ELK38V

Indicators
with independent Timer option

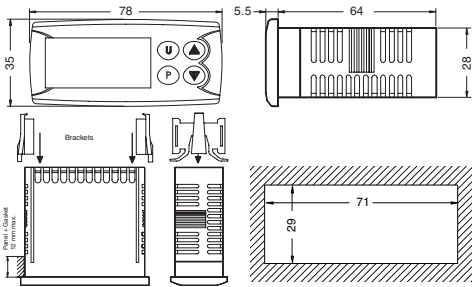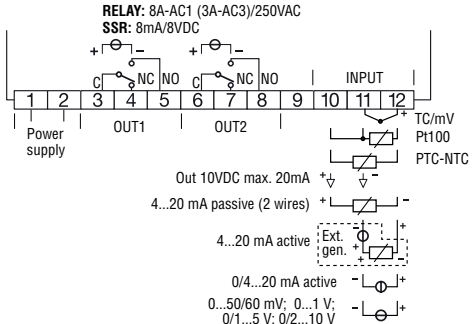## 1 - OUTLINE DIMENSIONS (mm)

1.1 ELK38V

2 - CONNECTIONS DIAGRAMS

2.1 ELK38Vs

2.2 Mounting requirements

This instrument is intended for permanent installation, for indoor use only, in an electrical panel which encloses the rear housing, exposed terminals and wiring on the back. Select a mounting location having the following characteristics:

1. It should be easily accessible;
2. There is minimum vibrations and no impact;
3. There are no corrosive gases;
4. There are no water or other fluid (i.e. condensation);
5. The ambient temperature is in accordance with the operative temperature (0... 50 °C)
6. The relative humidity is in accordance with the instrument specifications (20... 85 %)

The instrument can be mounted on panel with a maximum thick of 15 mm. When the maximum front protection (IP65) is desired, the optional gasket must be monted.

2.3 Genereal notes about wiring

1. Do not run input wires together with power cables;
2. External components (like zener barriers, etc.) connected between sensor and input terminals may cause errors in measurement due to excessive and/or not balanced line resistance or possible leakage currents;
3. When a shielded cable is used, it should be connected at one point only;
4. Pay attention to the line resistance; a high line resistance may cause measurement errors.
5. Before connecting the instrument to the power line, make sure that line voltage is equal to the voltage shown on the identification label.
6. The power supply input is **NOT** fuse protected. Please, provide a T type 1A, 250 V fuse externally.

Note: Safety precautions.

a) To avoid electrical shock, connect power at last;
b) For supply connections use No. 16 AWG or larger wires rated for at last 75°C;
c) Use copper conductors only;
d) Before connecting the instrument to the power line, make sure that line voltage is equal to the voltage shown on the identification label.
e) The power supply input is NOT fuse protected. Please, provide a T type 1A, 250 V fuse externally.

3 - CONFIGURATION PROCEDURE

3.1 How to enter the configuration mode

1. Push the [P] button for more than 3 seconds. The display will show alternately 0 and PASS;
2. Using [▲] and/or [▼] buttons set the programmed password.

Note:

a) The factory default password for configuration parameters is 30.
b) The parameter changes are protected by a time out. If no key is pressed for more than 10 seconds the instrument automatically returns back to the Standard display, the new value of the last selected parameter will be lost and the parameter modification procedure closed. Sometimes can be useful to enter the parameter configuration procedure with no timeout (e.g. for the first time an instrument is configured). In this case, use a password equal to the previously set password + 1000 digits (e.g. 1000 + 30 [default] = 1030). It is always possible to manually end the parameter configuration procedure (see the next paragraph).
c) During parameter modification the instrument continues to perform the Alarms and timer functions. In certain conditions, when a configuration change can produce a bump to the process, it is advisable to temporarily stop the alarm functions during the programming procedure (its alarms output will be Off). A password equal to 2000 + the programmed value (e.g. 2000 + 30 = 2030). The alarms will restart automatically when the configuration procedure will be manually closed

3. Push the [P] button
If the password is correct the display will show the acronym of the first parameter group preceded by the symbol ⌐.
In other words the display will show ⌐ InP.
The instrument is in configuration mode.

3.2 How to exit the configuration mode

Push [U] button for more than 5 seconds. The instrument will come back to the "standard display".

3.3 Keyboard functions during parameters modification

[U] A short pression allows to exit the current parameter group and select a new parameter group. A long pression allows to close the configuration parameter procedure (the instrument returns to the "standard display").

