External adjustment with AIN2 external input

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

oFF	No Control
SCo	Single (Heat)
dCo	Double (Heat/Cool)
bnd	Floating Control of Valve
Pfb	Feedback 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.