[P] When the display is showing a group, the key allows to enter in the selected group. When the display is showing a parameter, the key allows you to store the value shown and go to the next parameter within the same group.

[▲] Increases the value of the selected parameter.

[▼] Decreases the value of the selected parameter.

Nota: The group selection is cyclic as well as the selection of the parameters in a group.

3.4 Factory reset - Default parameters loading procedure

Sometimes, e.g. when you reconfigure an instrument previously used for other works or from other people or when you have made too many errors during configuration and you decided to reconfigure the instrument, it is possible to restore the factory configuration. This action allows you to put the instrument in a defined condition (in the same condition it was at the first Power ON).

The default data are the typical values loaded in the instrument prior to shipping from factory. To load the factory default parameter set, proceed as follows:
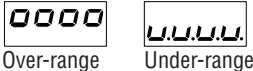
1. Press the [P] button for more than 5 seconds;
2. The display will show alternately "PASS" and "0";
3. Using [▲] and [▼] buttons, set the value -481;
4. Push [P] button;
5. The instrument will turn OFF all LEDs then it will show "dFLt" messages and than it turn ON all LEDs of the display for 2 seconds and than it will restart as at the first power ON.

The procedure is complete (the default value of each parameter is listed in the "**Parameters Tables**" paragraph).

4 - ERROR MESSAGES

4.1 Out of Range Signals

The display shows the OVER-RANGE and UNDER-RANGE conditions with the following indications:

Over-range   Under-range

The sensor break will be signalled as an out of range:

Nota: When an over-range or an under-range is detected, the alarms operate as in presence of the maximum or the minimum measurable value respectively.

To check the out of span Error condition, proceed as follows:

1. Check the signal source and the connecting line.
2. Make sure that the input signal is in accordance with the instrument configuration. Otherwise, modify the input configuration (see section 4).
3. If no error is detected, send the instrument to your supplier to be checked.

4.2 List of possible errors

ErEP- Possible problem of the instrument memory. The message desappears automatically. If the error continues, send the instrument to the supplier.

5 - GENERAL NOTES

5.1 Proper Use

Every possible use not described in the complete manual must be considered as a improper use.

This instrument is in compliance with EN 61010-1 "Safety requirements for electrical equipment for measurement, control and laboratory use"; for this reason it coud not be used as a safety equipment.

EL.CO. S.r.l. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, wrong or improper use or in any case not in compliance with the instrument's features.

⚠ **WARNING!**
Whenever a failure or a malfunction of the device may cause dangerous situations for persons, things or animals, please remember that the plant must be equipped with additional safety devices which will guarantee safety.

5.2 Warranty and repairs

This product is under warranty against manufacturing defects or faulty materials that are found within 12 months from delivery date.

The warranty is limited to repairs or to the replacement of the instrument.

The tampering of the instrument or an improper use of the product will bring about the immediate withdrawal of the warranty's effects.

In the event of a faulty instrument, either within the period of warranty, or further to its expiry, please contact our sales department to obtain authorisation for sending the instrument to our company.

The faulty product must be shipped to EL.CO. S.r.l. with a detailed description of the faults found, without any fees or charge for EL.CO. S.r.l., except in the event of alternative agreements.

Before supplying tension to the instrument, make sure that it is perfectly dry.

4 - PARAMETERS TABLES

⌐ InP Group (parameters relative to the inputs)

no.	Parameter	Description	Range	Default	Vis. Promo.
1	HcFG	Parameter available by serial link nIt shows the current hardware	TC/RTD - TC/PTC - Current - Voltage	According to the Hardware	Not displayed
2	SEnS	Sensor selection (according to the hw)			A-4
		TC, Pt100 input	J, crAL, S, r, t, ir.J, ir.cA, Pt1, 0... 50 (mV), 0... 60 (mV), 12... 60 (mV)	J	
		TC, PTC, NTC input	J, crAL, S, r, t, Ir.J, Ir.cA, Ptc, ntc, 0... 50 (mV), 0... 60 (mV), 12... 60 (mV)	Ptc	
		Current input	0... 20 (mA), 4... 20 (mA)	4.20	
		Voltage input	0... 5(V), 1... 5(V), 0... 10(V), 2... 10(V), 0... 1 (V)	0.10	
3	dP	Decimal figures	0... 3	0	A-5
4	SSc	Initial scale readout	From -1999 to FSC (E.U.)	-1999	A-6
5	FSc	Final scale readout	From SSc to 9999 (E.U.)	9999	A-7
6	0.Pot	Offset value (to shift the zero readout)	From SSc to Fsc (E.U.)	0 = °C	
7	unit	Engineering unit	°C or °F	0 = °C	A-8
8	FiL	Digital filter on the measured value	From 0 (oFF) 20.0 (s)	1.0	C-0

⌐ Out Group (parameters relative to the outputs)

no.	Parameter	Description	Range	Default	Vis. Promo.
9	o1F	Out 1 function	nonE =Output not used. AL =Alarm output t.out =Timer output t.HoF =Tiemer out - OFF in Hold or.bo =Out-of-range or burn out indicator P.FAL =Power failure indicator bo.PF =Out-of-range, burn out and Power failure indicator	H.reg	A-16
10	o1AL	Alarms linked to output 1	0... 15 +1 =Alarm 1 +2 =Alarm 2 +4 =Alarm 3 +8 =Alarm 4 +16 =Sensor break (burn out)	AL1	A-17
11	o1Ac	Out 1 action	dir =Direct action rEU =Reverse action dir.r =Direct with reversed LED ReU.r =Reverse with reversed LED	dir	C-0
12	o2F	Out 2 function	Same range as [9] o1F - Out 1 function	AL 1	A-19
13	o2AL	Alarms linked up with out 2	Same range as [10] o1AL - Alarms linked to output 1	AL1	A-20
14	o2Ac	Out 2 action	Same range as [11] o1Ac - Out 1 action	dir	C-0
15	o3F	Out 3 function	Same range as [9] o1F - Out 1 function	AL	A-22
16	o3AL	Alarms linked up with out 3	Same range as [10] o1AL - Alarms linked to output 1	AL2	A-23
17	o3Ac	Out 3 action	Same range as [11] o1Ac - Out 1 action	dir	C-0
18	o4F	Out 4 function	Same range as [9] o1F - Out 1 function	AL	A-24
19	o4AL	Alarms linked up with out 4	See parameter [10] o1AL - Alarms linked to output 1	AL2	A-25
20	o4Ac	Out 4 action	Same range as [11] o1Ac - Out 1 action	dir	C-0

⌐ AL1 Group (parameters relative to AL1 - alarm 1)

no.	Parameter	Description	Range	Default	Vis. Promo.
21	AL1t	Alarm 1 type	nonE =Alarm not used LoAb =Absolute low alarm HiAb =Absolute high alarm LHAb =Absolute band alarm SE.br =Sensor break	LoAb	A-47
22	Ab1	Alarm 1 function	From 0 to 15 +1 =Not active at power up +2 =Latched alarm (manual reset) +4 =Acknowledgeable alarm	0	C-0
23	AL1L	- For High and low alarms, it is the low limit of the AL1 threshold - For band alarm, it is low alarm threshold	From -1999 to AL1H (E.U.)	-1999	A-48
24	AL1H	- For High and low alarms, it is the high limit of the AL1 threshold - For band alarm, it is high alarm threshold	From AL1L to 9999 (E.U.)	9999	A-49
25	AL1	AL1 threshold	From AL1L to AL1H (E.U.)	0	A-50
26	HAL1	AL1 hysteresis	1... 9999 (E.U.)	1	A-51
27	AL1d	AL1 delay	From 0 (oFF) to 9999 (s)	oFF	C-0
28	AL1o	Alarm 1 at out of range indication	No = Alarm NOT running when out-of-range YES = Alarm enabled when out-of-range	no	C-0

⌐ AL2 Group (parameters relative to AL2 - alarm 2)

no.	Parameter	Description	Range	Default	Vis. Promo.
29	AL2t	Alarm 2 type	Same range as [21] AL1t - Alarm 1 type	LoAb	A-54
30	Ab2	Alarm 2 function	Same range as [22] AB1 - Alarm 1 function	0	C-0
31	AL2L	- For High and low alarms, it is the low limit of the AL2 threshold - For band alarm, it is low alarm threshold	Same range as [23] AL1L - Low limit of the AL1 threshold/How AL1threshold	-1999	A-56
32	AL2H	- For High and low alarms, it is the high limit of the AL2 threshold - For band alarm, it is high alarm threshold	Same range as [24] AL1L - High limit of the AL1 threshold/High AL1 threshold	9999	A-57
33	AL2	AL2 threshold	From AL2L to AL2H (E.U.)	0	A-58
34	HAL2	AL2 hysteresis	1.... 9999 (E.U.)	1	A-59
35	AL2d	AL2 delay	From 0 (oFF) to 9999 (s)	oFF	C-0
36	AL2o	Alarm 2 at out of range indication	No = Alarm NOT running when out-of-range YES = Alarm enabled when out-of-range	no	C-0

⌐ Tin Group

no.	Parameter	Description	Range	Default	Vis. Promo.
37	tr.F	Independent timer function	NonE =Timer not used i.d.A =Delayed start timer i.uP.d =Delayed start at power up i.d.d =Feed-through timer i.P.L =Asymmetrical oscillator with start in OFF i.L.P =Asymmetrical oscillator with start in ON	nonE	A-62
38	tr.u	Timer unit	hh.nn =Hours and minutes nn.SS =Minutes and seconds SSS.d =Second and tenth of seconds	nn.SS	A-63
39	tr.t1	Time 1	00.01... 99.59 when tr.u = hh.nn 00.01... 99.59 when tr.u = nn.SS 000.1... 995.9 when tr.u = SSS.d	1.00	A-64
40	tr.t2	Time 2	00.01... 99.59 when tr.u = hh.nn + iNF 00.01... 99.59 when tr.u = nn.SS + iNF 000.1... 995.9 when tr.u = SSS.d + iNF	1.00	A-65
41	tr.St	Timer status	run =timer run HoLd =timer hold rES =timer reset	rES	C-0

⌐ PAN Group

no.	Parameter	Description	Range	Default	Vis. Promo.
42	PAS2	Password level 2	From 0 (oFF) to 999 (oFF = Level 2 not protected by psw)	20	A-93
43	PAS3	Password level 3	3... 999	30	C-0
44	uSrb	U button function during run time	nonE =No function AAc =Alarm reset ASi =Alarm acknowledge HoLd =Hold of the measured value d.Pic =The display will shows the peaks r.Pic =Peaks reset 0.Pot =Start the 0.Pot routine r.Pot =0.Pot routine + Peaks reset t.Pot =Input calibration with self-learning procedure Str.t =Timer run/hold/reset	nonE	A-94
45	diSP	Display management	nonE =Standard display AL1 =Alarm 1 threshold AL2 =Alarm 2 threshold AL3 =Alarm 3 threshold ti.uP =Timer time up ti.du =Timer time down	nonE	A-95
46	Edit	Alarm editing enable	AE =Alarm thresholds can be modified AnE =Alarm threshold can NOT be modified	ANe	

⌐ CON Group (worked time count)

no.	Parameter	Description	Range	Default	Vis. Promo.
47	co.ty	Measurement type	oFF =Not used dAY =Total worked days Hour =Total worked hours	nonE	A-97
48	h.Job	Threshold of the worked hours/days	From 0 (oFF) to 9999 (days/hours)	oFF	A-100

⌐ CAL Group (User calibration)

no.	Parameter	Description	Range	Default	Vis. Promo.
49	A.L.P	Adjust low Point	From -1999 to AH.P-10 (E.U.)	0	A-9
50	A.L.o	Adjust low Offset	-300... +300 (E.U.)	0	A-10
51	A.H.P	Adjust High Point	From A.L.P +10 to 9999 (E.U.)	9999	A-11
52	A.H.o	Adjust High Offset	-300... +300 (E.U.)	0	A-12

CODING

ELK38V		
Description	**C o d e s**	**Codes Description**
Power supply	24	24 VAC/DC
	240	100..240 VAC
Input Signal	V	0-1/5V, 0-2/10 V
	I	0-4/20 mA
	E	TC (J,K,S,IR) + PTC, NTC, mV
	C	TC (J,K,S,IR) + PT100, mV
First output OUT 1	R	Relè - Relay
	S	20 mA / 12 VDC per SSR 20 mA / 12 VDC for SSR
	-	No uscita - No output
Second output OUT 2	2R	Relè - Relay
	2S	20 mA / 12 VDC per SSR 20 mA / 12 VDC for SSR

EXAMPLE OF CODE COMPOSITION

ELK38V- 24 - C -R - 2R

Mod. Termoregolatore / Temperature controller model

Alimentazione / Power supply

Segnale ingresso / Input signal

Uscita 1 / Output 1

Uscita 2 / Output 2